Business and Health Administration Association
Division of MBAA International
2018 Meeting
Chicago, Illinois

ABSTRACT AND PAPER PROCEEDINGS

BHAA President – Jean Sanchez
Program Chair – Marcy Butler
Proceedings Editor- Hanadi Hamadi

PROCEEDINGS

of the
BUSINESS AND HEALTH ADMINISTRATION ASSOCIATION

CHICAGO, IL
April 18th-April 20th, 2018

2018 PROCEEDINGS EDITOR
Hanadi Hamadi
Clayton State University
Morrow, GA

Sample Footnote: Please use the following style when referring articles from the Proceedings:
Zakari, Nazik M.A. (2009), "The Influence of Academic Organizational Climate on Nursing Faculties Commitment in Saudi Arabia," in *Business & Health Administration Proceedings*, Avinandan Mukherjee, Editor, p. 244.

Letter from the BHAA 2018 President

Jean E. Sanchez
Washburn University

Dear BHAA Colleagues,

It has been a privilege to serve as President for this year's BHAA conference. It is always a pleasure to reconnect with colleagues and meet new participants. I look forward to another conference filled with interesting papers and presentations. For the past five years, I have been attending the BHAA conference with co-workers and students. It is definitely one of my favorite annual symposiums because of the collegiality and excellent educational opportunities.

This year's conference schedule looks like it will be full once again. All of the hard work that everyone puts into submissions and presentations is greatly valued. We also appreciate the participation by students and encourage faculty to continue promotion of this event as an excellent venue for student research and presentation.

Please note the BHAA Annual Business Meeting and Award session will be held on Thursday, 8-9 am in Dearborn 1. The ticketed luncheon will also be held Thursday, 12:15-1:30, so be sure to purchase your tickets and enjoy the excellent food that is served during this event.

Thank you to everyone for your participation in the BHAA 2018 conference and I look forward to seeing all of you in April. This year, Program Chair Marcy Butler, Proceedings Editor Hanadi Hamadi, and Zack Hill completed all of the hard work. I would like to thank them for all they have done to insure this year's conference is a success. As always, I appreciate the guidance provided by BHAA Executive Director Ashish Chandra. Congratulations to all of you and again, thank you for your hard work in preparation for the conference.

Sincerely,
Jean E. Sanchez
President-BHAA 2017/2018

Letter from the BHAA 2018 Conference Chairperson

Marcy Butler
Clayton State University

Dear BHAA Colleagues,

I would like to welcome you to the 2018 Business and Health Administration Association (BHAA) Conference at the Palmer House in Chicago, Illinois!

Whether this is your first time attending this conference or a conference alum; I hope that you will enjoy the presentations. We have a wonderful array of papers and abstracts from various disciplines again this year, so I hope that you will take the time to attend as many presentations as possible. I personally want to express my gratitude for all the efforts you have put into your submissions.

I have been attending this conference since 2013, and this is one of my favorites. I have met many wonderful individuals that I consider as friends and colleagues. I look forward to meeting many of you for the first time as well as reconnecting.

It has been my privilege serving as your Conference Chairperson for this year's BHAA. I would like to express my gratitude to the leadership of President Jean Sanchez, the tireless work of our Proceedings Editor, Hanadi Hamadi and Zack Hill, as well as many of the past presidents, for their support and guidance throughout this year. Peter Fitzpatrick and Ashish Chandra are my mentors here and I am eternally grateful.

Again, thank you for your participation in this year's BHAA conference. I hope that you will have a wonderful learning experience and will have an opportunity to enjoy the city of Chicago.

Sincerely,
Marcy Butler
Chairperson, BHAA 2018

Letter from the BHAA 2018 Proceedings Editor

Hanadi Hamadi
Clayton State University

Dear BHAA Colleagues,

Welcome and greetings to the 2017 BHAA Annual Conference at the Palmer House in Chicago, Illinois!

I want to thank you for your exceptional efforts that you have put forth into your submissions and the presentations. I highly recommend that you attend as many of the presentations as you can, as they provide a great opportunity to share experiances and connect with others in your field.

This is will me my third year attending and presenting at the BHAA conference and my first year as proceeding editor. This is one of my favorite annual conferences because you are able to network in depth with new colleagues from other colleges local and national.
I look forward to meeting many of you in April.

It has been my privilege serving as your Proceeding Editor for this year's BHAA conference. I would like to acknowledge the leadership provided by President Jean Sanchez the tireless work that Program Chair Marcy Butler has put forth. In addition, I would like to recognize Zack Hill, for his extensive help and assistance in compiling the proceedings manual.

Again, thank you for your participation in this year's BHAA conference. I hope that you will have a wonderful learning experience and will have an opportunity to enjoy the city of Chicago.

Sincerely,
Hanadi Hamadi
Proceedings Editor-BHAA 2017/2018

Best Paper Awards

MBAA INTERNATIONAL BEST PAPER AWARD

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Emily R. Baggett and William B. Stroube

TRACK: CORPORATE HEALTHCARE

MACRA and Rural Hospitals

Erica Kelley, Rhea Lipscomb, Jennifer Valdez, Nitesh Patil, and Alberto Coustasse

TRACK: HEALTH AND WELLNESS

Hospital Nurse Burnout: A Continuing Problem

David P. Paul, Lama Bakhamis, Harlan Smith, and Alberto Coustasse

TRACK: HEALTH INFORMATICS AND TECHNOLOGY

Emerging Cloud Computing Trends in Mobile Healthcare

Anuradha Rangarajan and David Batts

TRACK: HEALTHCARE ECONOMICS AND FINANCE

The Economic Impact of Caregiving for Dementia Patients

Rahul Deshmukh, Yeleena Sahakian, and Ateequr Rahman

TRACK: HEALTHCARE EDUCATION

Characteristics of Strong Long-Term Care Administration Academic Programs: A 10-year Structured Review of NAB Accreditation Reports

Jennifer L. Johs-Artisensi and Douglas Olson

TRACK: HEALTHCARE MANAGEMENT

Evaluating the Impact of Minority Population Presence on Hospital Acquired Conditions Performance Scores

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TRACK
CORPORATE HEALTHCARE

MACRA AND RURAL HOSPITALS

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MACRA AND RURAL HOSPITALS

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ABSTRACT

Every year, the cost of healthcare within the United States has continued to increase while the quality of patient care has decreased. To reconstruct the delivery of care, Congress has introduced the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015. The purpose was to study MACRA and its implementation to determine how it would financially impact rural hospitals. Two reimbursement pathways have been created for physicians under the MACRA. In addition to the pathways, financing and competition among facilities created by the act have been expected to impact physicians and healthcare organizations. Rural hospitals have been set to receive reduced government reimbursements and have been predicted to compete poorly with larger hospitals and corporations. The payment tracks available through the act have been projected to impact solo and small practice physicians negatively; therefore, hospitals have been expected to have to provide support and assistance to local clinicians.

INTRODUCTION

In 2015, Medicare spending increased 4.5% to $642 billion contributing to the United States' (U.S.) national health care expenditure of $3.2 trillion or approximately 17.8% of the gross domestic product (Centers for Medicare and Medicaid Services [CMS], 2017). With the continued use of Medicare's former physician reimbursement algorithm termed Sustainable Growth Rate (SGR), national expenditures within the U.S. have been expected to climb 5.6% annually (CMS, 2017). SGR has not been the only factor taking the blame for the rising costs of healthcare; Traditional Fee-For-Service (FFS) payments have also been emerging as a key contributor (Millard, 2016). As these financial expenditures have continued to grow, quality of care within the U.S. has not (Heller et al., 2017). To address these concerns, Congress has passed the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) which has permanently eliminated and replaced SGR (Medicare Access and CHIP Reauthorization Act [MACRA], 2015). MACRA has altered Medicare physician reimbursement programs drastically. MACRA has sought to control national healthcare expenditures while also incentivizing value rather than volume (Kuebler, 2017).

For many years, SGR has been the system utilized for determining physician Medicare reimbursement rates. SGR originated from the Balanced Budget Act of 1997 (CMS, 2015a). SGR did have not placed direct limits on expenditures; the algorithm has been used to adjust Medicare reimbursement rates based on actual expenses and target expenditures (Steinbrook, 2015). From 2002 to 2015, SGR has called for scheduled cuts in Medicare payments; however, Congress has overridden the scheduled deductions every year except for 2002 (Steinbrook, 2015). Due to Congress interference, the SGR formula has asked for a dramatic decrease in Medicare payments in 2015 (CMS, 2015a). If MACRA had not repealed SGR, physician reimbursement rates would have decreased 21% effective April 1, 2015 (Doherty, 2015).

MACRA was a bipartisan legislation signed into law April 16, 2015 (MACRA, 2015). Title 1 of MACRA has repealed SGR, changed the basis of Medicare payments to value rather than volume, condensed multiple quality programs into one new channel deemed Merit-Based Incentive Payment Systems (MIPS). Also provided incentives for participation in eligible Alternative Payment Models (APMs) (Manchikanti, Staats, Boswell, & Hirsch, 2015). MACRA has been expected to help link 90% of all Medicare FFS payments to quality and 50% of Medicare payments to value through APMs by 2018 (Heller et al., 2017). The primary goals of MACRA have been to generate smarter spending and positive health outcomes by concentrating on incentives, care delivery, and information sharing (CMS, 2015b).

MACRA has created two primary channels through which physicians would be reimbursed. Most providers have been expected to participate in MIPS which has intended to link traditional FFS payments to quality and value (Rosenkrantz, Nicola, Allen, Hughes, & Hirsch, 2017). MIPS has streamlined pre-existing quality reporting programs such as the Physician Quality Reporting System (PQRS), Value-Based Payment Modifier (VM), and Medicare Meaningful Use (MU) into one system which would score the physician's' individual performance (Williams, Casale, & Oetgen, 2015). The composite score has been set to be based on quality, resource use, clinical practice improvement activities (CPIA), and MU of certified Electronic Health Records (EHR) technology or Advancing Care Information (ACI). Based on this score, physicians would receive positive, negative, or neutral reimbursement adjustments (Williams et al., 2015).

The second incentive program through MACRA was APMs. Possible APMs have included the CMS Innovation Center Model, Medicare Shared Savings Program, demonstration under the Health Care Quality Demonstration Program, and model required by Federal Law (Millard, 2016). Most providers who have participated in APMs would still be subjected to MIPs scoring; however, the physicians would receive more favorable scoring (CMS, 2015b). Only participants in Advanced APMs have been exempted from MIPS. Advanced APMs must meet the following criteria: quality-based payment measures similar to MIPS, utilization of certified EHR technology, and either bears more than the theoretical financial risk for losses or be a medical home model (Mulvany, 2016). Qualifying APM participants have also been scheduled to receive lump sum bonus payments annually starting in 2019 (Mulvany, 2016).

Independent practices have been predicted to be impacted the most by MACRA; however, hospitals have also been projected to be involved and directly affected by MACRA. The overall impact on hospitals has been suspected to be low in comparison with solo providers and small practices (Manchikanti et al., 2015). Hospitals would have to be aware of MACRA regulations to maintain steady revenue and patient volume from local physicians and clinics; additionally, hospitals have also been predicted to have to support local physicians and closely monitor any hospital owned facilities or affiliates operating outside the hospital (Doherty, 2015). Specifically, rural hospitals would have to obtain a knowledgeable understanding of MACRA to ensure daily operations have not been negatively impacted. Due to size, location, limited resources, higher percentages of Medicare patients, and small financial reserves, rural hospitals have heavily relied on government payments (American Hospital Association [AHA], n.d.).

The purpose of this research has been to study MACRA and its implementation to determine how it would financially impact rural hospitals.

METHODOLOGY

The hypothesis of this study was: rural hospitals will be negatively impacted financially by the implementation of MACRA.

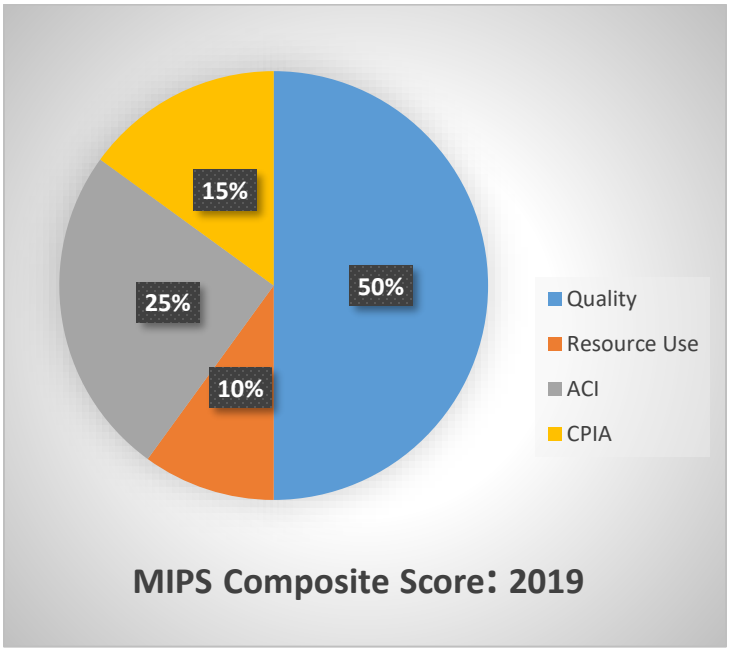
The methodology for this study consisted of a qualitative literature review. Research articles and peer-reviewed literature were located using Marshall University's EbscoHost, CINAHL, ProQuest, and PubMed research databases. When information could not be found within these databases, Google Scholar was utilized. The Google search engine was also used to research government and private associate websites. Keywords used in the search included 'MACRA' OR 'SGR repeal' OR 'MIPS' OR 'APMs' AND 'rural hospitals' OR 'hospitals' OR 'cost.' The Thirty-Six articles reviewed were limited to the English language and were published from the year(s) of 2015 through 2017. A professional presentation was also utilized as a source of research for vital data that contributed to the literature review. The information gained from these articles, websites, and presentation were used as the sources of primary and secondary materials. Following the review of relevant abstracts, appropriate articles were used for the reporting of information and conclusions. This search was completed by EK, RL, JV, and NP and validated by AC who acted as the second reviewer and determined if the references met inclusion criteria.

RESULTS

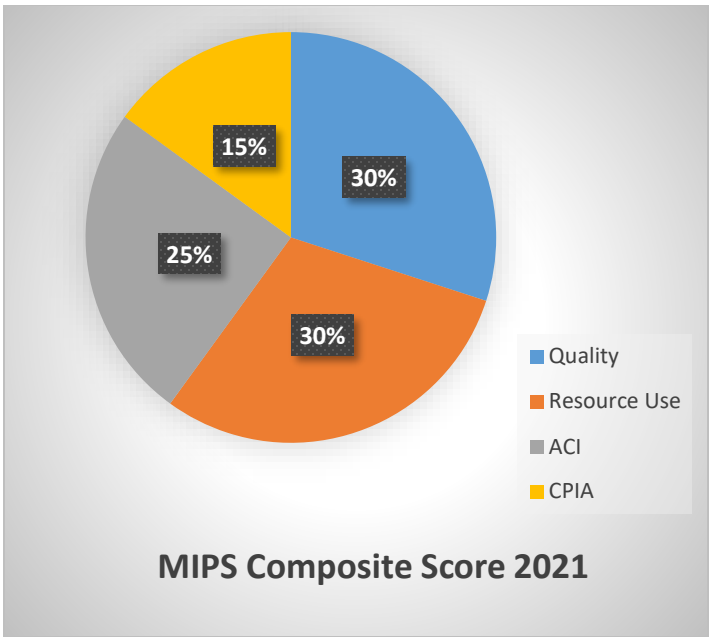
Merit-Based Incentive Payment Systems

The new Medicare physician payment system began data reporting in 2017; however, the reimbursement adjustments have not been scheduled to occur until 2019 (Manchikanti, Helm, Benyamin, & Hirsch, 2016). The 2017 performance period has been pronounced as a trial run for reporting. It has been estimated that 738,000-780,000 clinicians billing under Medicare FFS would be excluded from MIPs for this first reporting period (Manchikanti, Helm, Calodney, & Hirsch, 2017). Some rural providers have been set to be exempt from the Quality Payment Plan (QPP) in 2017. These exemptions have included clinicians with low volumes of Medicare patients, Rural Health Clinics, and Federally Qualified Health Centers (Manchikanti et al., 2016). Clinicians with low Medicare volumes, who have seen fewer than 100 Medicare patients or billed less than $30,000, have been predicted to be the largest cohort of clinicians excluded from MIPS. Approximately 32.5% of clinicians would be exempt from MIPS due to the fact the provider has seen less than 100 Medicare patients. (Manchikanti, et al., 2017). If providers are not found exempt, the reimbursement method has been set to default to MIPS: MIPS has been expected to be the payment system most clinicians in rural facilities utilize (Casalino, 2017). If clinicians have re-assigned billing rights to hospitals, the hospital has legally met criteria to be subjected to MIPS (Van-Dyke, 2016).

For those providers not exempted from MIPS, the CMS has outlined a specific payment adjustment model (Clough & McClellan, 2016). MIPS would score physicians based on quality, resource use, CPIAs, and MU of EHR. Each category has been assigned to represent a specific weight of the total composite score; however, the significance of each type has been set to change in 2021 (CMS, n.d.). In 2019, the quality category has been established to represent 50% of the total composite score while resource use would carry a weight of 10% (Clough & McClellan, 2016). CPIAs have been weighted to represent 15%, and MU of EHR would account for 25% of the total score for 2019 (CMS, n.d.) (Figure 1). In 2021, quality has been scheduled to drop to 30% while resource use has been set to increase to 30%. CPIAs and MU of EHR have not been expected to change in 2021(CMS, n.d.) (Figure 2). The total composite score would be a numeral between 0-100 and would decide how much of an adjustment rate Medicare would make (Clough & McClellan, 2016).

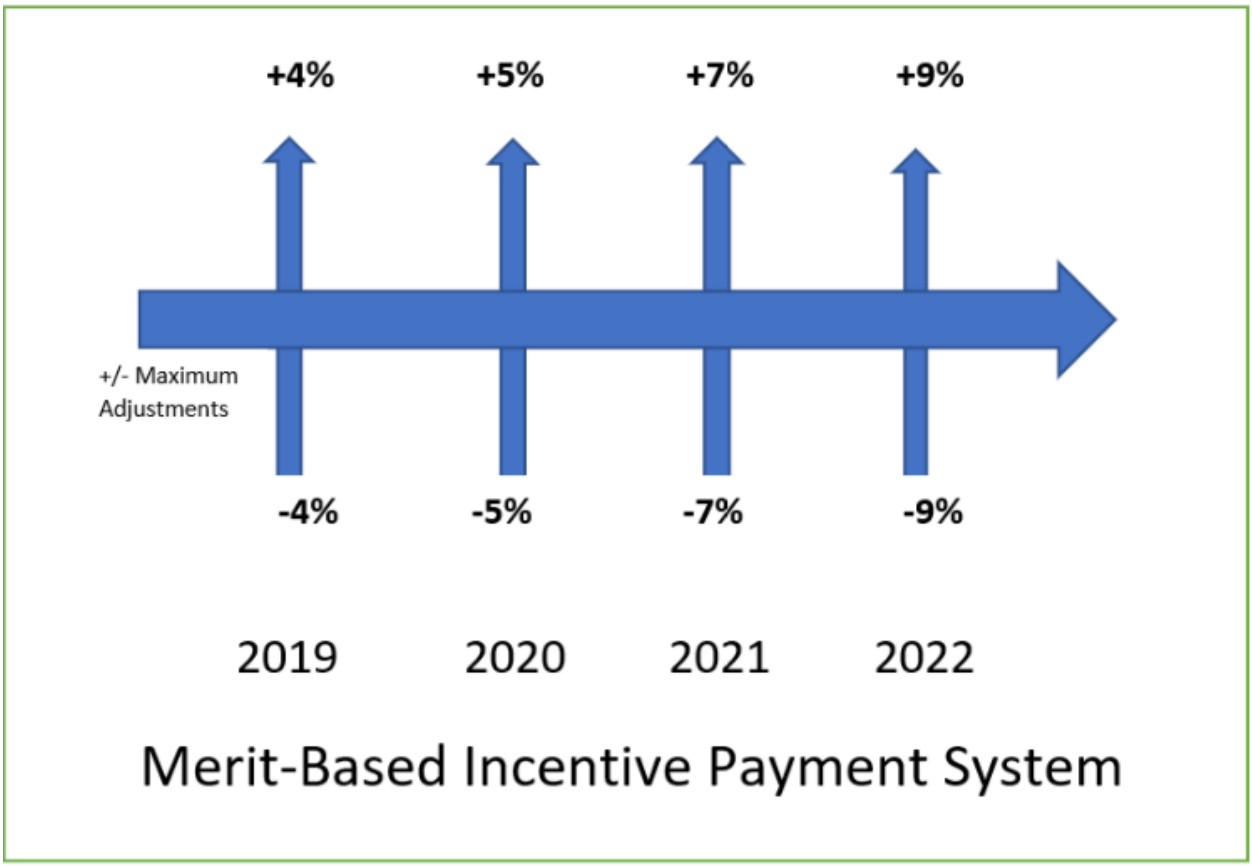


Reference: (CMS, n.d.)
Figure 1: Weighted Categories for MIPS Composite Score 2019



Reference: (CMS, n.d.)
Figure 2: Weighted Categories for MIPS Composite Score 2021

In 2019, the CMS has planned to start making payment adjustments. The adjustments have been scheduled to increase in range each year until 2022. The first adjustment has been set to range from -4% to +4% based upon the physician's total composite score. The reimbursement rate would change to range from -5% to +5% in 2020 and -7% to +7% in 2021 (CMS, n.d.). The adjustment rate range has been scheduled to increase one last time to -9% and +9% in 2022 (Clough & McClellan, 2016) (Figure 3). Based on these numbers, the potential reward and risk for clinicians can be high. For example, a representative from a rural hospital in West Virginia has stated a 1% change in Medicare reimbursement rates approximated to $1 million (Adkins, 2016). Rural clinicians, specialists, and other small practices do not have the financial reserves to survive a -4% reimbursement cut. Hospital officials have been predicted to have to step in and support local physicians to avoid decreased rates of admissions and outpatient procedures (Hussey, Liu, & White, 2017).



Reference: (Clough & McClellan, 2016)
Figure 3: Merit-Based Incentive Payment System Positive and Negative Maximum Adjustments

For 2019, the CMS has estimated that 87% of solo physician practices and 70% of clinics with 2 to 9 physicians would experience negative adjustments while 81% of providers in practice with over 100 clinicians would experience positive adjustments (Manchikanti et al., 2016). In May 2017, 34%-59% of clinicians remained within practices of 9 physicians or less while only 39% were employed through hospitals (Casalino, 2017). The predicted negative adjustments have supported the fact that many independent clinicians will join larger corporations to survive MACRA reimbursement adjustments. Large hospitals and multi-million-dollar companies such as Davita have been predicted to be the type of businesses clinicians seek employment from to avoid negative adjustments (Casalino, 2017).

Advanced Alternative Payment Models

The goal of the U.S. Department of Health & Human Services (HHS) has been to move 30% of Medicare payments into APMs by 2016 and 50% by the end of 2018 (Mullins, 2016). Advanced APMs have offered incentives for participation and bonus payments for clinicians. Clinicians in the Advanced APMs or Qualified Participants (QPs) would be eligible to receive a 5% lump sum bonus payment for 2019-2024 and a 0.75% increase to their Medicare physician fee schedule in 2026 and beyond (Manchikanti et al., 2016). The 5% bonus payment has been set to attract clinicians to the APM payment track; however, clinicians who qualify for the bonus payment have to undertake a sizable financial risk (Van-Dyke, 2016). To be awarded the bonus payment, CMS has set specific revenue and patient thresholds that the Advanced APM entities must meet (Casalino, 2017). CMS would then evaluate all of the eligible clinicians in the Advanced APM as a whole to determine if the threshold was reached (Van-Dyke, 2016).

The CMS has created two methods that would determine if an Advanced APM has been considered eligible. The schemes have been termed the Payment Amount Method and the Patient Count Method (Dong & Pelizzari, 2016).

The Payment Amount Method would ensure that the Advanced APM entity has received at least 25% of its Medicare Part B payments through the Advanced APM. The Patient Count Method was established to ensure that the Advanced APM entity has seen at least 20% of its Medicare patients through the Advanced APM (American Academy of Family Physicians, 2017). Physicians have been predicted to look to hospitals to create advanced APMs that will exempt participating clinicians from MIPS as well as qualify them for the 5% annual bonus payment for APM participation (Adkins, 2016).

The APMs has another inventive payment under MACRA while the Advanced APMs were a branch of APMs which has given the providers a chance to gain more bonus when it has been faced the risk related outcomes with patients (CMS, 2016b). There are 7 models under the Advanced APMs : 1) the Comprehensive ESRD (End-Stage Renal Disease) Care (CEC); 2) the Comprehensive Primary Care Plus (CPC+); 3) Next Generation Accountable Care Organizations (ACO) Model; 4)The Shared Savings Program - Track 2 &3, Oncology Care Model (OCM); 5) Comprehensive Care for Joint Replacement (CJR) Payment Model and 6) Vermont Medicare ACO Initiative (as part of the Vermont All-Payer ACO Model) (CMS, 2016b). The first year to start the incentive Medicare payment through Advanced APMs was January 1 of 2017. The requirement has been the practitioners receive 25% Medicare payments or take care 20% of their patients in 2017 and could get 5% incentive payment in the year of 2019 in a cycle of 2 years (CMS, 2016c).

In CEC Model, there were 37 ESRD Seamless Care Organizations (ESCO). Even though there were more than 600,000 US citizens engaged in ESRD and have received treatment more than once a week, these outcomes have been distrustful. The United States Renal Data System has estimated that no more than 1% patients of Medicare population consumed 7.2% of FFS expenditure which was $32.8 billion within ESRD beneficiaries in the year of 2014. The CEC model has been trying to improve the outcomes of ESCO by enhancing care coordination and care experience (CMS, 2017a).

In the CPC+ Model, there have been 2,893 healthcare organizations and have served more than 1.76 million beneficiaries. The redesigned of CPC+ by a public-private partnership with 54 aligned payers in 14 regions has improved the quality of patient care and has reduced the waste of resources because of flexibility financial resources (CMS, 2017b).

There were 45 ACOs engaged in the Next Generation ACO Model. In this model, the health care providers and suppliers work together voluntarily to improve the quality of care and reduce the cost to their Original Medicare patients. The goal of this model has been to test if the financial incentives have worked for the ACOs, which could improve outcomes and reduce the cost for Original Medicare FFS beneficiaries (CMS, 2017c).

The Medicare Shared Savings Program (Shared Savings Program) has established by section 3022 of the Affordable Care Act which has aimed to provide better care for patients, better health for populations and lowering growth in expenditures to improve outcomes and increase the value of care (CMS, 2017d).

There were 190 practices and 16 payers participating in the OCM. Since there have been more than 1.6 million individuals diagnosed with cancer each year in the US. The goal of OCM has been aligning to financial incentives to improve the care coordination, appropriateness of care and access to care for beneficiaries undergoing chemotherapy (CMS, 2017e).

The CJR model has aimed to support inpatient surgeries for Medicare beneficiaries: hip and knee replacements. Hip and knee replacements have been the most common inpatient surgery for Medicare beneficiaries and have required lengthy recovery and rehabilitation periods. In 2014, there were more than 400,000 procedures, costing up to $7 billion for the hospitalization. The high volume of these surgeries, quality and costs of care for these hip and knee replacement surgeries still has varied dramatically among providers (CMS, 2017f). The overall Medicare expenditure for surgery, hospitalization, and recovery has ranged from $16,500 to $33,000. This alternative payment model has contributed to the Medicare goals introduce by the MACRA of having 30% of all Medicare FFS payments has alternative payment models by 2016 and 50% by 2018 (CMS, 2017f).

The Vermont All-Payer ACO Model has been a new test of an alternative payment model to the CMS, in which, Medicare, Medicaid, and commercial healthcare payers have incentivized healthcare value and quality, with a

focus on health outcomes. CMS has made available to Vermont start-up funding of $9.5M in 2017 to support care coordination and have bolster collaboration between practices and community-based providers (CMS, 2017g). The Vermont All-Payer ACO Model has begun on January 1, 2017, and it has been estimated to conclude on December 31, 2022. (CMS, 2017g).

In Table 1, it is shown an overview for Advanced AMPs and a streamline of each model with a concise description.

Table 1 Advanced Alternative Payment Models Overview

Model Name	Details
Comprehensive ESRD (End-Stage Renal Disease) Care (CEC)	➢ 37 ESCO ➢ 600,000 US citizens engaged ➢ Improve outcome by enhancing care coordination and care experience
Comprehensive Primary Care Plus (CPC+)	➢ 2,893 health care organizations ➢ 1.76 million beneficiaries ➢ 54 aligned payers in 14 regions ➢ Improve the quality of patient care due to flexibility financial resources
Next Generation Accountable Care Organizations (ACO)	➢ Health care providers and suppliers work together voluntarily ➢ Test if the financial incentives worked for the ACOs
Shared Savings Program - Track 2 &3	➢ Provide better care for patients ➢ Better health for populations ➢ Lowering growth in expenditures ➢ Improve outcomes ➢ Increase value of care
Oncology Care Model (OCM)	➢ 190 practices and 16 payers ➢ Align to financial incentives to improve the care coordination ➢ Appropriateness of care and access to care for beneficiaries undergoing chemotherapy
Comprehensive Care for Joint Replacement (CJR)	➢ Support inpatient hip and knee replacement surgeries ➢ The high volume, quality, and costs of these surgeries vary significantly among providers
Vermont Medicare ACO Initiative (as part of the Vermont All-Payer ACO Model)	➢ Vermont start-up funding of $9.5M ➢ Support care coordination ➢ Bolster collaboration between practices and community-based providers ➢ Began on January 1, 2017 ➢ Conclude on December 31, 2022

Merit-Based Incentive Payment Systems and Rural Hospitals

Rural hospitals have faced challenges meeting some of the quality requirements that were in place before MACRA (Belliveau, 2017). The value-based purchasing models have been predicted to be a challenge for rural hospitals as well, approximately 60% did not bill under the Medicare inpatient reimbursement model in 2015 (Belliveau, 2017). For this reason, individual MIPS participation and reporting requirements have been designed by CMS for rural clinicians. To aid participation in MIPS, several assistance programs have also been created. One program that has been created by CMS, Support for Small Practices initiative, has offered rural clinicians hands-on training and education. These assistance programs have provided support with technical assistance when selecting and reporting MIPS measures (Belliveau, 2017).

Financing MACRA

The CMS has planned to take several steps to ensure proper allocation of resources for the MACRA initiative. One step utilized has been decreasing reimbursement rates to post-acute care facilities such as nursing homes and rehab centers (Hirsch et al., 2016). These authors also reported post-acute care organizations had been limited to a 1% increase in 2018. An additional cost-saving measure has been to replace the expected one-time pay increase of 3.2% to inpatient hospitals. Instead, inpatient hospitals would receive 0.5% reimbursement increases from 2018 through 2023 (Hirsch et al., 2016). The scholars have stated some rural hospitals could stand to gain approximately $1 million with a 1% reimbursement increase. The CMS revoking the 3.2% increase has been estimated to be detrimental to rural hospitals who rely majorly on government reimbursement to remain operational (Hirsch et al., 2016).

DISCUSSION

The purpose of this research has been to study MACRA and to determine the financial impact the implementation of MACRA would have on rural hospitals. The hypothesis of this study was: rural hospitals will be negatively impacted financially by the application of MACRA. This theory has been supported by the findings of this research which has covered MACRA financing, MACRA payment methods and reimbursement rates, and competition that rural hospitals have been projected to face in transitioning to MACRA.

Findings

The majority of small and independent practices have been projected to be impacted negatively by MACRA. The negative reimbursement rates have been estimated to cause these clinicians to move away from primary care practices and into large corporations. Large corporations can help support and protect clinicians from MACRA and its implications. Rural hospitals have not been predicted to compete well with large organizations for the clinicians leaving primary care due to low financial reserves.

It has been anticipated that MACRA will cause a significant decrease in hospital reimbursement. This has been projected to be a direct result of the transition from volume-based payment to value-based reimbursement. Financing MACRA has also impacted hospital reimbursement rates and government payouts. Inpatient hospitals were set to receive a one-time pay increase of 3.2%; however, MACRA has cut this expected payment and instead has configured the hospitals to earn 0.5% pay increases annually starting in 2018 and ending in 2023.

Physicians have been given a choice to be included in two different payment tracks under MACRA which have been termed APMs and MIPS. Most providers have been expected to fall under MIPS. MIPS has offered physicians either a substantial reward or substantial penalty based on the provider's clinical performance. Individual physician performances have been set to be evaluated and compared to the performance of other clinicians. Physicians who have participated in eligible APMs have the potential to earn favorable reimbursement rates and bonus payments; however, the APM eligible physicians have to take more financial risks than MIPS providers.

Limitations

Throughout this research study, various shortcomings have been noted. The study design utilized was a literature review. Researchers and publications bias may have existed. MACRA has been implemented since January 1, 2017; therefore, long-term effects have not been able to be studied or calculated. The number of research articles performed has been limited. Also, MACRA reimbursement rates have been set to go into effect in 2019. Thus the current analysis of the impacts of MACRA has been based on predictions and projections. The search strategy utilized and the number of databases searched has also limited this study.

Practical Implications

MACRA has been attempting to push providers and other healthcare delivery systems to value rather than volume reimbursement methods. MACRA has set two payment tracks for providers that offer many rewards but also several penalties. Most small and independent practices are projected to receive negative reimbursement rates in 2019. Rural hospitals are expected to be awarded reduced amounts of government reimbursements. Hospitals are also

anticipated to have to compete with one another for clinicians who choose to seek protection from MACRA by joining a larger corporation. These actions would thus make it critically important for clinicians and all healthcare organizations to be well-informed on MACRA and its potential implications.

To improve the soundness of this study, primary research studies can be performed once data collection is completed in 2019. The studies may include specific study variables that represent adjustments made to physician reimbursement rates based on data being collected now in 2017. Also, this review could be expanded to compare MIPS and APMs in their relationship with small practices and rural hospitals. A meta-analysis and/or a systematic review could also be utilized to improve this report.

CONCLUSION

Although the long-term effects of MACRA have not been able to be studied, MACRA has the potential to impact rural hospitals financially negatively. MACRA has possible risks and benefits for physicians associated with its two reimbursement payment methods. The estimated negative reimbursements and set reductions to hospital reimbursements supported the fact that physicians and all healthcare organizations need to be aware and fully prepared for MACRA implementation.

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A CRITICAL AND COMPARATIVE ANALYSIS OF COMMUNITY HOSPITALS IN NIGERIA AS COMPARED TO A U.S. HOSPITAL

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ABSTRACT

Healthcare systems worldwide are both similar and different in a number of ways including but not limited to practice, infrastructure, management, affordability and sociocultural impacts. In this paper, the two community hospitals – one in Nigeria and one in the U.S. - are being compared. Knowledge gained from these comparisons may be used constructively by either hospital to improve their current practices. A detailed assessment of the marketing mix as well as SWOT analysis is provided with recommendations for improvement based on comparative deductions as it relates to each hospital.

INTRODUCTION

Healthcare systems worldwide are both similar and different in a number of ways including but not limited to practice, infrastructure, management, affordability and sociocultural impacts. A commonly made observation is that problems which health care systems face are similar, despite widespread variations across countries in their financing and organization. Consequently, international comparison should be of interest not simply for curiosity's sake, but for insights that they give people about their own country. All countries can learn from elsewhere, and may be better able to assess their own ways of dealing with issues by observing how others do it. [6]

Healthcare service marketing is unique in that its products are mainly services and the significant issue which poses as a challenge for organizations today is creating loyalty and customer retention. [2] To satisfy the diverse demands of its customers and improve the quality of the healthcare it provides, healthcare organizations need to engage in effective external and internal marketing of their various services. [8]

This report is elaborated based on the marketing mix analysis whereby the Product, Price, Promotion and Place as observed and is written using the 'Who, Where, What, When, Which and How' format to give an overview and better understanding. Subsequently, the details of the *Strengths, Weaknesses, Opportunities and Threats (SWOT)* identified are addressed emphasizing the differences and similarities as they relate to each country which leads to the proposed strategies for improvement. For this paper, the sites being compared are both community hospitals: Cypress Spring Branch Community Health Center (SBCHC), Cypress, TX and General Hospital, Oye-Ekiti, Ekiti State, Nigeria, West Africa.

MARKETING MIX ANALYSIS

Product

Products represent *goods, services, or ideas* offered by a firm.[3] The *providers* in these facilities offer a variety of services, they can adopt consumer product branding strategies to secure market-share, build brand equity, and improve profitability.[13] They are mostly *primary/preventive* care such as vaccinations, wellness exams, breast exams, etc. and some *secondary/curative* care such as the abscess incision and drainage, laceration repair, etc. [4] They also pride in the fact that their providers are up to date in the latest techniques and technologies, and their services can be offered online also[1], hence multiple options for customer convenience.

Similarities:

- Preventive care: immunizations, Health Education
- Outpatient care

- Basic laboratory tests on site
- Community outreaches

Differences:

U.S.A	NIGERIA
Telehealth available	Face to face consultations only
Electronic Health Records	Paper records
No secondary care	Secondary care available
Website with health information available	No website
Inpatient care only	Both outpatient and inpatient care
Time for on-site services is limited to stipulated working hours	The clinic is always open with staff running shifts
Doctors and Nurse Practitioners are consulted	Only doctors are consulted.
Well child care is offered	No routine well child check up
Mental and Dental care offered	Not offered

Price

In a clinic, prices are usually not displayed for services as is done for goods such as healthcare products or over the counter medications in a store. Pricing is relatively flexible and can be negotiated based on what an individual patient can afford. Spring Branch Community Health Center (SBCHC) is a private, non-profit community health center providing quality, affordable healthcare services to the underserved and uninsured communities of Spring Branch and West Houston. [1]

***Similarities*:**

- Challenge of determination of value of services represented by the price [3]
- Take care of all patients irrespective of financial abilities
- Non-profit organization

***Differences*:**

U.S.A	NIGERIA
Have options of payment: Insurance, Credit card, cash, installment payment	Cash and immediate payment
Data available to track defaulters	No data, difficult to track defaulters
Private entity	Public entity

Place

Place represents the manner in which goods and services are *distributed* by a firm for use by the consumers. Place might include decisions regarding the *location* or the *hours a medical service can be accessed*. However, in the digital and wireless age, the entire definition of place in terms of patient – provider interaction may also shift. [3]

The physical address of the Cypress Spring branch community health center is 7777 Westgreen Blvd, Cypress, TX 77433, which is off FM-529 road which is a major intercity road. They also offer *online services* for booking appointments and for prescription refills. The hours of operation are Monday through Friday from 8am to 5pm, closed on Saturday and Sunday.

The General Hospital in Oye-Ekiti is also located along a major intercity road, Ikole Oye Road, serving the Oye East local government area. The facility is open round the clock.

Similarities:

- Both have reception/waiting area for clients
- Both are stand-alone facilities, not in the midst of other businesses, bordered by empty plots of land
- Neat and organized

Differences:

U.S.A	NIGERIA
Centrally located – In the middle of the community	Located away from the community

Have digital presence	No digital presence
All the offices, examination rooms, administrative offices, laboratory are in the same building	Doctors' offices, Laboratory, inpatient section, outpatient section/administrative offices are in different buildings
Aesthetically advanced	Not much of aesthetics
Has one main entrance to the building	Has several entrances to the different buildings in the facility
Has a reception with entertainment	No entertainment
Child friendly environment	Indifferent
Mobile Clinic	No Mobile Clinic

Promotion

Promotion represents any way of informing the marketplace that the organization has developed a response to meets its needs, and that the exchange should be consummated. Promotion itself involves a range of tactics involving publicity, advertising and personal selling. [3]

In Nigeria generally the healthcare system is not involved in a lot of advertisement relative to the U.S.A. Until recently, there were even regulation prohibiting health care advertisements especially for privately own hospitals.

Similarities:

- Have a roadside sign
- Members of the community advertise the facility
- Engage in community outreaches.

Differences:

U.S.A	NIGERIA
Have a website	No website
Promote via social media	Not on social media
Flyers sent to homes of members of the community via mail	Flyers not used by the hospital
Utilize patient portals and promote their services therein	Not technologically advanced
Roadside sign is obscured	Roadside billboard stands out
Time of operation not on sign	Time of operation boldly advertised

ANALYSIS OF THE STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT)

A *SWOT analysis* has both *internal and external compo*nents. *Strengths* and *weaknesses* exist within a company, while *opportunities* and *threats* come from the outside. Internal strengths are those characteristics that give a company the advantage in the market, such as a strong reputation, ability to deliver products quickly, low prices, expert staff, state-of-the-art technology, or solid financial position. [2]

The external aspects of a SWOT analysis involve identifying where opportunities lie and what threats lurk outside the company. Opportunities could range from new customer behavior patterns, supply chain enhancements, advanced technologies, or new markets opening up. Threats might be zoning changes, tax law changes, natural disasters, or increased competitor activities. [2]

It's usually harder to spot opportunities, as that calls for a great deal of *creativity*. Founders of *startup companies* concentrate on opportunities no one else sees. They don't always guess correctly, but when they do, their success can be phenomenal. It can also be short-lived if ongoing SWOT analyses don't include the threat component-or if the founder pays no attention to the threat component. [2] Reported below are SWOT deductions based on personal observation of the community clinics being discussed by one of the authors.

Strengths

As part of the ***Spring Branch Community Health System*** they have the advantage of being associated with a larger organization. This boosts the interest and confidence of potential customers who are searching and comparing them with other healthcare providers in the area. Being part of a larger organization encourages ***continuity of care*** for the patients such that if they relocate to any community within the West Houston metropolis they can still maintain being clients of SBCHC. SBCHC was developed to reduce area health disparities by creating a neighborhood-based health center and by providing comprehensive primary health care services that are culturally competent, linguistically appropriate and client-driven in a location easily accessible to public transportation. [1] The location of SBCHC within the community enhances patronage. The hospital setting/aesthetics is also considered a strength relative to General Hospital, Oye-Ekiti. This **organization** knows that to fulfill the primary economic transaction is not enough; customers also expect an environment that anticipates. It will draw from guest service experiences as well as from the emerging services: marketing and healthcare service. [9]

SBCHC is ***technologically advanced*** in practice. The availability of telehealth, access to website with health information, patient portal to view lab results make patients more willing to access health care based on convenience. These also make the clinic more attractive to prospective customers. Secondly, the availability of electronic health records helps the health practitioners in terms of accessing patient health information for follow purpose. Also, the use of social media is an advantage for promoting the clinic, one of such is their Facebook page which informs the public that they are a private, non-profit community health center providing quality and affordable healthcare to anyone with or without health insurance seeking care. [7]

General Hospital, Oye-Ekiti on the other hand, stands out as a **24 hour facility** where health care may be accessed at any time of the time of the day. This makes members of the community comfortable knowing that they can access care even at night should there be an emergency in the same facility where they usually access care and their health information is known.

Some **secondary health care** (e.g. laceration repair, IV fluid rehydration, incision and drainage) can be accessed at General Hospital, Oye-Ekiti thereby, taking off the financial burden of visiting an urgent care or emergency facility where the **price** for services offered is more.

Weaknesses

The **hours of operation** for SBCHC is limited to 8:00 am to 5:00 pm, Monday through Friday which translates to clients needing services outside these hours and during weekend having to seek care elsewhere. This can be considered a disadvantage from the marketing standpoint relative to clinics that are open 24 hours, all days of the week.

Of note, the billboard signs **advertising** SBCHC and **directing** new and prospective clients to the clinic is completely obscured. When locating a clinic becomes unnecessarily challenging, patronage is significantly affected.

General Hospital, Oye-Ekiti is **technologically set back** in terms of availability of electronic health care systems. There is **no digital presence** which makes the practice of and access to health care more difficult for the providers and clients respectively.

Entertainment systems especially for children are next to absent at General Hospital, Oye-Ekiti. Therefore, the environment is not perceived by children as a welcoming place hence decreases the willingness seek care at this facility. Also, the environment is **aesthetically poor** hence undervalued by the community.

Opportunities

Both clinics being discussed are bordered by **empty plots of land**. This provides an opportunity for investors to open up thriving businesses around the clinics which will increase human traffic around the clinic. This will naturally increase awareness of the facilities thereby promoting the clinics, such as an **investment in a wellness center;** with the growing recognition that a patient's health and wellbeing extend beyond office visits, medical procedures, prescriptions, and basic nutrition, many hospitals consider offering health and wellness components to their staff, customers, and the community at large. Health and fitness centers are possible revenue sources that represent a form of wellness, supplementing many of the benefits that traditional medical facilities provide. With some 15,000 health and fitness centers across the United States, hospitals have many opportunities for affiliation. There are

nearly 1,000 hospitals throughout the United States and Canada already associated with fitness centers (Medical Fitness Association 2010) [5]

Invest in internal marketing to achieve an effective workforce. Winning your customers over and building a reputation for quality cannot happen if your employees- your internal customers- do not perform to expectations or subscribe to your philosophy of customer service. [10]

SBCHC has great opportunity of improving patronage by participating in **joint health programs** with the high school in the communities close by.

A life span perspective on health promotion argues against choosing any one life stage as the optimal time for health promotion. The rationale for health promotion at each life stage differs, just as each life stage presents different opportunities for health promotion. What, then, does the adolescent period offer in terms of special opportunities for health promotion? It is well known that many of the behaviors associated with adult morbidity and mortality begin during the adolescent years. Intervening during adolescence gives us the opportunity not only to prevent the onset of health-damaging behaviors, but also to intervene with health-compromising behaviors that may be less firmly established as part of the lifestyle. Early intervention also provides an opportunity to introduce, reinforce, and further establish healthy patterns. Even in the absence of a clear link between specific adolescent actions and adult. [4]

The more involved a consumer is in healthcare decision making, the more likely he is to have favorable health outcomes and lower costs. [5]

Collaborating with the schools through the school boards or the Parent Teachers Association/organization is a way to promote this easily if ventured into.

General Hospital, Oye-Ekiti would become a house hold name in the community if she **incorporates free routine well child check**. Since it is located within a community made of significant number of families with children, the parents would bring their children to the clinic and while doing so, will seek health care themselves when necessary. Routine well child check leads to early diagnosis and treatment of diseases and well as prevention of spread of communicable diseases. These in general will increase patronage to the clinic as well as boost the economics of the community. **Routine** examinations may be of much greater **importance** in areas populated by the underprivileged, and it may **well** be that significant health measures could originate from such an emphasis. [14]

Threats

Loss to follow up*:* It is widely known in the practice of health care that the farther away a healthcare facility is from an individual, the less likely it is that the individual will return to the facility for a follow up especially if the condition that necessitated the initial visit is resolving. The location of General Hospital, Oye-Ekiti away from the community will encourage loss of patients to follow up due to proximity.

Loss of records*:* in today's technologically advanced world, depending of paper records as a means of storing health records is very risky. General Hospital, Oye-Ekiti is completely dependent on paper records hence run the risk of losing patient records to fire, flooding and other natural disasters.

Negative reviews: Since SBCHC is on social media everyone has access to reviews of other clients. A negative review posted by a disgruntled client may affect the willing of others patronizing the clinic. With social media, a negative review about the clinic could easily go viral and significantly affect the business.

Loss of business: An investor who understands the economic value of running a 24-hour clinic may open up such clinic in close proximity with SBCHC. This will over time shift the healthcare business in the community from SBCHC to the 24-hour clinic.

Doctors' offices/Clinics in the area, who are intuitive and proactive can discover the potentials in corroborating with the schools which will be an opportunity lost for Cypress Springs Family Care Clinic.

PROPOSED STRATEGIES FOR IMPROVEMENT

SBCHC

1. Put up an attractive and visible billboard.
2. Consider running a 24 hour based practice.
3. Reach out to investors of thriving businesses to set up franchises (like McDonalds) on the empty land by the clinic.
4. Organize health programs in partnership with the high schools in the community one of which is literally behind this facility.
5. Do more events that will involve members of the community, thereby creating awareness and promoting the sense of belonging/responsibility.

General Hospital Oye-Ekiti

1. Make the reception area more welcoming by putting up a television, setting up a play corner for children with few toys.
2. Improve on the lighting to make the place brighter, that will positively affect people's mood, could feel better by just sitting and waiting in the reception.
3. Inculcate **free** routine well child visit and counseling services.
4. Get involved with the middle and high schools by doing educative and fun activities for/with them
5. Gradually **transition** from paper records to electronic record systems, three kinds of benefits may be expected: (1) improved logistics and organization of the medical record to speed care and improve care givers' efficiency, (2) automatic computer review of the medical record to limit errors and control costs, and (3) systematic analysis of past clinical experience to guide future practices and policies. [15]
6. Begin to invest on health care technologies that will make the clinic relevant in a technologically advanced community.

Both Facilities

1. Organize community outreaches more frequently, this can be advertised through the community newsletters, magazines, or blogs. Could do things as simple as interesting health publications via these media.
2. Introduce opportunities for **professional development** of members of staff since they are the internal costumers. [8]
3. Invest in **strategic partnerships** [11] that will enhance business, health and wellness of both their internal and external customers.
4. Improve **marketing strategies**. As competition intensifies and the environment continues to change, importance-performance analysis is a research methodology that can significantly contribute to the continued improvement of health care marketing practices. This improvement will lead to better medical care for patients and improved organizational effectiveness by the providers of health care services. [12]

CONCLUSION

Fostering new while improving on the present ***community collaborations*** will be of great impact to these facilities not just in terms of business but better health as well. Customer relations management is not a one-time event nor is it a management "flavor of the month" approach to treating your patients in an attempt to get more business. Customer relations management is an all-out, comprehensive approach to dealing with patients. In today's globally ultracompetitive environment, nothing less will do. Your customers and prospects patronize a variety of other service providers and product vendors— health spas, boutique eye doctors, airport gold key clubs. Customers know which businesses get services right. When a nearby hospital/clinic provides better customer service than you do, it's only a matter of time before your competition gets the loyal, long-term, lucrative customers. [5]

These Community Clinics will profit from being proactive with their promotions also by taking advantage of the opportunities in their immediate communities. Having a good standing among a few is not good enough when there is a more out there that can be achieved, more so if all that needs to be done is apply the appropriate principles and strategies.

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TRACK
HEALTH AND WELLNESS

DEVELOPING SMARTER HEALTHCARE CONSUMERS USING CAMPUS HEALTH AND WELLNESS SERVICES

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ABSTRACT

The understanding of both preventative care and overall health influences future health decisions. College campuses offer services aimed to educate students on the importance of both and to improve student health outcomes. Utilizing the Health Belief Model, the goal of this research was to determine what colleges are doing to develop healthy behaviors, realistic expectations of care, and well-informed healthcare consumer habits prior to students leaving campus. The results revealed that established college programs assist students in understanding the importance of prevention and wellness, but they do not prepare students to navigate our complex healthcare system as a consumer.

INTRODUCTION

Healthcare delivery is changing. Instead of exclusively treating patient symptoms, healthcare is transforming to include activities focused on wellness and prevention. Goals have shifted from offering only sick care to embracing well care in order to prevent or limit an illness before it occurs (O'Brien, 2006). The concept of wellness is focused around the mind, body, and spirit. Collectively, these contribute to the entirety of health, which was defined by the World Health Organization [WHO] (2017) in the mid-twentieth century as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" and is still applicable today.

College campuses play an important role in promoting health and healthy living. They offer a variety of wellness services that aim to not only improve student health outcomes, but also educate students on the importance of primary care and prevention. The understanding of both preventative care and the wellness of the mind, body, and spirit from an early age can influence more health-conscious decisions in the future. This is done by providing the information and decision-making support essential to encourage individuals' personal development in becoming a healthcare consumer.

Individuals are no longer just patients. Within an ever-changing and expanding healthcare market, they are shifting from patient to healthcare consumer. Individuals are becoming more aware of the importance of maintaining their health and the options available to them to make it happen (Rakowski, 2015). Exposing consumers to healthcare at an early age may influence them to make educated decisions about their health and wellness in the future. However, young adults are at a stage where they gain autonomy and may establish long-term, negative health behaviors, such as alcohol use, weight gain, unhealthy diets, and poor sleep patterns that put them at risk (Laska, Pasch, Lust, Story, & Ehlinger, 2009).

Many models exist that endeavor to describe, anticipate, and potentially change individual health behaviors (McKenzie, Neiger, & Thackeray, 2013). However, the Health Belief Model (HBM) was chosen as the theoretical foundation for this research. McKenzie, Neiger, and Thackeray (2013) describe the HBM as follows. Within this model, individuals (for this research – students) need a stimulus prompting them to perceive that they are at high risk for a specific disease or health related issue. Once an individual realizes they are at risk, they need to deduce if the perceived benefits of adopting an advised health improvement action outweigh the barriers, which are the deterrents to changing unhealthy habits. Additionally, self-efficacy plays a significant factor in whether or not individuals will adopt a long-term healthy lifestyle. Individuals need to believe they are capable of prevailing over the recognized barriers. This model explains why students will or will not participate in campus health and wellness services or events and utilize the information given after they leave campus.

In order to successfully utilize the HBM, one must understand what motivates students and the barriers students face. Kulavic, Hultquist, and McLester (2013) stress the four top motivators for traditional students to start exercising are not related to personal health. Instead, students are motivated by challenges, social recognition, affiliation, and appearance. The authors also note students indicated that lack of time, energy, and willpower were the primary barriers to exercising regularly. By providing practical advice to tackle exercise barriers and advertising the benefits of exercise, health and wellness services may be able to motivate students to regularly participate in physical activity.

An example of applying the HBM to college students is a study on weight management perceptions in first-year college students (Das & Evans, 2014). The authors used the HBM to examine barriers preventing students from forming healthy weight habits. A third of college students are overweight or obese and many students that begin college within an ideal weight range become overweight during their college years (Das & Evans). This presents a significant public health dilemma as these individuals transition from the role of students to working adult healthcare consumers and are expected to provide a benefit to society; however, they face consequential health conditions associated with being overweight and obese.

As noted above, health encompasses more than physical wellness. Gieck and Olsen (2007) describe the holistic wellness model as six dimensions of health-related behavior: physical, emotional, spiritual, social, occupational, and intellectual. They emphasize the promotion of holistic wellness in order to yield improvements in psychological functioning and enhancements in preventing and treating physical disorders. By reviewing websites and admissions literature, one could identify various methods and wellness services employed by both small and large college campuses that aim to improve student health outcomes and educate students on the importance of primary care and prevention. The goal of our research is to survey colleges in Northeastern Pennsylvania to gain an understanding of which health and wellness services are offered to students, and, in turn, determine if this can assist in developing a well-educated, future healthcare consumer.

Rakowski (2015) broadly describes the concept of healthcare consumerism as putting the decision-making and purchasing power in the hands of the user or consumer, which is done by providing the information and decision-making support to encourage personal involvement in both wellness and healthcare decisions of healthy habits. The evolution of healthcare, especially the development of high-deductible health plans, is forcing consumers to be "…more conscious about their healthcare spending, and [take] a more active role in their care. (Rakowski, 2015, p33). She further describes consumers as having a greater "…incentive to engage in products and services to help them better monitor and manage their health and wellbeing. (p 33). As the availability of services rise, the need for a well-educated consumer is recognized. This idea is crucial to this research as we attempt to determine the defining factors that drive students to make informed decisions about their personal health and wellbeing.

The growth of health and wellness programs in higher education aimed at improving the quality of student life, psychological well-being, and holistic development is evidence of an increase of promotion of mind, body, and spirit wellness on campus (Hettler, 1980; Opatz, 1986; Sivik, Butts, Moore, & Hyde, 1992). Campus health and wellness departments utilize resources and programs designed to encourage students to gain knowledge, practice skills, and form healthy habits that lead to a balanced lifestyle focused on prevention. Running events, fitness challenges, yoga, and meditation classes are just a few programs offered by health and wellness clubs. Taking care of one's mind, body, and spirit helps students reduce stress and their chances of disease, disabilities, and ailments.

Along with creating healthy habits and a healthy mindset, students can utilize campus health and wellness services for primary care services. Soleimanpour, Geierstanger, Kaller, McCarter, and Brindis (2010) identified four major barriers to basic primary care that many students face when trying to access healthcare and college responses to overcome these barriers: cost, availability, comfort, and education. First, campus-based clinics help to reduce the cost barrier associated with treatment. Most schools use tuition or fees to cover the cost, thus the utilization of the student health center is free for students. This creates an encouraging environment that allows students to express their health concerns without having to worry about costs.

Soleimanpour et al. also discovered student health services reduce the number of unnecessary hospital or urgent care visits due to the availability of walk-in appointments, which encourages students to use the services provided at the convenience of a clinic located within walking distance on campus. Third, a youth-friendly staff creates

a reassuring environment where students feel comfortable about seeking care. Students feel open to disclose their health concerns given the non-judgmental care provided and friendly disposition from staff. Fourth, student health services offer health education that may not be provided at other health institutions. Appropriate resources and methods are taught to encourage healthy habits and create a well-informed consumer.

Educated decisions must be guided by accurate information. However, there are various sources of exposure to misinformation, especially among the college-aged population (Tan, Lee, & Chae, 2015). Promoting awareness and the adoption of prevention, detection, and treatment of health conditions will lead to a more informed and engaged public. Tan, Lee, and Chae (2015) emphasize the exposure to misinformation has a direct influence on public health and its adverse effects may give way to negative consequences, such as the resistance to evidence-based medicine and health recommendations made by medical professionals. Journalistic norms provide an outlet for the public in gaining access to misleading health information. The transmission of health-related rumors is commonly associated with individuals experiencing anxiety, belief in the rumor, and uncertainty about the health issue (Tan et al.)

Tan et al. further discuss the use of social media as a platform for misinformation. This is especially important, as many young individuals are habitual users of social media. Often, information on social media is spread through individual desire for fact-finding, emotional coping, or the genuine welfare of others. However, when this information is incorrect, it has the potential to leave lasting negative effects on readers and fosters an environment for unwarranted health anxieties (Tan et al.).

METHODS

A convenience sample of four regional colleges was used due to the availability of contacts of the primary investigator (PI). The PI contacts were utilized to obtain the correct individuals with whom to speak to obtain permission and the information being sought. The contact at one school referred the researchers PI to another individual with whom the PI was unable to connect, so three colleges that all offered both residential and commuter services were approached. Once initial permission was obtained, all appropriate individuals were identified, and the researchers gathered letters of participation from the three schools, IRB approval was obtained.

Researchers sought participation by explaining the purpose of the study and that all responses and schools will remain anonymous with all data being used in the aggregate. Researchers then asked questions from those that follow. If other programs, departments, or student organizations were identified as being necessary to obtain information, the researchers contacted the appropriate individual(s) and followed the same procedure utilizing questions from the following list relating to student health services and wellness services:

Student health services (SHS)

1. Organizational structure (i.e. institution reporting structure; physician oversight; staffing levels – nurse practitioners, registered nurses, medical assistants)
2. What types of students (undergraduate, graduate, residential, commuter) are served?
3. Approximate annual volume of students served?
4. Types of services offered to students?
5. Under what circumstances would patients be referred to outside services (i.e. lab, radiology, other services)?
6. What preventative services are offered through student health services?
7. What services are not offered (and why) that should be?
8. What other programs, departments, or student organizations exist on campus that would provide any student health or wellness services or programming?

Wellness services (WS)

1. What wellness services are offered to students?
2. What services are not offered (and why) that should be?
3. What is the process utilized to offer these wellness services to students?
4. What other programs, departments, or student organizations exist on campus that would provide any student health or wellness services or programming?

RESULTS

In order to maintain anonymity of both the participating individuals and schools, descriptive statistics are not used to show demographic information for each of the schools. Due to the limited number of participants and the regional area utilized, the use of school demographic information would easily identify the participating school. The responses from each participant are grouped when possible, aggregated, and displayed in Table 1. below.

Table 1.

School Responses

Question	Responses
SHS 1	• Report to the head of student life (2) • Utilizes third-party contract services from local primary health provider for on-campus office hours and students could visit off-campus clinic as needed (1) • Uses Part-time, Off-site Physician Medical Director; Full-time Nurse Practitioner as Director; and Registered Nurses (2) • Medical Director will see students on a limited basis as needed either in SHS or physician offices and bill student insurance
SHS 2	• All residential students required to have health insurance coverage (3) • All full-time undergraduate students pay fee as part of tuition and fees and receive free care at SHS; part-time students pay reduced fee for service [few utilize] (1) • No fees for full-time students at this time; new incoming students (Fall '18) - all full-time undergraduate students pay fee as part of tuition and fees and receive free care at SHS; part-time students pay reduced fee for service [few utilize] (1) (1) • Graduate students could pay an annual fee or on a case-by-case basis if choose to use (1) • Graduate students pay reduced fee for service (1) • No fee to students as part of tuition and fees; third-party bills student insurance; if part-time student without insurance or insurance doesn't cover - college is billed by third-party provider(1)
SHS 3	• ~ 1,400 visits/yr. (1) • Need to forward data [did not receive] (1) • Separate visit data not collected (1)
SHS 4	• General med exams; Driver's license physicals; work physicals; acute care visits; blood draw; blood draw for STI testing; rapid testing for strep and flu; allergy injections; contraceptive and well women care; STI testing [outside group] – free treatment; outreach and education; OTC and basic script medicine on-hand; writing of scripts; basic mental health (3)
SHS 5	• Imaging referred out; blood draw for not strep and flu; specialty services; invasive procedures to medical director [bill student insurance]; no student health coverage plan [depending on service needed]; mental health (3)
SHS 6	• General wellness [vital signs]; weight & BMI; outreach; wellness; maternal family; basic contraception; use outside group for flu shots or other required vaccines (3) • Food pantry [mostly residential students] (1) • Self-care station – educational information with dose packets [track through student ID number] (1)
SHS 7	• Nutrition services; eating disorder screening / care; long acting reversible contraception (1) • SHS coverage 5 days / week (1) • Counseling services (1) • N/A - partner with other campus departments to provide services necessary (1)
SHS 8	• Counseling center - Wellness Wednesday (monthly) heavy mental health with some physical health; Health fairs (1) • Better training and utilization of Resident Assistants (1) • N/A - campus under resourced (1) • Number of services [including wellness programs] housed within student life (1)
WS 1	• STI education - sexual awareness; consent; Title IX mandates (3) • Crisis management [may use outside resource or ER] (1)

- Breast health awareness (1)
- Student assessment and wellness identification (3)
- Overall wellness and health promotion monthly events [flu/cold recognition; sexual health; fitness; nutrition; social media; wellness wagon; communication] (2)
- Departmental initiatives [one-time events and on-going] (1)
- Mental health / stress reduction / mindfulness (1)
- Alcohol awareness and high risk behavior (3)
- Nationally certified peer health education program (1)
- Smoking cessation (2)

WS 2
- More mindfulness and self-awareness (1)
- Collaboration among campus programs / departments (1)
- Nutrition education (eating disorders, healthy eating) (1)
- Additional sexual health resources (1)

WS 3
- Professionally run programs; Department events / initiatives; Peer to peer (1)
- Empowering students to gain skills to be proactive before reactive becomes necessary (1)
- Basic healthcare system navigation skills offered (1)

WS 4
- Departmental initiatives (1)

DISCUSSION

Though it was not initially intended as such, this research could be used as a pilot study due to the small sample size and limited results. It quickly became apparent that even though the convenience sample was small, the similarity in responses verified the belief that, if students choose to utilize the programs, college programs could instill an understanding of the importance of wellness and prevention. However, the programs do not prepare students to understand the basics of and the barriers within the complex U.S. healthcare system or the risks of not using available programs once they leave campus.

In fact, as institutions make is easier for the students to overcome the barriers or not have to overcome the barriers at all, they are doing students a disservice. Students could use the services on campus to develop wellness and prevention skills. However, unless they are already in the healthcare system, their skills to use the system as a healthcare consumer are hindered.

Limitations and Additional Research

The sample size and limited results impede the validity and reliability of this research. The similarity of responses assists in establishing basic study validity and reliability. However, additional research could be done that utilizes this model to explore the health and wellness services provided by colleges located beyond one small region of the country in order to enhance both validity and reliability. It is also important to incorporate demographic information to explore any relationships between the size of the school, academic programs offered, and the health and wellness services on campus.

In addition, further research could be done to explore the level of understanding students who will be leaving campus have about the healthcare system, identify those areas in which improvement is necessary, and develop potential solutions. It is important to not only understand what the students do or do not know. Research is also needed to understand how the students desire to learn what they need to navigate the healthcare system on their own. Combining student feedback with a knowledge of the services offered beyond a regional perspective will allow researchers to see if any colleges are providing the services necessary.

CONCLUSION

Institutions must do more to assist students in developing self-advocacy skills. They must instill a sense of self-empowerment in the students, so they are ready to navigate our complex healthcare system or assist family or friends in navigating the system. This could be accomplished by providing a basic understanding of the healthcare

system and what it means to be more than a passive user of services. They must be an active consumer of services. Students must be prepared to help themselves and assist others once they are 'on their own'.

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HOSPITAL NURSE BURNOUT: A CONTINUING PROBLEM

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ABSTRACT

RNs are a critically important component of the U.S. healthcare system. RN burnout – the feeling of exhaustion from working long hours without rest – is a real concern, having been reported in many hospitals. We examine the background, causes and consequences of burnout among RNs in U.S. hospitals, in order to identify solutions to this problem. Findings indicate that Burnout Syndrome in RNs can be analyzed in terms of four clusters of characteristics: individual, management, organizational, and work. The consequences of burnout include increased RN turnover rates, poor job performance, and threats to patient safety. RN burnout in hospitals negatively impacts the quality of care, patient safety, and the functioning of staff workers in the healthcare industry.

INTRODUCTION

In 2014, according to the U.S. Bureau of Labor Statistics, 2.75 million RNs worked in the U.S. healthcare system, 61% of whom were employed in hospitals (BLS, 2017a). But only 708,300 physicians and surgeons were employed in the U.S. healthcare system during 2014 (BLS, 2017b). RNs are thus critical in providing quality healthcare to U.S. citizens. The number of employed RNs, moreover, has been on the rise: the U.S. Department of Labor forecasts that the nursing workforce will grow 16% between 2010 and 2024 (BLS, 2017c).

The supply of RNs relative to the size of the U.S. population, however, remains low. As of 2010, there were 921 RN for every 100.000 U.S. citizens. RN density varies significantly across states, as well, ranging from 1247.7 RNs per 100,000 individuals in South Dakota to 677 RNs per 100,000 population in Idaho (HRSA, 2013). According to Carayon and Gurses (2008), low levels of staffing, when combined with the aging U.S. population and changes in the healthcare environment (e.g., more emphasis on containing costs), have meant that RNs are experiencing a heavier, more demanding workload than ever before.

The result for some RNs has been burnout - a state of emotional exhaustion where the individual feels overwhelmed by work to the point of feeling fatigued, unable to face the demands of the job, and unable to engage with others. The affected individual may develop a sense of cynical detachment from work and view others, especially patients, as objects. As fatigue, exhaustion, and detachment coalesce, affected individuals often become ineffective at work of the loss of the ability to contribute meaningfully. The incidence of burnout in RNs has been shown to be as high as 70% (Lyndon, 2016).

RNs not only experience challenging work conditions involving long hours and little appreciation, but are also paid relatively poorly: RN wages average between $3,400 to $7,700 per month, depending on the hospital and its location (Byung-Kwang et al., 2016). These stressors have contributed to high rates of burnout among new nurses: up to 65% of those in the study samples reviewed have left their jobs as a result, which has contributed to a nursing shortage (Liu et al., 2009). This shortage is significant, and the situation and is likely to become worse. There will be an estimated 1.2 million vacancies in nurse positions between 2014 and 2020. And over 55% of current RNs are 50 years or older and expect to retire within 5 to 10 years. On the demand side of the healthcare system, an aging population will exacerbate the nursing shortage: the number of hospital patients has increased in the last 10 years and is expected to increase for the next 30 years. The numbers gap between RNs and patients will likely continue to grow (Golubic et al., 2009).

The American psychologist, Herbert Freudenberger, first used the term "burnout" in the 1970s to describe the result of unyielding stress and high standards experienced by people working in hospitals (Freudenberger (1974). Although other measures exist - e.g., the Burnout Measure (Malakh-Pines, Aronson and Kafry, 1981), the Copenhagen Burnout Inventory (Kristensen et al., 2005) and the 9-item Mayo Clinic's Well-Being Index (Dyrbye et al., 2013) - the leading measure of Burnout Syndrome is the 22-item Maslach Burnout Inventory (MBI) (Maslach, Jackson and Leiter, 1996), which tracks the incidence of burnout along three main dimensions: Emotional Exhaustion, Depersonalization, and Inefficacy (Mealer et al., 2016; StatisticsSolutions, 2017). Emotional Exhaustion refers to the overwhelming exhaustion that can come from constant work under demanding conditions. Depersonalization refers to the sensation of being detached and insensate to the care and treatment of patients. When an RN becomes detached from his/her job, this could contribute to destructive feelings that lead to negative impacts on the effectiveness or quality of services provided to patients (Loera, Converso, and Viotti, 2014). The Inefficacy scale captures the impact of burnout on the person's sense of accomplishment and achievement on the job. Maslach, Leiter and Jackson (2012) have identified Inefficacy as a situation in which one's sense of personal achievement on the job is minimal, and note that this dimension is the most complex of the three.

The purpose of this research is to examine the causes and consequences of burnout among RNs in hospitals, in order to identify potential solutions to this problem. This examination is necessary in light of a very recent (Manzano-García and Ayala, 2017) Delphi study of factors in explaining burnout in nursing that have been insufficiently studied or ignored, which concluded that "further study … is needed for a better understanding of this syndrome and improve the quality of life in nurses."

RESULTS

Studies Utilizing the MBI

The Maslach Burnout Inventory, as noted earlier, highlights the dimensions of Emotional Exhaustion, Depersonalization, and Inefficacy. This research indicates that Emotional Exhaustion is the most easily noticeable among many nurses (Maslach, Leiter and Jackson, 2012). Most of the individuals reporting being burned out link the feeling to exhaustion, brought on by emotional stress, including distress and frustration (Spooner-Lane and Patton, 2007; Maslach and Leiter, 2008).

Based upon a cross-sectional surveys of nurses (n = 820) and patients (n = 621) from 40 units in 20 urban hospitals across the U.S., Vahey et al. (2004) determined that hospitalized patients cared for on units that nurses believed had adequate staff, good administrative support for nurses, and good relations between nurses and doctors were more than twice likely as other patients to report high satisfaction with their care, and their nurses reported significantly lower burnout. The overall level of nurse burnout on hospital units also affected patient satisfaction.

Tunc and Kutanis (2009) reported that RNs who had experienced Depersonalization claimed that it might be caused by excessive job demands that led them to disengage from their work. Depersonalization also occurs in RNs who have experienced emotion exhaustion, and has contributed to the occurrence of job dissatisfaction.

One study (Poghosyan et al., 2010) using the MBI was conducted in 2010 across six countries: the U.S., Japan, Germany, the United Kingdom, Canada, and New Zealand. Its purpose was to examine the impact of Burnout Syndrome among RNs in hospitals on the quality of care provided in diverse countries. The research sample consisted of 54,846 RNs. The researchers showed that the highest rate of RN Burnout was in Japan at 79.9%, while the lowest burnout rate was 9.4% in New Zealand. Germany had the second-highest burnout rate at 30%. The burnout rate reported in the U.S. sample was 18.8%, while the rates for Canada and the United Kingdom were, respectively, 14.4% and 12.8%. Most of the RNs in the research sample stated that Burnout Syndrome affected their ability to take good care of patients, thereby increasing the risks to patient safety.

Other Studies Examining Burnout Syndrome

This research now turns to other studies that focus on how clusters of characteristics at four levels (individual, management, organizational, and work) influence the incidence of burnout. (See Table 1)

Table 1: Causes of Burnout Syndrome Among Nurses

References	Causes of RNs burnout and risk factors
(Erickson and Grove, 2007)	Individual characteristics: Age • There were 43.6% RNs < 30 years suffered from burnout syndrome. • 37.5%. RNs > 30 years had burned out. • 46% RNs under 30 were less likely to cover up their emotional feelings. • 52%, RNs over 30 more likely to cover their feelings. • RNs younger than 30 have had a high levels of burnout syndrome and less likely to hide their true emotions.
(Old and Clarke, 2010)	Management characteristics: Mandated overtime: • Out of 5532 RNs 1487 mandated to work unpaid overtime, and 4045 worked paid voluntary over 35 hours a week.
(Sharma et al, 2014)	Organizational characteristics: Workload • 80% RNs complained no time to rest. • 42% RNs had a severe stress. • 45% RNs tired from their job.
(Weiner, 2014)	Organizational characteristics: Patient to nurse ratio • 7% decrease in patient mortality rates for every additional RNs. • Out of 232,342 patients there were 4535 patients died within 30 days from admission with over 8:1 but with 4:1 there were 635 survived patients. • An estimated 1 million shortage in RNs by 2020.
(McHugh et al, 2011)	Work characteristics: Work environment • 37% of RNs worked in non- nursing positions. • 34% of RNs burned out as a result of poor work environment. • 24% RNs in hospitals not satisfied with their occupations.

Gilles, Burnand, and Peytremann-Bridevaus (2014) note that RN burnout can be traced to some individual characteristics such as age, gender, and self-fulfilment. Erickson and Grove (2007) found that the rate of burnout among RNs below the age of 30 was 43.6%, while the rate of burnout among RNs over 30 was 37.5%. However, the authors found that the RNs under 30 were less likely than those over 30 to hide their true emotions.

Management characteristics influencing RN burnout include the lack of proper clinical supervision, failure to offer resources, and mandated overtime (Bakker and Heuven, 2006). Olds and Clarke (2010) found that exhaustion linked to extended work hours led to burnout. Of 5,532 RNs included in this study, 4,045 worked over 35 hours per week as paid volunteers, while the remaining 1,487 RNs had mandated, unpaid, overtime.

Organizational characteristics that cause RN burnout include an excessive workload, staff shortages, and a low nurse to patient ratio (Awa, Plaumann, and Walter, 2010). According to Sharma et al. (2014), roughly 80% of the RNs sampled complained that they had no time for rest due to a heavy workload. 42% of the RNs in this sample said they suffered from severe stress, and 45% of the RNs are tired of their jobs. In sum, the RNs in this study identified increases in workload, the nursing shortage, time constraints, poor management, and lack of team support as key factors leading to burnout.

Weiner (2014) noted a strong relationship between a high patient-to-nurse ratio (i.e., over 8:1) and preventive medical errors, which led to burnout. For example, for every RN added to staff, Weiner found that there was a 7% decrease in mortality. The mortality rate was highest among those patients who had the least access to RNs. This supports the earlier findings by Aiken et al. (2002) that nurses are more likely to experience burnout when working in hospitals with high nurse-to-patient ratios.

Work characteristics that caused Burnout Syndrome among RNs included the work environment and team relationships. McHugh et al. (2011) report that in their study 24% of the RNs were dissatisfied with their occupation,

34% of the RNs suffered from Burnout Syndrome, and 37% of the RNs eventually decided to work in non-nursing positions due to the poor and stressful work environment.

Consequences of RN Burnout

Research shows that RN burnout is associated with a poor level of patient care, patient dissatisfaction, an increased number of medical errors, higher infection rates, and higher mortality rates (Kanste, Kyngäs, and Nikkilä, 2007; Leiter, Harvie and Leiter, 1998; McHugh et al., 2011).

Olds and Clarke (2010) reported that 9.6% of RNs in their sample had a contaminated needle stick or serious injury, 15.1% provided the wrong treatment or dose to their patients, 19.8% had caused injuries to their patients from falls, 32.8% had experienced work-related harms, and 35.2% got infections.

According to Konwinski (2014) the RN turnover rate within the first year of work ranged from 35% to 61%. The author also demonstrated that there was a direct relationship between turnover rates and workload increases, bullying within the work environment, emotional exhaustion, loss of job control, a poor work environment, and lack of engagement.

Burnout has been shown to be associated with higher nurse turnover and intention to leave the profession (Hayes et al., 2012). Specifically, Schaufeli, Leiter, and Maslach (2009) found that 54% of RNs intended to leave their job because of reasons linked to Burnout Syndrome. Looking specifically at nurses working in ICUs, in a French study, Embriaco (2007) determined that about 60% of intensive care nurses who exhibited a high level of burnout wished to leave their jobs, and Emeline (2017) found that 61.7% of nurses suffered from burnout which was significantly ($p=0.016$) associated with intention to leave the profession. Flynn, Thomas-Hawkins and Clarke (2007) found that nurses suffering from burnout were 3 times as likely to be planning to stay with their employer but leave their current position ($p = 0.00$) and nurses who suffered from burnout were almost 3 times as likely to be planning to leave their employer ($p = 0.00$).

Such turnover has a strong negative impact on the quality of healthcare. For example, Hunt (2009) showed that RN turnover resulted in a decreased quality of care, an increase in the incidence of medical errors, more lost patients, and higher costs. In one hospital reviewed by Hunt there was an estimated financial loss of $300,000 for every percentage increase in nurse turnover annually.

The study by McHugh et al. (2011) showed that patient outcomes have been negatively affected by RN burnout in several ways: mortality rates in the hospitals studied increased by 19.4%, there was a 6.5% increase in patient readmission rates, and 36% of RNs missed essential changes with their patient's situation and/or failed to report important patient information when changing their shifts. Similarly, Nantsupawar et al. (2015) determined that burnout as measured by the MBI was associated with increased reporting of problems with quality of care, patient falls, medication errors, and infections. Every unit of increasing emotional exhaustion score was associated with a 2.63 time rise in reporting fair or poor quality of care, a 30% increase in patient falls, a 47% increase in medication errors, and a 32% increase in infection.

Stimpfel, Sloane, and Akien (2012) assessed the association between the patient-to-nurse ratio and burnout. They reported that nurses with large numbers of patients, such as more than 8 per RN, have less time to communicate with patients, which in turn delayed needed care and led to medical errors.

Cimiotti et al. (2012) discovered that hospital-acquired infections were associated with RN burnout. Their study, involving a sample of 7,075 RNs in 160 hospitals in Pennsylvania, showed that the rates of surgical site infections ($p < 0.01$) and urinary tract infections ($p = 0.03$) were positively related to the incidence of RN burnout. For example, the hospitals with the highest burnout rates had the highest infection rates: a 10% increase in the burnout rate was associated with increases of 1 urinary tract infection and 2 surgical site infections for every 1,000 patients. Using the per-patient average costs associated with catheter-associated unitary track infections ($749 to $832 each) and surgical sire infections ($11,087 to $29,443 each), the researchers estimate that if nurse burnout rates could be reduced to 10% from an average of 30%, hospitals could prevent an estimated 4,160 infections annually in their state, with an associated savings of $41 million.

Fennessey (2016) noted that RNs suffering from burnout felt less motivated to work and tend to be less careful with patients, which resulted in more medical errors and decreased their work efficiency. Suñer-Soler et al. (2014) found that burnout in nurses was associated with absenteeism, intention to quit the profession, and personal and family deterioration.

DISCUSSION

The aim of this study was to examine the causes and consequences of RN burnout in hospitals, in order to identify solutions to this problem. The results of the literature review suggest that burnout has led to the development of mental and physical difficulties in RNs, such as low self-esteem, rejection, anxiety, and depression. The literature review also suggests that Burnout Syndrome among RNs is present all over the world.

Among the identified factors which attributed to RN Burnout, the results indicate that the working environment, shift work, and workloads – all of which are controlled by hospital management – were biased against nurses. Hospital management, often non-clinical in nature, decided the number of nurses to employ, what nurses would work off-time shifts such as the night shift, and the working conditions for RNs. This lack of autonomy has contributed to the profession's burnout rates (Van Bogaert et al., 2013).

This research also points out that burnout affects not only RN job performance, but also mental and physical health. Some of the consequences of burnout among the RNs included in the reviewed studies included severe headaches, sleeping complications, high blood pressure, and cardiovascular illness. These health issues, caused in part by high patient-to-nurse ratios (i.e., above 8:1), have contributed in turn to higher medical error rates and a lower quality of patient care.

CONCLUSION

Burnout among RNs in hospitals has become a worldwide phenomenon that negatively impacts the quality of care, the safety of patients, and the working staff. Solving the burnout problem continues to be difficult. This study's focus on the causes and consequences of RN Burnout represents a contribution in the continuing search for more complete solutions.

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THE IMPACT OF HEALTH PSYCHOLOGY ON PREVENTION, LIFESTYLE, AND BEHAVIORS; MERGING PSYCHO-SOCIAL AND PHYSICAL HEALTH

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ABSTRACT

Chronic health conditions continue to drive health care costs. Many chronic conditions can be prevented by modifying behaviors and lifestyles, such as tobacco use, alcohol consumption, physical activity, and healthy diet. Health Psychology can be very helpful for determining prevention methods as it helps explain the relationships between the social factors and individual's thoughts and behaviors. Very little naturalistic research has been done to determine the impact of health psychology on prevention. Hence, the efficiency and the cost-effectiveness of implementing prevention theories based on health psychology remain indefinite. In this presentation, the researchers review existing literature regarding utilization of health psychology for disease prevention and identify the existing gaps and challenges for merging Psycho-social and physical health. The researchers review the exiting health psychology literature and examine the benefits and challenges of incorporating this into health care provision.

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THEORY- AND EVIDENCE-BASED PLANNING OF A SUSTAINABLE AND COST-EFFECTIVE WELLNESS PROGRAM FOR COLLEGE OF HEALTH STUDENTS, STAFF, AND FACULTY

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ABSTRACT

To improve the health of the undergraduate and graduate students and to reduce missed classes, and to prevent unnecessary turnover and absenteeism in staff and faculty, and potentially rising health care costs, the Dean of the College of Health requested that the Department of Health Care Management Applied Research Course students research what it takes to establish an effective and sustainable Wellness Program for staff, faculty, undergraduate and graduate students. To accomplish this, 8 student teams used a behavioral or an economic theory to guide their search for, and analysis of peer reviewed journal articles related to university or other employer wellness programs. The topics of focus were structure, participation rates by type of wellness offerings, incentives, costs, leadership, effectiveness, and sustainability. The teams also conducted 9 key informant interviews with staff and faculty members identified as wellness proponents, and constructed, conducted, and analyzed 3 surveys: of undergraduate students, graduate students, and of staff and faculty. Recommendations are supported by two or more of these sources of original data and by at least one peer reviewed journal article. The objectives of this article are to share the methods, results, recommendations, and challenges that one will face when implementing a public university-based wellness program, and to share gaps in the literature.

Keywords: Wellness program, university, participation, costs, sustainable, effectiveness, students, staff, faculty

INTRODUCTION

More than one-third (34.9% or 78.6 million) of U.S. adults are obese (Ogden, Carroll, Kit, Flegal, 2014). Rates of obesity are higher among middle age adults 40-59 years old (39.5%) than among younger adults ages 20-39 (30.3%), or adults over 60 or above (35.4%) (National Center for Health Statistics, 2012). "Being overweight or obese substantially raise the risk of morbidity from hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and endometrial, breast, prostate, and colon cancers" (NIH, 2014). These rates and conditions resulted in an estimated annual medical cost of $147 billion in the U.S in 2008. The medical costs per person who is obese is $1,429 higher than that of a person of normal weight (Finkelstein, Trogdon, Cohen, Dietz, 2009).

Low, Gebhart, and Reich conducted a cohort study of women hospital employees 40-65 years of age to reduce risk factors for cardiovascular disease, including weight and stress. (Low, Gebhart, Reich, 2015). The intervention group was randomly assigned to weekly motivational counseling which the controls did not receive. All employees were offered weight/diet, stress, exercise, and smoking cessation classes, as well as gym access. After one year, the intervention group experienced greater weight loss, stress reduction, and exercise days per week as compared with the comparison group.

Experimental research has demonstrated that happiness can increase productivity by 12% (Oswald, Proto, Sgroi, 2014).

A range of returns on investment ranging from $3.60 to $6.70 for every dollar spent by city and county government agencies in Arizona, Minnesota, South Carolina, and Wisconsin on their employee wellness programs. (Benavides, David, 2014). These returns were demonstrated through reduced health insurance premiums, decreased absenteeism, increased productivity, and reduced turnover rates.

To prevent unnecessary turnover and absenteeism in staff and faculty, and potentially increased health care costs, the Dean of the College of Health requested that the Department of Health Care Management Applied Research Course students what it takes to establish an "effective" and "sustainable" Wellness Program for staff, faculty, undergraduate and graduate students.

"Effective" means that (1) participants are successful in meeting their own personal wellness goals and (2) the College of Health Wellness Program grows in the number of students, staff, and faculty members who are actively part of the Program, year after year.

"*Sustainable*" means that (1) participants are successful in achieving and maintaining their personal wellness goals and establish wellness as an integral part of their lives for the long-haul and (2) the College of Health Wellness Program is financially self-sustaining and does not require grant nor external funding to be perpetuated.

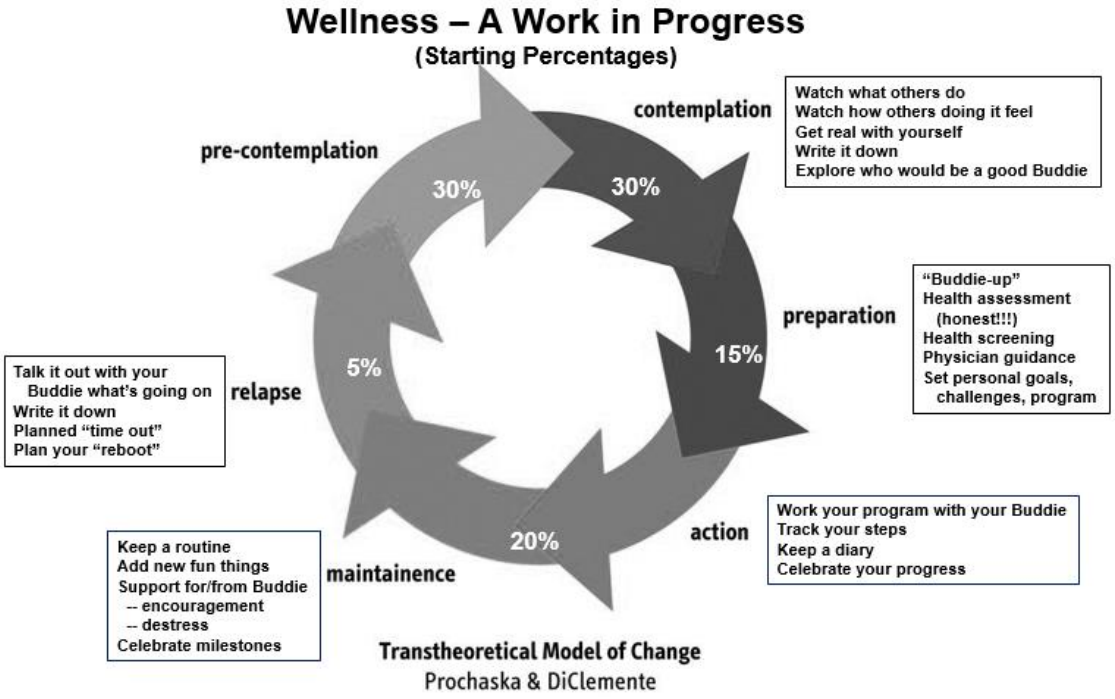
METHODOLOGY

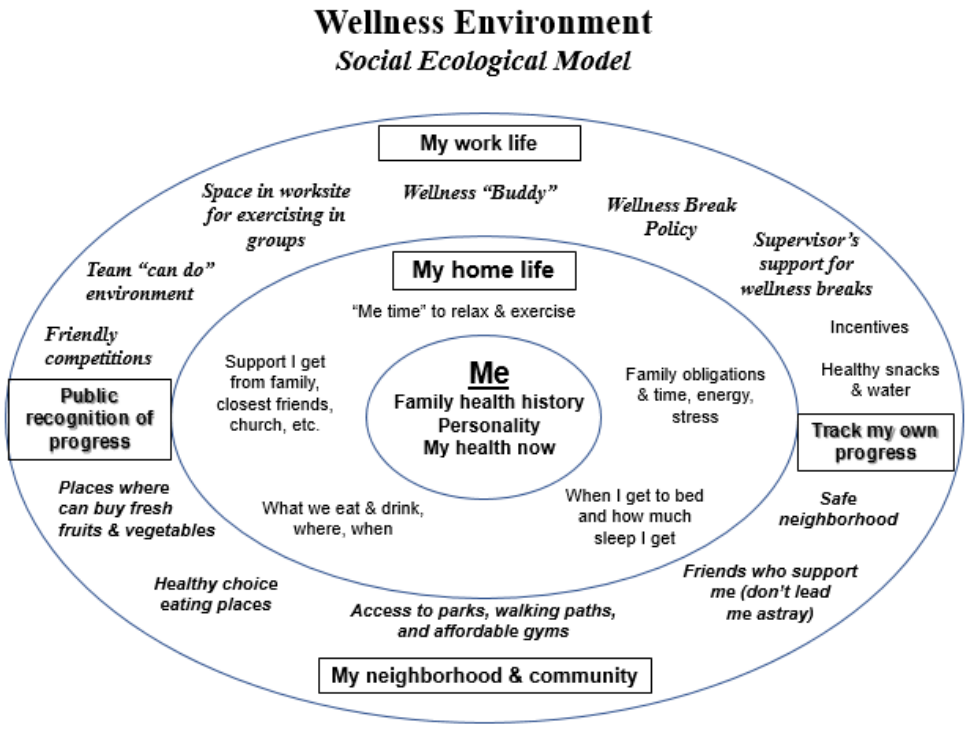
The students (researchers) worked in 8 teams, each guided by a different behavioral or economic theory, to find and analyze six highly relevant peer reviewed journal articles per team to gain insight about critical issues facing the College of Health Wellness Program (see Table 1).

Table 1: Theories Used to Research Key Wellness Program Issues

Team	Find approaches that have been proven to work to effectively help universities have effective Wellness Programs	Using the Theory
1	Effective strategies for making students, staff, and faculty aware of the College of Health Wellness Program offerings and ways to lure them into trying those services for themselves.	Lavidge and Steiner's Hierarchy of Effects Model
2	Effective incentives to improve continuity of Wellness involvement by students, staff, and faculty.	Exchange Theory and Social Exchange Theory
3	Effective self-motivation and management approaches that students, staff, and faculty can use to stay engaged in Wellness activities.	Transtheoretical (Stages of Change) Model
4	Effective support group approaches and competitions between Wellness Teams that will intensify commitment to and sustained involvement in Wellness activities.	Developmental Assets/Resiliency Model
5	Effective incentives to increase and sustain involvement in Wellness activities.	Chronic Care Model
6	Community resources that can contribute to a culture of Wellness for students, staff, and faculty on campus and in our neighborhoods.	Social Ecological Model
7	Characteristics of effective spokespersons and advocates for, and leaders of Wellness Programs.	Health Beliefs Model
8	Effective approaches to building self-confidence and self-efficacy in making Wellness an integral part of students, staff, and faculty members' lives.	Social Cognitive Theory

Each team reconstructed the theory that they used in their research to capture what they learned from the peer reviewed literature into a real-life guide for Wellness Program use. Two examples are provided in Figures 1 and 2.





The students conducted and analyzed the results of three surveys in the College of Health: an in-class survey of undergraduates (n = 167; 100% response rate), an in-class survey of graduate students (n = 18; 100% response rate), and an online survey of the 100 staff and faculty members (41% response rate). The survey helped to understand their

physical and emotional health needs; the wellness offerings that they would commit to doing on-campus and at-or-near home; how much they are willing to pay each month for healthy snacks and water provided on campus, and for wellness equipment and incentives; and their willingness to organize and coordinate wellness offerings.

The students conducted Key Informant Interviews with persons identified as being committed to a wellness lifestyle (Wellness Enthusiasts). We were able to capture very realistic observations, suggestions, and preferences from three staff members and six faculty members. Of the nine, five stated that they are willing to serve as Wellness Leaders.

The recommendations captured by the students will help shape a College of Health Wellness Program that can help student, staff, and faculty participants improve their lifestyles and reduce stress and the risk of heart and other chronic diseases. A total of 82 recommendations were identified through the use of the six different research methods: Key Informant Interviews of staff and faculty; Undergraduate Student Survey; Graduate Student Survey; Staff and Faculty Survey; and peer reviewed journal articles and analysis included in the reports of the eight Applied Research Class teams. The authors decided rated each recommendation on a scale of 1-10. A score of 10 required that the recommendation be supported by two or more research methods and at least one peer reviewed journal article. Only 33 recommendations met this requirement and are listed in the Results section.

RESULTS

The data included in Table 2 below were obtained from the three surveys (Undergraduate Student Survey, Graduate Student Survey, and Staff and Faculty Survey). The top three health concerns of undergraduates are "anxiety, depression, or other emotional or mental health conditions" (21.1%), "borderline high blood pressure or hypertension" (16.4%), and "diabetes, pre-diabetes, borderline diabetes" (15.4%). The top three health concerns for graduate students are "borderline high blood pressure or hyper tension" (23.5%), "chronic respiratory condition" (11.8%), "anxiety depression, or another emotional or mental health conditions" (11.8%). Staff and faculty's top three health concerns are "borderline high blood pressure or hypertension" (30.8%), "diabetes, pre-diabetes, and borderline diabetes" (18%), and "high blood cholesterol" (18%). These are all risk factors for heart disease.

Table 2 Health Concerns and Challenges Shared by Health Providers with Undergraduate Students, Graduate Students, and Staff and Faculty, as Reported in the Surveys (2017)
n = number of respondents

HEALTH CONCERNS	Undergraduate Students (n=167)	Graduate Students (n=18)	Staff and Faculty (n=41)
	%	%	%
Borderline high blood pressure or hypertension	16.4	23.5	30.8
Diabetes, pre-diabetes and borderline diabetes	15.4	0	18
High Blood cholesterol	11.5	0	18
Heart disease or stroke	0	5.9	5.1
Cancer	1.9	0	2.6
Liver or Kidney condition	1.0	5.9	2.6
Chronic respiratory condition	1.0	11.8	2.6
Anxiety, depression or another emotional or mental health condition	22.1	11.8	7.7
Sexually transmitted infections	6.7	5.9	0
Sickle cell	0	0	0
Other	24.0	35.3	12.8
Other for Undergraduates:	Obesity, Polycystic Ovarian Syndrome, Sickle cell trait, thyroid condition, epilepsy, auto-immune disease, anemia, migraines, asthma		

Other for Graduate Students:	Thyroid condition, anemia
Other for Staff & Faculty:	Gestational diabetes, sleep apnea, Lupus, ACL knee reconstruction

As shown in Figure 3, the Undergraduate Survey identified that the top three wellness offerings that undergraduate students are willing to commit to doing at or near their homes include "individual fitness activity or classes" (42.5%), "team fitness activities or classes" (29.3%), and "healthy cooking and shopping classes" (29.3%). The graduate students in their survey reported "individual fitness activity or classes" (61.1%), "nutrition classes" (38.9%), and "stress management coaching or classes" and "sleep improvement coaching or classes" (38.9%) as their top at- or near-home wellness offerings. The staff and faculty survey identified "individual fitness or classes" (53.7%), "team fitness activity or classes" (39%), and "yoga classes" (31.7%) as being their top priorities.

Figure 4 shows that on campus, the undergraduates' top choices were "healthy snack club in break room" (59.9%), "healthy cooking and shopping classes" (59.3%), and "stress management coaching or classes" (59.3%). For the graduate students, their top picks were "nutrition classes" (55.5%), "sleep improvement coaching or classes" (55.5%), and "stress management coaching or classes" (50%), and "martial arts or self-defense classes" (50%). For staff and faculty, their top on campus choices are "health snack club in break room" (41.5%), "individual fitness activity or classes" (31.7%), and "team wellness competition" (31.7%).

It is clear that nutrition, sleep management, stress management, and individual or class activities are most in demand for both undergraduate and graduate students, while healthy snacks, individual activities (e.g., yoga and meditation), and team competitions were the top picks for staff and faculty.

Figure 3: Wellness Activities That Researchers, Staff, and Faculty Will Commit to Doing at or Near Home

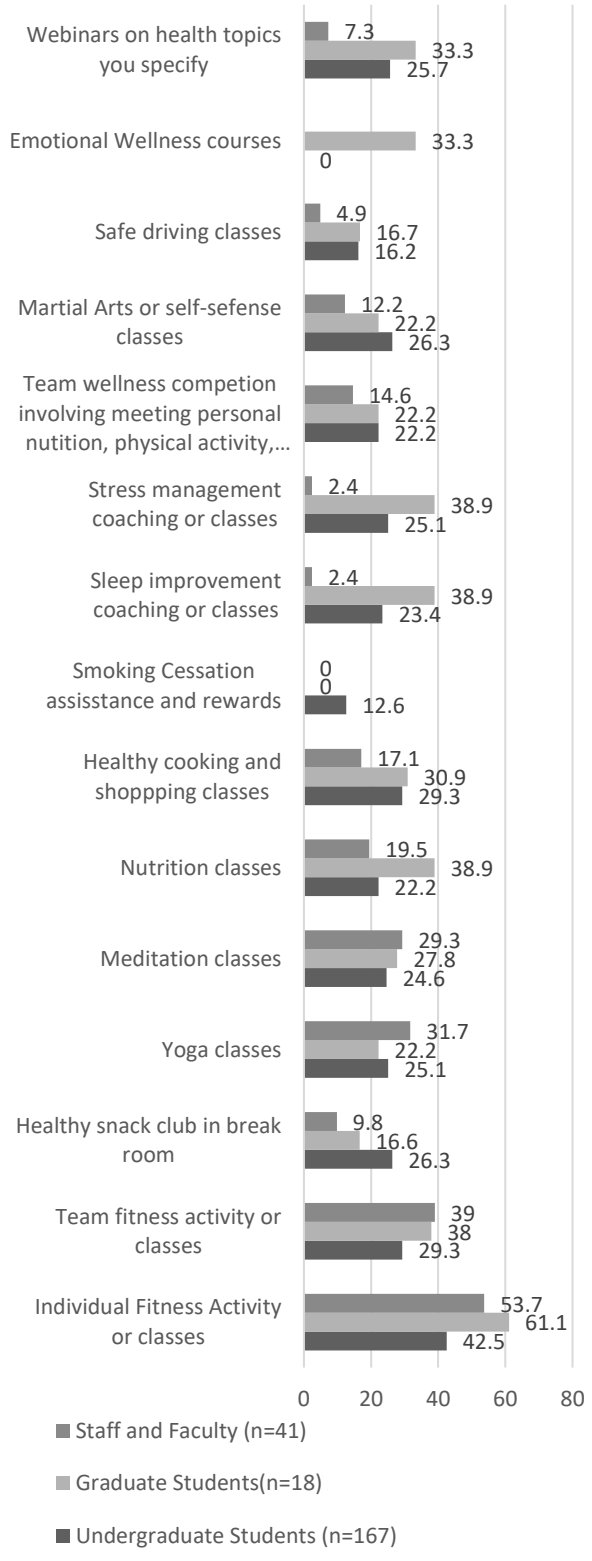
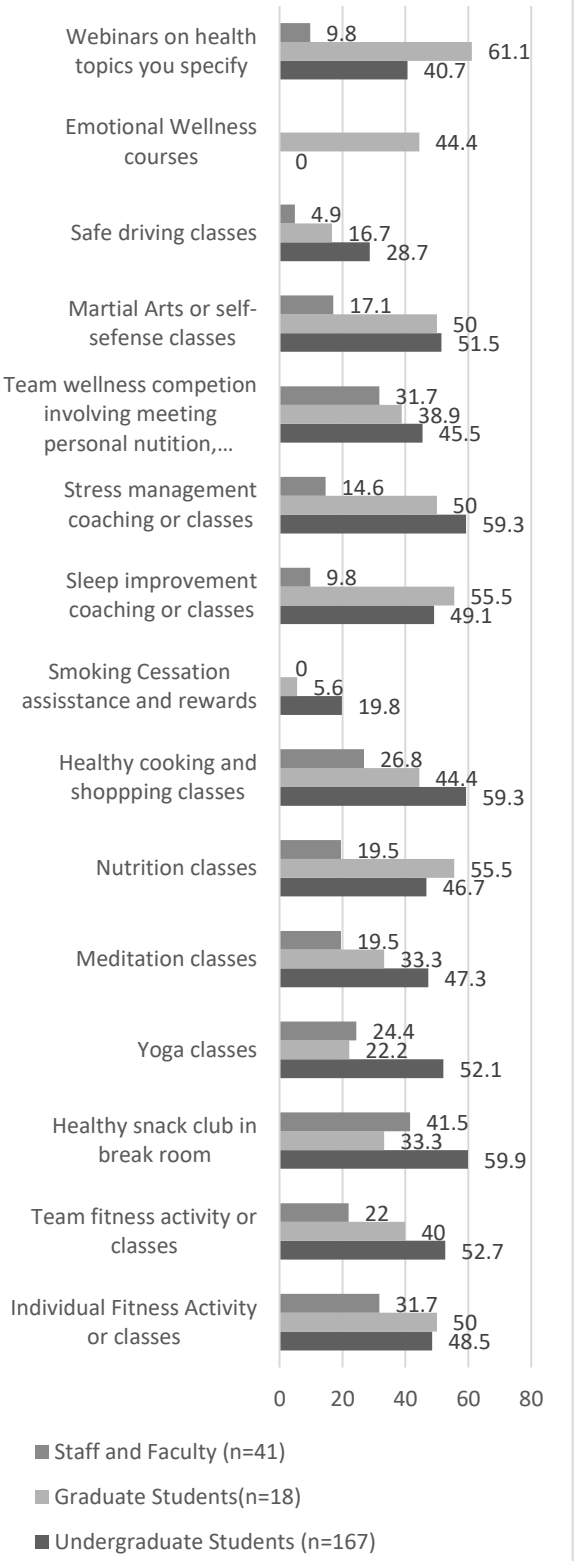
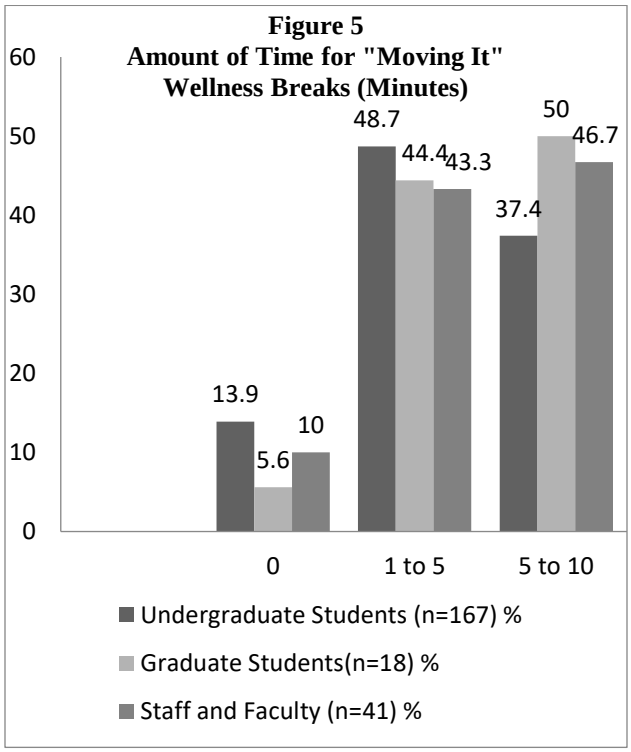


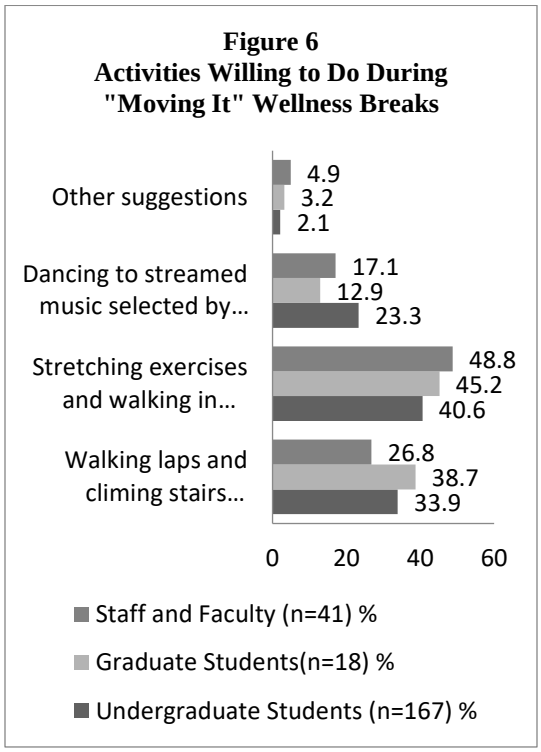
Figure 4: Wellness Activities That Researchers, Staff, and Faculty Will Commit to Doing On Campus



As show in Figure 5, the surveys also revealed that 40 plus percent of undergraduates, graduate researchers, staff and faculty members favor having a 1-5 minute "Moving It" wellness break during classes. Between 37-50% favor an even longer wellness break. The authors recommend a 4-5 minute break based on these data as well as the Key Informant Interviews.

Figure 6 reveals that the most popular choices of "Moving It" wellness activity for undergraduates, graduate students, staff, and faculty are stretching exercises and walking in place.





As shown in Table 3, 45.6% of undergraduates, 66.7% of graduate students, and 40.5% staff, and faculty are willing to pay $1-9 each month for healthy while substantial numbers of all groups are willing to pay even more each month. In terms of paying for equipment and incentives, 32.5% of undergraduates, 47.1% of graduate students, and 40.5% of staff and faculty are willing to pay between $1-9 each month, while substantial numbers of all groups are willing to pay even more each month. The authors recommend voluntary contributions of $5 per month for healthy snacks and $5 per month for equipment and incentives based on the survey results as well as what we were told during Key Informant Interviews.

Table 3: What Each Person is Willing to Pay Per Month for Healthy Snacks, Equipment and Incentives

What each person is willing to contribute each month for . . .	**Undergraduate Students (n=167)**	**Graduate Students (n=18)**	**Staff and Faculty (n=41)**
Healthy snacks	%	%	%
$0	16.9	0	29.7
$1 - 9	45.6	66.7	40.5
$10 - 14	26.9	27.8	16.2
$15 - 19	4.4	5.6	0
$20 - 25	6.3	0	13.5
Equipment and incentives	%	%	%
$0	25.0	5.8	29.7

$1 - 9	32.5	47.1	40.5
$10 - 14	28.8	41.2	16.2
$15 - 19	6.9	5.9	0
$20 - 25	6.9	0	13.5

RECOMMENDATIONS

Out of the 81 recommendations made, the authors selected 33 to share in this article. These recommendations were supported by either (1) three of the research sources that we used (Undergraduate Student Survey, Graduate Student Survey, Staff and Faculty Survey, nine Key Informant Interviews, and eight theory-guided literature searches resulting in eight presentations and reports to the Dean) or (2) two or supported by two or more research sources plus a specific peer reviewed journal article. The recommendations are grouped into the following categories: ***Organization and Support, Healthy Nutrition, Physical Activity, Stress Management, Policy, and Assessment***.

Organization and Support

Students, staff, and faculty members report on meeting own personal wellness activity achievements every Mondays, and on progress to own personal wellness goals (e.g., change in BMI, blood pressure) the first Friday of each month. (Hooper and Veneziano, 1994)

Team competition within the College of Health, involving meeting personal nutrition, weight, sleep, and physical activity goals, including periodic water consumption competitions. (Omar, Wahlqvist, Kouris-Blazos, and Vicziany, 2005)

Students encouraged to keep a Wellness Record ("Portfolio") for extra credit in one related class (e.g., Epidemiology, Applied Research). (DeVahl, King, and Williamson, 2005)

Provide incentives to encourage researchers, staff, and faculty to meet their personal goals (e.g. free parking passes, $5 gift card to campus coffee shop, Starbuck, Dunkin' Donuts, or Chick-fil-A, or a $5 gift card for the campus book and accessories store). (Strohacker, Galarraga, Emerson, Fricchione, Lohse, and Williams, 2015)

Promote and provide immunizations and other preventive/screening services, including HIV prevention and treatment. (Carter and Kelly, 2011)

Buddying-up of peers (student with student, staff and/or faculty with staff and/or faculty) to keep students, staff, and faculty consistently engaged in wellness activities as buddies or in small group exercises, encouraging family involvement (making healthy food choices and increasing physical activity at home) to ensure continuity. (Hilton, Ackermann, and Smith, 2011)

Support the College of Health Wellness Committee in (1) establishing Wellness as the accepted culture of the College of Health as a way of life, daily action, and priorities--'the new normal"; (2) providing leadership in building teams, maintaining an evolving wellness plan, establishing baseline data collection and periodic evaluation of personal goals over time; and (3) creating competitions between teams.

The Wellness Committee needs to coordinate childcare availability at the Student Activity Center (gym) at times that enable undergraduate and graduate students to use the facilities.

The Wellness Committee should develop partnerships with businesses in the community to obtain free or discounted nutritious snacks, prizes, and rewards.

The University should make working out at the Student Activity Center (gym), use of equipment, and fitness classes free for students, staff, and faculty.

Healthy Nutrition

Survey results show (see Table 3) that 45.6% of undergraduate students, 66.7% of graduate students, and 40.5% of staff and faculty are willing to pay between $1-9 each month for healthy snacks (fruit, nuts, etc.) and 10.7% of undergraduates, 5.6% of graduate students, and 13.5% of staff and faculty are willing to pay between $15-25 dollars per month for healthy snacks. The authors surmise that a significant majority would voluntarily be willing to pay $5 per month for healthy snacks.

A healthy nutrition snack bar for those students, staff, and faculty that pay a monthly fee, with access only by swiping the door lock using their programmed university identification card.

Healthy cooking demonstrations on campus coupled with education about nutrition, menu planning for the week, development of a shopping list based on menu planning, nutritionist guided tours of a grocery store, a nutritious reward for participation, and the exchange of healthy recipes.

The Dining Hall should promote and make available to-go healthy meals with vegan options.

On a weekly basis, provide Webinars about the healthy preparation of meals along with nutrition, meal planning, and shopping tips. (Mailey, Wojcicki, Motl, Hu, Stauser, Collins, and McAuley, 2010)

The University should negotiate a new contract with vending machine vendors to provide healthier snacks and bottled water for a reasonable price on Campus. (Hua, Kimmel, Van Emmenes, Taherian, Remer, Millman, and Ickovics, 2017)

Physical Activity

Professors should provide 4 minutes during each 2 to 3-hour class session to stretch, march, go up and down flights of stairs within the lecture hall, and to meditate, accompanied by music selected and provided by students. (Anshel, Brinthaupt, and Kang, 2010).

The Wellness Committee should plan and coordinate a weekly walking program for staff, researchers and faculty in walking groups on school 1-mile, 2-mile, 3-mile, and 5-mile trails with start- and finish-points at the buildings where students take classes and the staff and faculty have their offices, on days and at times that are appropriate for each group.

The Wellness Committee should plan and coordinate individual and group fitness activities or classes (aerobics, Zumba, dance, stretching), including before evening and weekend classes in rooms located in the buildings where students take classes. (Losina, Yang, Deshpande, Katz, and Collins, 2017)

Allow students, staff, and faculty in the College of Health to buy and use stationary bikes and elliptical machines in a room in the buildings where students take classes and the staff and faculty have their offices. This is feasible as 32.5% of undergraduates, 47.1% of graduate students, and 40.5% of staff and faculty are willing to contribute between $1-9 per month for fitness equipment and incentives, and 28.8%, 41.2%, and 16.2% respectively are willing to contribute $10-14 each month, and $13.8%. 5.9%, and 13.5% respectively are willing to contribute between $15-25 each month (see Table 3). The authors are confident that the vast majority of students, staff, and faculty would be willing to pay $10 per month for fitness equipment and incentives.

Invite students, staff, and faculty to volunteer to serve as leaders (males and females) to mentor, organize and train others in individual and group physical activity sessions. (Hilton, Ackermann, and Smith, 2011)

Identify Wellness Ambassadors who will identify persons with powerful testimonials to motivate others. The Wellness Committee will then use different communications strategies to share these testimonials with students, staff, and faculty. (Hilton, Ackermann, and Smith, 2011)

The Wellness Committee needs to identify fitness rooms for women only prior to classes to accommodate

their religious needs.

Stress Management

Organize courses with a sleeping coach each semester for students, staff, and faculty.

Provide classes with a coach to teach students, staff, and faculty mental acuity and luminosity exercises, and provide counseling as needed. (Mailey, Wojcicki, Motl, Hu, Stauser, Collins, and McAuley, 2010)

Proactively monitor and identify veterans and others who need assistance with PTSD or depression and referring them through Veterans Services the Student Assistance Program for counseling and to be part of support groups.

Organize courses and coaching to help with stress management for students, staff, and faculty. (Walker and Frazier, 1993)

Policy

The Dean should set aside one hour each day for wellness and physical activity that CANNOT be interrupted by phone calls or meetings.

Weekends should be left to enjoy time with family without work related calls or tasks for staff.

The Wellness Committee should review the health insurance policies offered to staff and faculty each year with Human Relations so that wellness-friendly changes can be recommended each year for future year negotiations.

Assessment

Pre- and post-enrollment questionnaires to collect family history, and measurements (BMI, cholesterol, blood glucose, and blood pressure) should be implemented as part of organized Wellness courses or individualize programs. Eight domains in self-care need to be addressed: physical exercise, nutrition, work-life balance, mental/spiritual/emotional health, relationships, sleep and rest, environmental conditions related to health, and personal responsibility for one's own health. (Dinger, Watts, and Barnes, 2009)

Students, staff, and faculty should be encouraged to use tracking apps and Fitbits to foster self-motivation and self-efficacy. (Losina, Yang, Deshpande, Katz, and Collins, 2017)

Software should be obtained or created so that individuals' personal performances can be uploaded from their tracking apps or Fitbits to their teams' database, to provide a platform for Team Competitions. (Losina, Yang, Deshpande, Katz, and Collins, 2017)

Limitations

We were only able to analyze survey finding from 18 of the 36 graduate students in the College of Health, meaning that information was obtained from half of these students. This limits our ability to have full confidence that the responses of the graduate students who completed the survey are truly representative of that body of students.

Only four of our 35 references (11.4%) reported wellness program outcomes related to improvements in health, sustained participation in a wellness program, sustainability of the wellness program, and/or a return on the investment in the wellness program by the university or employer.

CONCLUSION

More research is needed to provide sound, evidence-based guidelines for those who are developing university wellness programs that are effective (improve the health of students, staff, and faculty), provide a return on investment, and are self-sustaining. The authors learned from the theory-driven research that they and their colleagues did, that it is important to focus on individuals setting their own wellness goals and offering them the means and support needed to track their own progress towards meeting their own goals. Team competitions are helpful in creating excitement, but do not provide a solid foundation for sustained participation in a wellness program by individuals. It was clear from the survey results and Key Informant Interviews that people are very likely to commit to wellness offerings when they are linked to health challenges that they are faced with based on what they are told by their health care provider. It was also clear that social support is core to the success of individuals participating in a wellness program and that methods like "buddying-up" and membership in supportive teams are essential. Based on what we learned, we hypothesize that wellness programs that are financially supported by monthly financial contributions from students, staff, and faculty for equipment, incentives, and healthy snacks are more sustainable than programs that are funded by a grant or by the university for a set number of years. This hypothesis remains to be tested.

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TRACK
HEALTH INFORMATICS AND TECHNOLOGY

CYBERSECURITY IN HEALTHCARE APPLICATIONS – TRENDS AND DEVELOPMENTS

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ABSTRACT

The use of computers, electronic devices and various software to view, share and transmit data is ubiquitous in the world of healthcare today, thanks to the electronic and digital age we live in. This brings into focus the challenges associated with data security while at the same time providing digital access to a wide range of stakeholders including physicians, health care organizations and patients. Threats to data security are emerging at about the same pace at which computer developments are taking place in the digital age. The cybersecurity challenges with respect to healthcare applications may be viewed from several perspectives or dimensions, namely the ethical dimension, the regulatory and compliance dimension, and the technology dimension. This literature review paper summarizes the most recent developments in cybersecurity in the context of healthcare applications considering the above perspectives.

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EMERGING CLOUD COMPUTING TRENDS IN MOBILE HEALTHCARE

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EMERGING CLOUD COMPUTING TRENDS IN MOBILE HEALTHCARE

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ABSTRACT

Healthcare industry's adoption of cloud computing technology has continued to grow despite privacy and security challenges. Use of mobile devices to deliver healthcare solutions has proliferated in recent years. Within this context, this study sought to examine emerging trends in cloud computing's adoption in mobile healthcare applications. A systematic literature survey was undertaken against the PubMed database. The search criteria focused on peer reviewed articles containing the keywords "cloud", "cloud computing", AND "mobile healthcare", "mobile health", "mobile delivery of healthcare". A comprehensive review of these articles was performed to identify adoption dimensions including healthcare sub-domain and technology contexts. This article benefits healthcare technology practitioners and researchers alike by summarizing underlying themes, challenges and areas of future research.

Keywords: Mobile Cloud Computing for Healthcare, Healthcare Cloud, mHealth, eHealth, Smart Health.

INTRODUCTION

Rapid growth of mobile and wireless technologies has advanced newer ways of delivering healthcare services. The global observatory for e-health of the World Health Organization (WHO) defines mobile health as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices" (Van Heerden et al., 2012). Decreasing costs of mobile phones and computer tablets has opened newer avenues for interactions amongst remotely located physicians, patients and healthcare providers.

At the same time, newer means of storing and processing large volumes of data has been realized by utilizing shared computing resources, commonly termed as "cloud computing". In this type of internet-based computing, cloud "providers" host shared services such as storage, network infrastructure, software and hardware resources that are consumed by multiple cloud "consumers". This results in an optimized, flexible and cost-effective use of computing resources.

These technologies when leveraged in a complementary manner have the potential to enable breakthrough innovations in the healthcare context by delivering efficient and scalable solutions. Against this backdrop, this study sought to answer questions such as the breadth and depth of cloud technology's adoption in delivering mobile healthcare services, patterns of use across healthcare sub-domains as well as potential challenges and opportunities that lie ahead.

METHODS

A systematic literature review was conducted on PubMed. Since the emphasis was on the most current trends, the search criteria included peer reviewed articles published during the years 2015, 2016 and 2017 that contained the keywords ("cloud computing" OR ("cloud" AND "computing") OR "cloud computing") AND mobile AND ("delivery of health care" OR ("delivery" AND "health" AND "care") OR "delivery of health care" OR "healthcare"). This produced 30 articles. Of these, articles that only had a peripheral reference to the keywords were excluded resulting in 24 that were germane to the study. Findings are reviewed in subsequent section.

DISCUSSION

Figure 1 represents key themes from the healthcare and technology context that appeared in the literature survey.

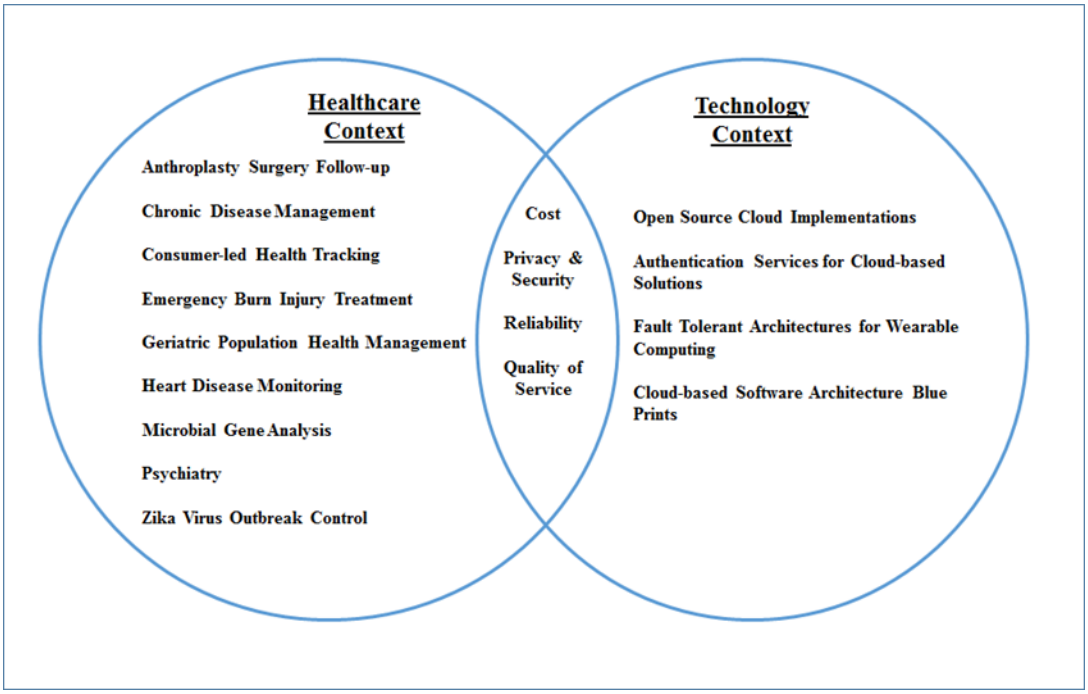

Figure 1. Cloud computing in mobile healthcare and technology context

Healthcare Context

Anthroplasty Surgery Follow-up

Bitsaki et al. (2017) have leveraged cloud computing and mobile application technologies for improving patient and physician communication and reducing the cost of follow-up after hip and knee arthroplasty. They propose a mobile-Health system that provides access to key interaction details including patient education, monitoring of patient symptoms and operation details from a central database. Supported by a cloud-based backend system coupled with service-oriented computing, the authors have performed a cost-effectiveness study of their implementation for 423 patients at the University Clinic for Orthopedics in Essen-Werden. For a re-admission rate of 5%, the cost reduction was estimated to be 63.67% of the standard healthcare cost of all hip and knee replacement patients. They conclude that in addition to the cost savings advantage, this novel solution empowers patients to self-manage their disease in cooperation with healthcare providers.

Chronic Disease Management

Managing chronic diseases like diabetes mellitus and hypertension among citizens of underserved areas is compounded by lack of immediate access to medical care. Telemedicine has opened newer avenues for remote health monitoring in such areas. With an intent to solving this problem in Brazil, Roesler et al. (2015) have designed a mobile health promotion system Mobilicare, which enables remote monitoring of patient's vital signs and engages patients for more self-awareness of the disease. Modeled as a Software-as-a-Service paradigm, the system comprises of an in-home mobile patient kit and a cloud storage component that interacts with a health care center. The kit comprises of electrocardiograms, blood pressure meters, oximeters and glucometers that connect to a tablet or mobile phone through Bluetooth technology. Data transmitted to the cloud is both stored and compared against threshold measurements customized to a patient. A visual analysis of this data is made available for physicians who can perform diagnosis, send alerts to patient's in-home tablet and also contact patients through teleconference. In addition, area-specific

medical centers can view aggregated patient data and take actions such as executing a medical protocol in response to an alert. The authors conducted a randomized controlled trial of 100 type 2 diabetes patients recruited over one year, from one of the largest home care providers in Brazil. Participants were divided into three groups – the control group, intervention group 1 that used an offline glucose meter only and intervention group 2 that used a tablet and glucose meter with a Bluetooth converter. At the end of the experiment, only 17% of group 2 had left the program. It was observed that remote monitoring at regular intervals led to earlier identification of significant changes in glucose level, as well as earlier reaction by medical center personnel. Patient's mood and attitude towards working out improved and as a result their measurements were brought to acceptable levels sooner. The authors acknowledge privacy and security issues that need to be addressed but are encouraged by the early results.

Lee, Herschfeld and Wedding (2016) highlight work done in the Nightscout project to enable patients to manage Type-1 diabetes. Mobile and cloud technology is used to access, transmit and remotely display blood glucose readings from a Continuous Glucose Monitoring System (CGMS) which provides interstitial glucose readings every five minutes. While the authors cite several inherent challenges in its current implementation including issues of legal liability, regulatory challenges and safety, this example highlights the increased autonomy patients have in managing their health with limited engagement with care givers.

In a similar study, Neinstein et al. (2016) have sought to build a technology platform to proactively aid in Type 1 diabetes management. The Tidepool platform, an open-source framework, is built on Amazon's cloud servers as an ecosystem to integrate raw data from any diabetes management device. By making the platform device-agnostic, it is able to ingest data from any vendor's devices while ensuring critical safety and regulatory standards are followed. The authors argue that in addition to advantages for patients and physicians, such a system enhances diabetes research by enabling patients to contribute their data to an anonymized research database thereby benefiting researchers with access to high-quality, contextualized data.

Kuo (2015) has designed and implemented a cloud-based blood pressure data management system that can enable patients, physicians, nurses and healthcare providers to access, upload and modify data through a web and mobile interface connected to a cloud platform. The work done is part of the Pressure Down (TPD) joint initiative of the Heart and Stroke Foundation (HSF) and Beacon Community Services in British Columbia, Canada. One of the main drivers of this system has been to replace the current paper-based tracking to record patient's blood pressure, demographic and health history information. Several case studies expand on how the system can cater to these stakeholder's needs. A usability evaluation conducted with twenty five volunteers indicates that only 8% needed help with using the system and 72% found the system easy to use. Kuo emphasizes the flexibility and scalability the cloud-hosting platform has provided which has eliminated the up-front hardware cost commitment.

Consumer-Led Health Tracking

Patrick (2015) has surveyed consumer-led healthcare innovations spurred by advances in mobile technology and cloud computing. Patrick details several such solutions used for personal dietary, health and exercise tracking. Examples include Apple's HealthKit – the vendor's foray into healthcare space, AliveCor – an FDA approved heart monitor that attached to the back of a mobile smartphone, CellScope Oto – a mobile smartphone converted to an ear-inspecting otoscope and Propeller, an asthma monitor attached to smart inhaler. Patrick highlights this changing context of self-monitoring and self-diagnosis that will lead to a novel model of patient and physician collaboration.

Emergency Burn Injury Treatment

Wallis et al. (2016) have presented the design for a smart mobile application integrated with clinical decision support that enables transfer of patient data and pictures of burn wounds from point-of-care to remote burn experts for diagnosis and feedback. The authors cite the relatively high burn mortality rates in low and middle-income countries that enhances the need for novel and cost-effective solutions to enable accurate and timely transmission of patient information and decision-making. The client application installed on a smart mobile phone can capture images adhering to appropriate protocols. The user can indicate specific injured body surface(s) through a touchscreen interface. An in-built calculator estimates the total body surface the injury affects and provides predefined and standardized care advice. Simultaneously, the case data is relayed to a cloud server, and a text message sent to an on-call burn expert who can access the data from the cloud server to diagnose and provide personalized care for the

patient. The research's planned next phase will deploy this system in hospitals in the Western Cape of South Africa. While the authors cite challenges such as adequate training for medical staff and ensuring anonymity of transmitted images and network interruptions in under-developed geographies, they strongly believe that its intended use will well serve those living in under-served areas.

Geriatric Population Health Management

Sun et al. (2016) emphasize the need for leveraging technological advances in treating the aging population with chronic ailments, especially in countries like China, where there is a growing shortage of caregivers and healthcare providers. In their review, they highlight a broad range of cloud-based solutions being implemented to solve this problem. Some examples include remote treatment of sleep disorders and an enhanced telemedicine platform that incorporates cloud computing-based decision support systems to provide remote diagnosis and treatment. They conclude that this technology although nascent, holds promising potential for developing countries.

Heart Disease Monitoring

To solve for a cost-effective, yet proactive way to monitor Electrocardiography (ECG) readings for patients with heart disease, Yang et al. (2016) have proposed a novel method for based on the Internet-of-Thing (IoT) cloud technology. This is accomplished by a combination of an ECG sensing network, the IoT cloud and a flexible Graphical User Interface (GUI). The sensing network, responsible for collecting physiological data is achieved via Wearable sensors worn by patients. Data is periodically transmitted to the cloud via wireless protocols like Wi-Fi and Bluetooth. Data in the cloud is cleansed to reduce effects of noise during transmission. Cloud data storage and analysis facilitates data mining and machine learning to diagnose heart conditions. Results are presented in a user-friendly manner through mobile applications and webpages. Based on experimental results, the authors believe that such a system can indeed aid in accurately and reliably diagnosing certain forms of heart disease.

The World Heart Federation (WHF), an international non-governmental association for prevention of cardiovascular diseases has set forth a strategic target for comprehensive use of register-based control programs where Rheumatic Heard Disease (RHD) is endemic. To this end, van Dam et al. (2015) have developed an eRegister based on open-source cloud-based software. This allows for easy data collection via user-friendly forms by field workers using their mobile devices. This data is stored in an open-source cloud CommCare in a secure manner. Utilities were built to extract and derive meaningful knowledge from this data. Field testing of this system was performed in Lusaka, Zambia to support screening of over 1,200 children. The biggest benefits, the authors posit is the ease-of-use from the field worker's standpoint, as well as its low-cost of adoption relative to traditional paper-based tools.

Infants born with hypoplastic left heart syndrome require staged surgery for correction. This often involves three operations performed shortly birth, between four and six months of age and between three and five years of age. The period between the first and second surgeries poses a risk for sudden death for babies. Traditional home monitoring requires caregivers to record weight and oxygen saturation measurements. Shirali et al. (2016) have developed a cloud-based solution to securely and nearly instantaneously transfer this information for physician review and feedback. The system involves integration of a tablet personal computer programmed into a kiosk mode for caregivers to input data. This data is transmitted securely to a cloud platform integrated with a patented software data warehouse. They work in concert to provide near-instantaneous alerts in response to a set of red flag clinical concerns within the data input by caregivers. In a trial phase, the system was used to monitor 30 patients with none resulting in interstage deaths. Based on feedback a daily high-definition video feed of babies has been added to monitor subtle changes in their breathing patterns. While there are challenges in continuing to mature this platform, the authors strongly believe in its end vision.

Acute Aortic Syndrome (AAS) requires prompt diagnosis and specialized care. Matar et al. (2015) have conducted a study to determine the efficacy of hand-held devices in accelerating such diagnosis compared to the traditional way of using dedicated work-stations for diagnosing cardiovascular emergencies. The set up involves mobile phones interfacing with a secure cloud network that in turn connects to imaging repositories. 104 cases of suspected AAS patients underwent Computerized Axial Tomography (CAT) scan over a period of 11 months. Two independent readers with significant experience distinctly evaluated findings. The hand-held devices' sensitivity was determined to be 85.2% with the readers agreeing on diagnosis in 98 cases. The authors conclude that coupling hand-

held device reading with cloud-based image sharing technologies would allow for fast transfer of imaging studies, avoiding delayed diagnosis and triage of cardiovascular emergencies.

Microbial Gene Analysis

In a state-of-the art survey of microbial bioinformatics, Pallen (2016) has reviewed the emergence of cloud computing as a competitive advantage in performing collaborative research and exchange of genome sequencing data. Pallen emphasizes that benefits of cloud adoption like economies of scale in effort and cost to maintaining common systems, would outweigh inherent challenges such as the need for trained labor force to meet these demands in short order. The United Kingdom's Cloud Infrastructure for Microbial Bioinformatics (CLIMB) is cited as an example of this effort, which makes use of the OpenStack open-source cloud computing environment.

Pulmonary Disease Investigation

Chronic Obstructive Pulmonary Disease (COPD) treatment is a major contributor to healthcare expenses as it is complicated by several comorbidities like chronic heart failure and diabetes. Studies cite that one-third of hospital COPD admissions are preventable by earlier diagnosis and management. To that end, Kayyali et al. (2016) have developed a wearable technology network aimed at integrated care for patients with COPD. The wearable vest is designed with sensors that monitor and transmit physiological signals specifically from an inhaler adherence monitoring device to assess patient's inhaler technique. This data is transferred to a cloud platform along with patient-entered data through mobile phones. In conjunction with decision-support systems, health data analyses and trending over time is presented for both physicians and patients to consume. This system was deployed to four clinical sites in Ireland, Netherlands, Greece and the UK. The authors followed this phase with qualitative assessments across all stakeholders. Results from its use show overwhelming support from both patients and physicians. Some lessons learned included customizing the duration and frequency of vest wear and the need for a more visual dashboard capability to alert physicians of abnormal results.

Psychiatry

Profit et al. (2016) have created a Digital Medicine System (DMS) that measures and reports on adherence to the anti-psychotic Aripiprazole, utilizing a secure mobile and cloud-based platform. The authors cite studies which highlight that patients with serious mental illness such as Schizophrenia and Bipolar Disorder are known to be poorly adherent to prescribed medication. Measuring adherence is complicated by the fact that it relies on self-reporting by patients. To address this problem, the authors developed DMS to measure and report medication adherence by electronically confirming medication ingestion and sending feedback to physician, caregivers and patients. The medication tablet is embedded with an ingestible sensor. Briefly after ingestion, the sensor generates a signal that is received by a wearable sensor that is applied to the patient's left costal area. This in turn communicates data to the patient's mobile phone that is transmitted to a cloud-based server which communicates bi-directionally with the patient's mobile phone as well as other software components to compute average and trending of adherence statistics. The authors conducted an umbrella study of the DMS's effectiveness by enrolling two cohorts of 29 and 30 volunteers respectively to assess detection accuracy and latency between ingestion and detection. By incorporating feedback from the first study, the authors have been able to achieve an overall ingestion detection rate of 96.6% and a mean signal transmission latency of 1 to 1.3 minutes from ingestion to detection and 6.2 to 10.3 minutes from sensor detection to server detection. Based on these results, the authors are optimistic of DMS's promise to enable physicians with patient insights to better enable therapy optimization.

Zika Virus Outbreak Control

Zika is a critical emerging virus that has caused outbreaks and epidemics across the world leading to a wide-spread clinical manifestations. Sareen, Sood and Gupta (2017) have proposed a cloud-based system to proactively track, monitor and control its spread. Their system comprises of the data collection, information processing and risk assessment and communication components. End users are armed with a mobile phone application that enables them to upload Zika symptoms periodically. In addition, information about mosquito-dense areas and breeding sites are continuously captured through wireless sensors placed in the risk-prone area that also measures other environmental characteristics such as air temperature and humidity. This data is uploaded to a cloud-based server environment which

embeds a Naïve Bayesian Network (NBN) classification model that can predict the probability of outbreak in the respective geography, based on the uploaded data. High risk-prone areas as output by the NBN model can be visualized using Google Maps to help government organizations and citizens alike in taking proactive measures. The communication component sends timely and location-based alerts and reminders to users via Short Message Service and emails as an early warning as well as for adoption of preventive measures. In an experimental set up the system was deployed and tested in the city of Amritsar in India. The NBN algorithm was found to produce a true-positive rate of 89% and a false-positive rate of 5.2%. The authors find these results encouraging and worthy of follow-up research, while citing challenges such as ensuring complete user anonymity that need to be addressed in tandem.

TECHNOLOGY CONTEXT

Open Source Cloud Implementations

Banos et al. (2015) have implemented the *Mining Minds* framework which is a distributed platform on a cloud environment for discovery of health and wellness patterns. What sets this apart from similar paradigms, is its people-centric approach. This is made possible by including an expert system to map user needs to recommendations and customized means to communicating them. From an architecture standpoint, it builds on the Data, Information, and Knowledge trilogy and is comprised of a Data Curation Layer (DCL), a Multimodal Data Source (MDS), an Information Curation Layer (ICL) and a Knowledge Curation Layer (KCL). It is implemented on a hybrid-cloud platform combining technology providers such as Microsoft, Xen and open source implementations like Hadoop. Personalized use cases such as physical lifestyle coaching, weight management and behavior inspection tool are presented. To measure the effectiveness of each component, the authors have conducted distinct trial studies. Based on the results, the authors continue to evolve and improve the platform. In addition, Niensten et al. (2016) and van Damm et al. (2015) have also utilized open source implementations in their proposed solutions.

Authentication Services for Cloud-Based Solutions

Mohit et al. (2017) have designed a secure version of an authentication protocol used in the Telecare Medical Information System (TMIS) exchange. TMIS as a paradigm enables patients and physicians to establish communication and exchange medical information over a public network. Several network-layer protocols have been proposed to ensure this happens in a confidential manner via patient authentication. A growing trend is to provide these authentication services via a cloud platform. Their literature review cites such state-of-the-art protocols that do not preserve patient anonymity and lack are lacking in security against patient's mobile device theft. The authors have proposed a light-weight authentication protocol to address these deficiencies. Based on a comparative analysis of features between their proposed protocol and its contemporaries, the authors underscore its resilience against commonly occurring security attacks.

OpenID Connect is seen as an emerging technology standard for federated authentication and authorization in cloud-based platforms. Ma et al. (2016) offer a solution to leverage this standard for securely sharing medical images in a cloud ecosystem. Picture archiving and communication systems (PACS) are at the heart of medical imaging with digital images acquired through Computerized Axial Tomography (CAT) scanners, Magnetic Resonance Imaging (MRI) machines and X-rays. With exploding imaging rates, the authors posit that migrating PACS systems to cloud computing is both cost-effective and efficient. However, managing the identity of various participants that include medical devices and providing safe and secure access is vital. To that end, the authors have proposed the *OpenID-Connect-as-a-service* architecture wherein each participant that owns imaging data has the flexibility to control its access. Authenticating participants and authorizing their access is coupled with fine-grained content-based policies for each participant group. Results from a prototype implementation appear promising.

Spanakis et al. (2016) have surveyed state-of-the-art innovations that foster healthy lifestyles and well-being with a focus on challenges each present. With respect to cloud implementations, they highlight the increased threat from insider attacks (i.e.) employees of cloud providers who have access to confidential data. They caution that while data encryption helps, the unique nature of data sharing across multiple user groups poses unique constraints.

Fault Tolerant Architectures for Wearable Computing

While wearable computing is prevalent in medical applications today, adoption has been limited to non-critical applications due to its limited resource constraints and failure sensitivity. Abdalli-Mohammadi et al. (2015) have investigated how wearable technology can be made more resilient for use in critical medical applications. The proposed architecture focuses on building a layered fault tolerant framework. The wearable computing layer comprises of the body node that collects information obtained from the human body and the master node which consolidates this information across all nodes for transmission to the mobile and cloud computing layers. The mobile computing layer receives and processes this information with more complex hardware and software for transmission to the cloud computing later. Due to higher bandwidth and capabilities of the cloud layer, it provides additional services such as real-time communication with physicians. Further, the authors have proposed newer fault-tolerant algorithms for the wearable computing layer and evaluated via simulation, the model's reliability and dependability using the Mean Time To Failure (MTTF) metric. They conclude that further research to build on the proposed tolerance of the wearable computing layer is needed to more comprehensively exploit recent advances in complementary technologies.

Cho et al. (2017) have published their analysis of an efficient network-layer routing scheme that can minimize latency and improve total cost of solutions which provide wearable-device-to-senor-network communication. Real-time monitoring of bio signals generates significant data that needs to be transmitted to hospital networks with minimal data loss. In addition, accurate monitoring of patient location for this purpose calls for enhanced mobility management features, making fault tolerance of such networks vital. The proposed protocol's performance was measured against its peers in different environmental settings. Results show that it outperformed the rest in providing better quality of service at lower cost.

Cloud-Based Software Architecture Blue Print

Tahmasbi, Adabi and Rezaee (2016) have proposed a software architecture for a pervasive, cloud-based healthcare system for patients in a network involving patients, physicians, healthcare providers and cloud computing. For each of these Actors, they propose a detailed *Process*, *Development* and *Physical* view to embody their characteristics, trace comprehensive interactions and transaction flows. To extend their design, they have proposed various technologies and standards to adhere to, in realizing each component. The authors posit that utilizing this framework would serve as a model which is focused on availability, interoperability and performance, leading to a system that is easier to implement and maintain.

Oh et al. (2015) have designed a generic framework for cloud computing-based Healthcare *Software-as-a-Service* platform (HSP) to deliver healthcare information that is of low cost, high value and usability. They start out by defining comprehensive scope and components of such a cloud-based platform including critical-to-quality privacy and security features. The resulting architecture view provides an ecology services including business support, operational support, technical and data services. The authors have extended this to present a software-based view of corresponding services provided by multiple vendors. The cloud services are further elaborated to delineate the various contexts they can be deployed within – *infrastructure* and *platform*. The authors contend that their proposed blue print can be applied for small and mid-sized hospitals to successfully set up a technology platform with relatively lower system operational and maintenance costs.

LIMITATIONS OF THE STUDY

This study focused on applications of cloud computing in mobile healthcare scenarios only. There is an emerging body of work encompassing cloud adoption in other healthcare areas such as Genomics and Neuroimaging. A literature survey of these complementary areas of research can be an extension to the current review.

CONCLUSIONS

This survey discussed healthcare domains where both cloud computing and mobile technologies that have been applied in solving specific healthcare problems. This article should provide researchers a unique opportunity for contextual analysis of the topics presented relative to their progress, challenges and opportunities. It became apparent from the literature review performed during the writing of this article that factors such as upfront investment cost have

been considered in some implementations. However, the relative usability of these solutions and technology interoperability challenges have not been reviewed in depth. This provides an avenue for further research. For the practitioner, this article should provide critical insights on how best to productize and commercialize these emerging trends, and make the much-needed technology available to the larger population in a cost-effective manner.

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MEDICAL TECHNOLOGIES THAT REDUCE MEDICATION ERRORS

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MEDICAL TECHNOLOGIES THAT REDUCE MEDICATION ERRORS

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ABSTRACT

Due to the high rates of medication mistakes with subsequent patient injury and expenses, their reduction is a global priority for hospitals. Programs that utilize the information technology, for example the computerized doctor order entry, are very essential elements of strategies to eliminate drug mistakes. In addition, there is an increasing body of evidence calling for their global initiation. On the other hand, significant obstacles, for example high expenses of the

technologies, ought to be solved using economic enticements and also government guidelines. This research study offers an evaluation of the present condition of information technology systems in reducing medication errors.

INTRODUCTION

Reports show that medication mistakes are common and they lead to serious medicine events or wounds as a result of medicines that happen more often that they should. Actually, the rate as well as the costs of iatrogenic injuries appears to reduce the rate of different of the kinds of injuries that are better known, for example airplane and car accidents (Brennan, 2004). There is a current study that concluded that a complete occurrence of 6.7 percent for serious medicine reactions within health centers. Moreover, twenty-eight percent and fifty-six percent of all serious medicine activities cannot be prevented.

Perhaps that reasons why this problem has received inadequate research are complicated, the motives why drug injuries happen a lot of times are maybe not very complex. Also, drugs are more or less a cottage sector with minimal standardization and comparably few protections in comparison to for example manufacturing. In actual fact, a majority of the systems that is present in medicine were officially structured and that supports the whole procedure of offering medicines

Consider for instance, the allergy identification procedure that is utilized within the health centers a few years past that were the same as those utilized in numerous hospitals at the same period. Doctors, medical students and other health personnel all inquired from their patients what their thought their allergies were (Brennan, 2004). These details were written down within the hospital's books, despite the fact that there was a major location. In addition, these details were to be recorded at the top of all sheets, but in reality that was hardly ever done.

The doctors put that information in their computers, nonetheless they became aware of allergies if that information was filled in the orders, but that was not the case. Therefore, confirming with nurses and other staff members was done manually. This kind of information was not reserved between the inpatients and outpatient environments. Not astonishingly, approximately thirty three percent orders for medicines that the patient was aware of his allergy were lost. On the other hand, there is a new system that has taken the place of the old system. Within the new system, all the allergies information is recorded within a single place within the information program. Moreover, medicines are classified according to different classes so that confirming them within classes can be undertaken, information is maintained for some period and examining them is done through the information system, which is an easy process (Brennan & Leape, 2009).

Using Information Technologies to Prevent Medication Errors

A number of interferences concerning information systems have been proven to decrease medication mistakes significantly. And numerous others have offered assurance; nonetheless have not been adequately examined. Some of these include computerized doctor order entry, computerized doctor decision support (that is regularly not adequately connected with order entry), robots for recording drugs instructions and bar coding among others.

It is important to say at the beginning, nonetheless, that information technologies are not the solution. That means that they contribute to success at times and failure at other times. Therefore, the net effect is hence not completely foreseeable and it is significant to examine the effects of these innovations (Brennan & Leape, 2009). They comprise of the biggest effects in organizing and making available details, in determining connections between bits of information, and in performing uninteresting monotonous activities such as inspection for issues. The most suitable drug procedure will therefore not take the place of individuals; nonetheless it will improve the strong points of information technology and permit individuals to undertake the activities that are more effectively performed by individuals, for example making difficult conclusions and communicating with other one another.

Computerized Physician Order Entry

Computerized physician order entry (CPOE) is a program that doctors use to fill orders on the Internet. This program has perhaps the biggest effect of any automatic intervention in decreasing drug mistakes; the frequency of severe mistakes reduced by fifty five percent in one research project and the frequencies reduced by eighty three

percent in another study. Computerization of ordering enhances security in a number of methods; first, they are structured, in order for them to constitute of dose, direction and rate. Secondly, they are legible and the orderer can be determined in all situations, thirdly, details can be offered to the person that orders within the procedure and fourthly, all orders can be examined for some issues such as allergies, medicine interactions and medicine laboratory issues (Brennan & Leape, 2009).

A high reduction in a number of mistakes can be attained through computerizing the procedure even in the absence of strong decision support. For instance, in one research project, a single easy program decreased drugs mistakes by sixty-four percent.

Computerized decision support is also significant for decreasing the rate of serious medicine activities, even if they are not connected to computerization of the ordering procedure. For instance in a sophisticated sequences of research projects, a team from LDS Hospitals located in Salt Lake City, Utah, demonstrated big reductions in serious medicine events as a result of antibiotics (Zheng & Zhang, 2016).

Moreover, a certain community health care in Phoenix utilized a computerized alert program to mark thirty-seven drug particular serious responses such as arrhythmia that is as a result of digoxin that is resulted by digoxin and hence they searched for individuals that were taking digoxin and were suffering from hypokalemia.

They found out that they could reduce injury at a degree of sixty-four per a thousand patients; forty-four percent of the genuine alerts had yet to be determined by the doctors. This method is effective partly by assisting clinicians to connect relevant bits of information that can be an issue due to the overwhelming flow of information that they encounter.

Despite the fact that computerization of ordering significantly reduces the complete frequency of drugs mistakes,, computerized choice support may be particularly vital for eliminating mistakes that actually contribute to damages (Zheng & Zhang, 2016). In a particular research project, computerized order entry with comparably constrained decision support lead to a bigger reduction in near misses (that is eighty four percent) compared to mistakes that in fact lead to damages (seventeen percent). On the other hand, in later assessment, after strong decision support had been included, the frequencies of mistakes that lead to damages decreased from three to one per a thousand admissions.

Robots for Filling Prescriptions

Similarly, automation may also decrease mistakes frequencies in recording prescriptions. Robots have been utilized for that activity within bigger health care centers for a while and more currently in smaller institutions, and they are progressively being utilized in outpatient hospitals. There is no published information that is present, nonetheless in one research project; a robot reduced the dispersing mistakes with a range of 1.3 percent (Manasse & Thompson, 2005) (Zheng & Zhang, 2016).

Bar Coding

Despite the fact that a small amount of information from hospitals are accessible, bar coding of medicines also appears beneficial for decreasing the frequencies of mistakes. The biggest obstruction to implementation has been the fact that medicine producers are not yet able to come to an settlement on a single method that ought to be standard. Bar coding is extensively utilized in numerous sectors apart from medicine, as it contributes to mistakes frequencies about sixty percent of the ones that result from using keyboards and is also less tiresome to the staff members (Zheng & Zhang, 2016).

A number of healthcare centers in America have already effectively applied bar coding. Therefore, bar coding can quickly make sure that the medicine that one has is the right one and can also be utilized to identify the health personnel that is issuing and the patients that is being given also, the different time recesses.

Automated Dispensing Devices

Automatic dispensing machines can be utilized to place medicines at a location and distribute them to a particular ill individual. These machines, particularly in case they are connected to bar coding as well as linked with the healthcare information program can reduce drugs mistakes frequencies significantly. In the absence of these connections the impact of these machines is uncertain, for example within a particular research project the program was in fact linked to a rise in drugs mistakes.

Automated Medication Administration Record

The other relevant section of drugs utilization use procedure is the medication management record, where the clinicians that in fact administer medicines write the name of the drug. Computerization of this section of the procedure, particularly in case it is connected to computerized order entry, could decrease mistakes and permit identification of other kinds of mistakes that are associated with the amount of medicines that are being used as required.

Computerized Adverse Drug Event Detection

In order to screen the manner that any procedure is progressing, it is vital to have the chance to measure its effects (Classen, 1991). Past methods of monitoring depend on self-reporting that radically overlooks serious medicine activities, only identifying approximately one in twenty. On the other hand, computerized information is linked with a serious response.

Therefore, a doctor can assess the situation and then define if it represents a serious medicine event and this information can then be utilized for root cause assessment. Furthermore, a computerized analyzation was found to find forty-five percent of activities that were found by any approach, associated with sixty-four percent for chart review and only four percent in the case of voluntary commentary. That was the initial project where drugs were checked on an ongoing basis.

Diffusion of These Technologies

The systems are currently available, and therefore, they should be utilized in different healthcare centers. Also, the general method ought to be analogous to that utilized within infection monitoring where information regarding complications is utilized to continuously enhance the program. Due to the fact that prospective effects of these innovations as well as the dispersal have been unexpectedly minimal.

One major reason may be the absence of investigation demonstrating the differences that technologies can generate. Likewise, funding for these kinds of studies have been comparably constrained, and comparably minimal support has been given form the inventors of the technologies. The other significant reason is the absence of interest from the hospitals around the United States. Safety is rarely a great interest in medicine, partly due to the fact that the issue of security is generally overlooked. This absence of gratitude could be due to the fact that medicine errors happen in low amounts instead in large numbers. Furthermore, the groups of people that are mostly affected are the old and those that are ill. However, the good news is that the concern from the general public is considerable and growing and the different hospitals in the United States are demanding for these technologies.

Concerns and Problems

Despite the fact that information technology systems offer strong and convincing mechanisms for decreasing medication mistakes and enhancing security, the substantial body of evidence to show their benefits, there are a number of apprehensions regarding their global clinical utilization. For example, there is disbelief regarding the evidence stating the effects of these technologies on clinical results (Classen, 1991). Numerous of the present proofs rely on either one site assessment in big academic healthcare institutions that have generated the programs within and incrementally, or big economic frameworks depending on projections. The former is constrained by unclear generalizability of the results as numerous institutions will be using commercially intended programs with limited resources for changes. The latter appears to overlook the prospective gains of information technology through making calculations that rely on the best case situation. These issues are being solved in more current studies that rely on

rigorous approaches proving the positive effects of some various information programs and their clinical implementations in different hospitals within extensive clinical results for example inpatient death, duration, difficulties and expenses.

CONCLUSION

There are a number of information technologies that demonstrated that they can be used to enhance the safety of medicines. Computerized doctors order entry appears to the most powerful among them and it might become more beneficial as additional data is computerized. Therefore, technology can be anticipated to diffuse quickly as all main suppliers are creating these technologies and numerous are using applications that rely on the Internet that would create a chance to order and offer one platform. In addition, information technology ought to enhance security within other sections of the procedure, constituting of dispensing and administering, nonetheless the entire gains will not be attained until all the elements are electronically connected.

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PRIVACY BY DESIGN: FIX IT BEFORE IT BREAKS

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PRIVACY BY DESIGN: FIX IT BEFORE IT BREAKS

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ABSTRACT

The establishment of the Health Insurance Portability and Accountability Act by the federal government mandates healthcare facilities protect patient privacy through the implementation of physical, technical and administrative safeguards. Advances in information and communication technology have had significant impact on organizational practices and have allowed employees to share, store and manipulate information easily and at any time. With this ability to control and manipulate information, comes new risks posed by human error. This paper present how a hospital and academic university embeds the concept of Privacy by Design to improve the privacy and security of patient and research subject data.

INTRODUCTION

Confidentiality, privacy and security pose increasing challenges to the economic viability of virtually all industries. With the federal Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health Act (HITECH Act), the healthcare environment should be in a good position to protect and secure patient information. However, it is not. Small and large-scale privacy and security breaches continue to leave consumers of healthcare services questioning why healthcare organizations cannot protect and secure their sensitive information. Providers need to store and transmit (to other providers) this protected health information (PHI) to deliver effective care. So, how do they effectively strike a balance between permitted uses of sensitive information and, at the same time, protect the confidentiality, privacy and security of not only patient information, but research subject information as well. This is of particular concern in a large hospital and academic university.

So what is a breach? A breach is defined as an event in which an individual's name and a medical record and or a financial record or debit card is potentially put at risk, either in electronic or paper format ("Breach Notification Rule," 2013). In a Ponemon Institute 2017 study, there were three main causes of a data breach: a) malicious or criminal attack, b) system glitch or c) human error. The costs of a data breach varies according to the cause and the safeguards, the internal controls, to a greater or lesser degree, in place at the time of the data breach. According to the Ponemon Institute 2017 report on 419 companies, the average total cost of a data breach was $3.62 million. Additionally, the average cost for each lost or stolen record containing sensitive and confidential information was $141. However, health care organizations incurred an average cost of $380 per lost or stolen records. Lost or stolen records in the research space totaled $101. (Ponemon Institute, 2017).

According to a breach barometer report generated by Protenus (2017), in 2016 there was at least an average of one health data breach per day, affecting more than 27 million patient records. Unfortunately, this trend continues in 2017 (Protenus, 2017). Given the complex and dynamic environment of healthcare and research, how can we use technology to stem these kinds of losses? One solution is to adopt a compliance strategy known as Privacy by Design (PbD). PbD can provide a reasonable and strategic approach that embeds protection measures into the use, disclosure and storage of PHI. This paper assesses how a hospital and academic university approaches PbD within its privacy and security program.

METHODOLOGY

Using Stake's (1995, 2003) idea of an intrinsic case study, this paper explores how the concept of PbD is applied in a real life context. PbD is essentially a new risk management protocol. Implementation of protocols like this is critical if healthcare organizations are going to meet the ever greater expectations required by the federal government when it comes to protecting and securing patient's personal information, whether collected, used and shared. This paper focuses specifically on how the PbD risk management protocol can be embedded within organizational policies, procedures and best practices. Here, PbD is not viewed as part of a case study or program. Rather, it is a way forward, an entry point into establishing proactive strategies for ensuring the organization has created a risk management initiative for addressing privacy and security risks.

BACKGROUND

What is Privacy by Design (PbD)?

PbD is about 20 years old and is the brainchild of Ann Cavoukian, formerly the Information & Privacy Commissioner of Ontario, Canada. Generally, security professionals may not be familiar with this concept because PbD has been known to be vague, too consumer-oriented, and not technical. At a high level, PbD refers to the philosophy and approach of embedding privacy into the design of technology, business practices and physical design. This framework dictates that privacy and data protection are embedded throughout the entire life cycle of technologies, from the early design stage to their development, use and ultimate disposal. The concept that organizations need to build privacy directly into technology, systems and practices at the design phase, thereby ensuring the existence of privacy from the outset, is the main principle of privacy by design (Cavoukian, 2010, 2011)

The Seven Foundational Principles

The concept of *PbD* can be defined as the new generation of privacy protection which focuses on a proactive, holistic approach to protecting the privacy of individuals. Generally, other privacy protection concepts are associated with reactive approach frameworks which cover reactions for privacy breaches occurring in information technology application. Reactive approach, based mostly on legal compliance is not sufficient enough in the era of rapid pace of technological progress and changes (Cavoukian, 2010, 2011). Cavoukian (2010, 2011) outlines seven *PbD* Principles as follows:

Table 1. Seven Privacy by Design (PbD) Principles

Principle	Description
Proactive not Reactive (Preventative not Remedial)	This principle considers privacy at the outset of the project, not only as a reaction to a breach or other data protection issue. Think Privacy!
Privacy as the Default Setting	This principle focuses on the protection of individuals' privacy as the primary concern. For example, explicit opt-in, safeguards to protect consumer data, restricted sharing, minimized data collection, and retention policies in place. Privacy by Default therefore directly lowers the data security risk profile: the less data you have, the less damaging a breach will be.
Privacy Embedded into Design	This principle considers privacy when designing a new tool or technology – think about privacy as a core feature of the new product.
Full Functionality (Positive-Sum, not Zero-Sum)	This principle suggests accommodating all interests in a harmonious way. Respecting people's privacy should never present an impediment to the delivery of health-care services. Given the sensitive nature of health related information, ensuring OHSU's highly beneficial systems are built with privacy in mind will deliver a positive-sum outcome. Another example is protecting sensitive health data ***and*** making it available for health research by using de-identification methods that minimizes the risk of re-identification.
End-to-End Security (Full Lifecycle Protection)	This principle considers the protection of personal data throughout the product lifecycle. Protection follows the data, wherever it goes. Appropriate encryption and authentication should protect the data till the very end when it finally gets deleted.
Visibility and Transparency (Keep it Open)	This principle seeks to ensure being transparent about the adopted approach to privacy. This principle builds trust about our privacy practices.
Respect for User Privacy (Keep it User-Centric)	This principle requires keeping the product or service user-centric; for example, keep the interests of the individuals in mind.

Source: Cavoukian, 2010, 2011

Privacy by Design in the Context of Information Privacy and Security

A prominent hospital and academic university recently revamped their Information Privacy and Security (IPS) department as part of the Office of the Chief Privacy Officer. The primary focus of the program is to identify the many types of HIPAA privacy concerns that can arise in a large healthcare enterprise. It can be unequivocally stated that human error is a major cause of these privacy failures. Examples are rampant: hospital staff snoop on colleague electronic health records, physicians leave laptops or pagers overnight on the backseat of their cars, or inadvertently share research data with those outside those deemed designated contributors. Professionals working in the information privacy and security space not only have to identify privacy risks and or privacy breaches, but they are required by HIPAA to implement internal controls to mitigate these risks. Attempts are generally made to fix the problem so it doesn't happen again. And, those efforts do not always bear fruit.

In the past that fix was to scold employees for sending a Protected Health Information (PHI) laden emails (unencrypted) and as penance force them to take an on-line HIPAA training, which they would complete in eight minutes while simultaneously texting the latest mojito recipe to their best friend for life. The training checks off the box, but it is a Band-Aid approach to the problem. What is needed is a more proactive approach to managing risk. This is the PbD risk management approach, which, at its most basic, involves designing systems and processes and fail safe measure, at the front end of hardware or software that can reduce the number and severity of privacy incidents on the back end. PbD can't fix bad employee behavior but system safeguards can help reduce failures in that vast "preventable" middle tier of the Bell curve.

To see how this might work in the real world, this paper will focus on a few key areas where the risk of a privacy breach is high: The inappropriate disclosure of PHI to non-organizational providers that participate in Tumor Boards, Grand Rounds and, specifically within the research community that is overseen by the Institutional Review Board (IRB).

Applying PbD in the Health Care Organization

So how can PbD lower risks when it comes to disclosure of PHI in a collaborative setting? The first question to ask is what is the risk? Providers or researchers are inadvertently sharing data outside the definition of the Workforce? The "Workforce" includes employees, students, volunteers, trainees and other persons directly supervised by a provider (PA, RN, and Nurse Practitioner). Within the Workforce, the HIPAA Privacy Rule says we can share PHI to varying degrees ("Privacy Rule," 2003). What does that mean exactly? This "Workforce" status triggers the Payment, Treatment, Operations (PTO) exemption under HIPAA, which allows access to PHI without a written patient authorization. Treatment is the "direct medical care" including referrals, consulting and care coordination. The billing for that care is the Payment exception to sharing insurance information without a patient authorization. Health care Operations – the "O" in the PTO exemption, is considered an adjunct to direct medical care and makes up the auditing, compliance, quality improvement, quality assurance activities, and medical and dental training of students and providers ("Privacy Rule," 2003).

Tumor Boards

Tumor Boards that end up sharing PHI are considered at lower risk (to their organizations) since the work these physician participants perform falls within the definition of Treatment. Consulting with another health care provider about a patient meets HIPAA's "Treatment" exception and, therefore, sharing PHI without a patient authorization is permissible ("Privacy Rule," 2003). Tumor Boards are basically expanded version of the single provider-to-provider consultation. However, risks still arise even within this venue of doctor specialists. Problems occur where one participant is mentoring a medical student (who has no contact with patients) or physician in a specialty not likely to contribute to care. Once a Tumor Board relinquishes its status as a clinician-driven venue (through participation by those not directly involved in care) the standard regarding what can be disclosed under HIPAA lowers dramatically.

How does PbD fit into this? The PbD protocol would ensure that proactive measures are in place to ensure the Tumor Board facilitators communicate with Compliance or Integrity departments and convey who can or cannot be present. Most importantly, to the extent possible, Tumor Boards are reminded to limit PHI to the "minimal necessary" to accomplish the intended purpose of the use or disclosure as part of its effort to augment care.

Grand Rounds

Grand Rounds venues pose a greater risk when it comes to sharing data. HIPAA does not consider Grand Rounds care conferences. They fall into the basket of an education event, rather than a direct treatment-focused endeavor such as a Tumor Board. Physicians are even eligible for continuing education credit when attending Grand Rounds so calling them treatment doesn't work in the HIPAA world. Education falls into the Operations exception along with auditing and compliance, but when it comes to education, what can be disclosed without an authorization is very limited under HIPAA. But, there is a caveat to this: When a conference extends to partner organizations or others, and the providers at both organizations share the same patient, this can be construed as joint care and that arrangement can take the meeting out of the education or Operations exception realm and puts it into the more expansive (i.e. lower risk) of HIPAA's "Treatment" exception.

What are some proactive strategies to consider? If the meeting is educational the default choice is to 100% de-identify data, unless everyone attending is a provider working for the same enterprise, then it's appropriate to share "minimal necessary" PHI. The rationale is that the provider (in theory) leaves the conference, goes out and cares for patients that same day or the next day. Thus, the conference content augments patient care. This is the same for Medical Residents when they view PHI as part of a case study. They actually provide care on rounds so what they learn augments that care. There is a different standard regarding what PHI can be disclosed when it comes to medical, dental and nursing classes. The students do not yet have patients, so PHI must be 100% de-identified. Doctors are smart and some may try to circumvent HIPAA in the educational venue by obtaining a confidentiality agreement from non-organizational providers. Unfortunately, this is not an option, since the right to control where the information goes (and who sees it) is the patient's right. Nor can we call participants Business Associates, a status which allows sharing of PHI. HIPAA clearly sets out who qualifies as a Business Associate (lawyer, accountant, data or financial person, or shredder guy) and this does not extend to providers or other researchers that want to see some good data. ("Privacy Rule," 2003").

Applying PbD in Research

The hospital and academic university used in this case study has an IRB that oversees the compliance and integrity of human subject research. The Federal Policy for the Protection of Human Subjects or the "Common Rule" outlines basis compliance requirements for IRBs. The Common Rule also provides a definition of what is research and what is consider a human subject. Research is defined as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (Code of Federal Regulations, 1991, 2009). Human subject is defined as "...living individual(s) about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information ("Code of Federal Regulations," 1991, 2009). The primary purpose of the Common Rule is to protect individuals who are the subject of research projects. Consideration is given to how various aspect of the research project, including privacy, confidentiality, data collection, data maintenance and data retention, impact risks.

How can PbD reduce privacy incidents within the IRB? The IRB space is particularly challenging when it comes to when and to whom a researcher or investigator can disclose PHI. Researchers share PHI with researchers at other universities or with research labs. Researchers are involved in international based studies, which raises a whole lot of questions such as: Who owns the data and what laws govern transmission and protection of data? External sharing of PHI from internal data repositories to external researchers. This makes PbD particularly useful in an IRB setting. One of the primary ways the IRB evaluates projects is by the degree of risk to the privacy of the participant. The IRB considers the following questions when reviewing research projects:

- Is there a risk of release of private information because the study population is too small and or locally known?
- Who will have access to the data?
- How will the data be collected, stored and maintained?
- How will the data be shared and or reported?
- How harmful will a breach of privacy be to a participant?

How has the PbD approach improved the IRB? How can PbD support rather than hinder research when we struggle with this view that HIPAA often gets in the way of research? Supplementing privacy and security policies with PbD best practices provides a proactive approach to mitigating risk. Some best practices include: a) for data repository releases, ensure there is an audit log and completion of a data sharing agreement; b) well thought-out Informed Consent agreements can go a long way toward reducing the risk that a subject will file a complaint claiming their PHI has been compromised. Subjects must be informed about what private information will be collected; who will be able to access it and what measures are in place to protect it; c) carefully crafted Data Use Agreements (DUAs) to address important issues such as limitations on use of the data, liability for harm arising from the use of the data, publication, and the privacy rights that are associated with transfers of confidential or protected data. An effective DUA can help avoid later issues and will ensure that data is used appropriately for a specific research project,

protecting both the provider and the recipient; and d) for any new applications, systems or software, ensure there has been a security review by information technology experts prior to implementation or use.

CONCLUSION

Over the last several decades we have seen how data is reshaping healthcare. Healthcare organizations are using and disclosing data to improve healthcare quality, reduce healthcare costs and provide support for reformed payment structures. Tumor Boards contribute to the quality of healthcare by determining the best possible cancer treatment and care plan for individual patients. Ground Rounds are an important teaching tool for medical education and inpatient care. These services are essential for improving quality healthcare. The hospital strives to be in compliance with federal requirements to protect PHI. The reality is that most privacy and security breaches can be traced back to human error.

Data mining and the use of data for research is essential for researchers. At the same time, appropriate safeguards are essential to govern disclosure and use of what is often sensitive information. However, varying challenges exist within this landscape. Complex privacy legislation is open to interpretation, there is the constant fear of privacy breaches around every corner. This is not helped by the general public's perception that compiling population-wide repositories of sensitive and identifiable data will pose major risk to subjects. And, organizational data stewards or custodians worry about unauthorized use or disclosure of data by researchers, such as the re-identification of individuals. The public worries about increasing privacy risks related to constant shifts in technology, especially when it comes to the electronic health record.

Researchers are using technology to collect data from new sources such as the internet and social media along with sharing data via cloud computing services for research projects. Hospitals are using technology to collect, use and share data for improving services. Thus, PbD is an essential tool for ensuring an accountable privacy and security program is in place – one where the hospital and the research community are proactive in safeguarding PHI in a manner that maintains individual autonomy while protecting individuals from social, financial and physical harms.

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CHED: Carbon Health Education for Diabetics

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ABSTRACT

Telehealth utilizes therapeutic communication and care theory in order to provide health education. The researcher developed a telehealth study entitled, "CHED: Carbon Health Education for Diabetics" conducted over a ten week period using POTS (plain old telephone system). The researcher planned, implemented, and assessed a telehealth study designed to create caring and helping relationships with elderly type 2 diabetic people who reside in Carbon County, PA.. The aim of this study was to determine the impact of the program on elderly type 2 diabetic people's perception of helping relationships.

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TELEMEDICINE: ITS IMPACT, CHALLENGES & BENEFITS

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ABSTRACT

Connecting patients with appropriate physicians remotely is designed to improve outcomes and reach individuals in underserved areas. Telemedicine has been used in the medical industry for over forty years and demonstrates reduced costs with remote patient monitoring, and some diagnostic testing. Yet, there are inherent challenges in developing telehealth programs and tracking follow-up care depending on the specialty and patient needs. This paper explores the challenges, benefits and impact of telemedicine.

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HEALTHCARE FACILITIES: ANOTHER TARGET FOR RANSOMWARE ATTACKS

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HEALTHCARE FACILITIES: ANOTHER TARGET FOR RANSOMWARE ATTACKS

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ABSTRACT

Ransomware is a type of malware used by cyber criminals who encrypt files and then extort money in return for unlocking those files. Without adequate disaster recovery and backup plans, many businesses are forced to pay the ransom. We examine recent ransomware infections in healthcare settings, the liabilities and cost associated with such infections, and discuss possible risk mitigation tactics. Risks associated with ransomware attacks on healthcare facilities include financial, future business loss and damage to reputation. Healthcare facilities should have a disaster plan with adequate data backups and educate employees who are the usual sources of ransomware attacks.

INTRODUCTION

Ransomware refers to a type of malware used by attackers that first encrypts files and then attempts to extort money in return for the key to unlock the files by demanding a "ransom" (Bridges, 2008). These ransoms are most often demanded in the form of bitcoins, a type of cryptocurrency. When using bitcoins, transactions are irreversible, there is also a low fee of approximately $0.043 USD per transaction, and the owner of a particular bitcoin account can remain anonymous (Angel and McCabe, 2015). Due to bitcoin's ability to make transactions easy while protecting the anonymity of those involved, it has become the preference currency for criminal activity including ransomware hackers (Schneider, 2014; Swartz, 2017). According to a November 2015 report by the Cyber Threat Alliance, a single ransomware variant - CryptoWall 3 - was responsible for 406,887 attempted infections and $325 million in damages since it was discovered in January 2015 (Kumar, 2015). Based upon these financial estimates, it is believed that new variants of this version of ransomware and other ransomware approaches are certainly being developed and released (McCarthy, 2016). In fact, one estimate reports the number of new ransomware variants being developed as 100,000 a day (Pollock, 2016)!

In the past, ransomware of attacks had primarily been used to target individuals; however, criminals have the ability to not only encrypt the files on an individual victim's local computer, but they can also encrypt networked files to which that user had access. This makes organizations a more lucrative target for cybercriminals (Bridges, 2008). In fact, according to the U.S. Department of Health and Human Service Office for Civil Rights' Breach Portal, which displays breaches of health data that affect 500 or more people, over 325,000 healthcare data breaches were reported (Arndt, 2017)

Ransomware is typically spread through fake emails that have been designed by the hacker to appear legitimate (Mustaca, 2014). These emails may contain a link to an infected website or include an attachment such as a Word document that contains macros. Once a link is clicked or a document is opened, it downloads and infects the machine quickly: estimates vary from seconds (Correa, 2017; NFF, 2017) to 20 minutes (Cybereason, 2016). During this time, the malware searches the hard drive, network files, external drives, and cloud drives for all files that can be encrypted. After encryption, a "key" is required to unlock the files; this key is saved by the hacker, and this key in not released until the victim pays a requested amount or "ransom" (Mustaca, 2014).

Prior to 2016, healthcare organizations were not thought to be a primary target for ransomware (McCarthy, 2016). However, hospitals have become an easy target for hackers, for two reasons: (1) the necessity for computer-stored information associated with patient care (e.g., electronic medical records) and (2) the security holes in information technology (IT) systems. In fact, a report from Ponemon Institute, in 2016 stated that 89% of healthcare organizations suffered at least one data breach involving the loss of patient data over a 2-year period, and 45% had more than 5 such breaches. In addition, the frequency of successful hacking of patient medical files increased from 55% in 2015 to 64% in 2016. When hit with ransomware, some hospitals have been desperate to pay the ransom due to their need to provide critical care to patients with the most up-to-date information such as drug interaction, care directives, and medical history (Zetter, 2016a).

Ransomware has made it easy for hackers to attack hospitals due to their sudden adaptation of IT without a concomitant increase in the number and sophistication of IT support staff. This adaptation occurred after the government allocated funds for Meaningful Use, which was used to encourage the use of EHRs. With the Meaningful Use incentive, EHR utilization has increased from 9.4% in 2008 to 96.9% in 2014 (ONC, 2015).

With such a substantial increase in IT utilization in a short time frame, many healthcare facilities have been unable to adopt adequate network and other information technology resources to combat potential attacks (Verizon, 2016). Without adequate resources, many hospitals simply do not have the staff to provide simple barriers to hackers such as prompt installation of patches. According to a 2016 report by Verizon, 85% of successful exploits take advantage of vulnerabilities such as outdated patches.

The purpose of this study was to determine the extent of recent ransomware infections in the healthcare setting, the risk liabilities and cost associated with infections, and to determine possible risk mitigation tactics.

METHODOLOGY

The primary hypothesis of this research was: in the event of a ransomware attack, hospitals may suffer significant profit loss if they are not properly prepared with adequate information technology resources and business continuity/disaster recovery policies.

The methodology for this study was a literature review. The method used, shown in Figure 1, is an adaptation of the conceptual framework by Yao, et al., which illustrates the factors of a ransomware attack and how they promote or discourage these attacks. The ransomware process starts with a cybercriminal targeting a hospital. When the ransomware is detected by the hospital, a decision must be made to pay the ransom if they had not previously planned for such an attack and were not able to use disaster recovery methods to restore data. If payment is made to the cybercriminal, this promotes hackers to use ransomware attacks and other criminals while proper disaster recovery and risk mitigation discourages the ransomware process.

The study was conducted in three stages: (1) identifying literature and collecting data (2) analyzing and evaluating the literature, and (3) categorizing the literature found.

Step 1: Literature Identification and Collection

The key terms 'ransomware' and 'healthcare' or 'information security' or 'disaster recover' or 'cost' were searched through scholarly electronic databases. Databases included of PubMed, Academic Search Premier, ProQuest, and Google Scholar. Reputable websites of the Federal Bureau of Investigations and the International Association of Privacy Professionals were also reviewed.

Step 2: Literature Analysis

The literature review generated 29 sources. Since ransomware has only recently become an issue in healthcare information technology (IT), searches were limited to articles published between 2005 and 2017 in the English language.

A semi-structured interview was conducted on August 26, 2016 with Paul Smith, a lawyer who is an expert in healthcare legal concerns. In addition, a personal communication was accompanied on August 31, 2016 with Dennis Lee, a Chief Information Officer who is an expert in healthcare information technology (Appendix A & B). The professionals are referred to as an "Expert in Healthcare Law" and an "Expert in Healthcare Information Technology" throughout the review. The literature search was conducted by NS and validated by AC, who acts as second reviewer and double checked that references met the research study inclusion criteria.

Step 3: Literature Categorization

Original articles, reviews and research studies including primary and secondary data were included. Relevant articles were selected after a review of the abstracts was performed in order to determine if they were relevant to the research criteria. The findings are presented in the following results and categorized under the major subheadings of "Details of Previous Ransomware Events," "Risk Liabilities and Cost of a Ransomware Attack," and "Risk Mitigation and Information Security."

RESULTS

The rate of ransomware incidents has been growing, not just in the healthcare industry, but for all enterprise industries. The FBI estimated that by the end of 2016, monetary loss due to ransomware be over $1 billion (Brewer, 2016). The number of ransomware variants has been also increasing: aaccording to a 2016 Symantec report, there was a 250% increase in the number of ransomware variants from 2013 to 2014 (Savage, Coogan and Lau, 2015). More than 4 million ransomware variants were detected in the first quarter of 2015, including 1.2 million new ones, compared to fewer than 1.5 million total samples in the third quarter of 2013, when fewer than 400,000 were new (Brewer, 2016). Interestingly, McAfee Labs (2016) has predicted that ransomware attacks will peak in 2017 and decline thereafter, but others (Ashford, 2017; Butler, 2016b; Liska, 2017; Muncaster, 2016; Sustar, 2016) do not share in this optimism, believing instead that ransomware attacks will increase in both number and sophistication in 2018 and thereafter, at least until a solution to the problem is found and applied on a widespread basis. In an analysis of

internet traffic in 2016 of the US, Bitdefender, an internet security software firm, found that over 61.8% of malicious internet files were found to contain some form of ransomware (Arsene and Gheorghe, 2016).

Details of Previous Ransomware Events

The first documented case of hospital ransomware was at Surgeons of Lake County in 2012. A similar attack occurred two years later in 2014 at Clay County Hospital. In both events, the extent of ransomware attack was not detailed; a ransom was believed to be paid in both cases, but the amounts were never disclosed (HIPAA Journal, 2016).

However, it was not until the highly publicized (Mogg, 2016; Waddell, 2016; Winton, 2016a) ransomware attack at Hollywood Presbyterian Medical Centre in February of 2016 that hackers actively began to target healthcare facilities. In this attack, staff was unable to access patient records, X-rays, and other equipment, or to restore equipment from backup data and was forced to pay the ransom (Goldsborough, 2016). Initial reports claimed that the criminal initially demanded a ransom of $3.6 million but the ransom was negotiated down to approximately $17,000 or 40 bitcoins (Network Security Journal, 2016).

Paying a ransom, however, did not ensure that cybercriminals will provide the encryption key for the locked files. In the case of Kansas Heart Hospital, the ransom was paid, but the key was not provided. Instead, the cybercriminals demanded a second, larger ransom, which was not paid (Jayanthi, 2016).

After the success of the ransomware attack on Hollywood Presbyterian Medical Centre, the healthcare industry was targeted more frequently, with two hospitals attacked later that month and five hospitals targeted the next month. These affected hospitals did not pay the ransom, but instead were able to restore information from their backups (Network Security Journal, 2016). Ransomware attacks on other hospitals and health systems quickly followed within a month (see Table 1).

Risk Liabilities and Cost of a Ransomware Attack

According to an interviewed legal expert (Expert in Healthcare Law, personal communication, 2016, see Appendix A), there have been four risk categories associated with ransomware attacks: medical malpractice, data privacy, property, reputation, and cost and expenses issues. Although medical malpractice has been a regular concern for hospitals, there could be an additional risk of medical malpractice during a ransomware attack if patient care would be impacted or a patient was harmed as a result of ransomware: for example, if there was a medication error on a patient when the Computerized Prescription Order Entry (CPOE) system was down.

In a 2013 study the effects of CPOE on medication errors, data was pooled from the 2006 American Society of Health-System Pharmacists Annual Survey, the 2007 American Hospital Association Annual Survey, and the 2008 Electronic Health Record Adoption Database in order to approximate the reduction in medication errors that occur when using CPOE. This study found that CPOE reduced the rate of errors by 48%. If a hospital relying on a CPOE system was to lose that system due to whatever cause(s), the rate of prescription errors associated with returning to a manual prescription would increase substantially, perhaps doubling, especially during the forced transition when individuals who were familiar with the CPOE system had to be re-trained or trained to use the manual system (Radley et al., 2013).

The second threat has been the risk of patient data privacy loss, which could then lead to a HIPAA violation. During the first response to a breach, it is important for staff to identify, if possible, the type of malware that has infected their network. After the malware has been identified, professionals should assess what risks that particular malware has and if a solution to decrypt the files can been found (Lee, 2016; Sternstein, Maser and Nelson, 2016). Unfortunately, decryption without the necessary key is extremely unlikely and there are no free tools currently available to decrypt files (Cyber Point and Europol, 2016; Kennedy, 2017).

The risk of reputation loss and loss of future business were calculated in an annual study by the Ponemon Institute (2012), which examined cost related to 49 companies in the US and interviewed 400 individuals. This study found that, in 2011, the companies interviewed averaged over $3 million in losses related to reputation loss, abnormal

turnover of customers, increased customer acquisition activities and diminished goodwill. In a follow up study (Ponemon, 2016), 24% of companies surveyed expressed concern that their reputation would be diminished if they were to suffer a ransomware attack.

The final risk is cost and expense losses. In 2015, the average total cost of a data breach was $4 million (IBM Global Technology Services, 2016). The average cost per record spent in the healthcare industry in 2014 was $355, which would be a substantial amount for a large or small hospital to pay per record (IBM Global Technology Services, 2014). This may or may not include additional costs associated with a data breach which could vary when size of the organization and number of patients affected is considered. Such variable costs include credit monitoring per patient which may cost anywhere from $8 to $30 per person, depending on the level of monitoring needed (Identity Theft Protection Association, 2012).

If the institution chooses to pay the ransom, the average ransom demanded has been approximately $10,000 for enterprises and $700 for individuals. In a report published by cyber data and security vendor Imperva, attackers have often tailored the ransom to which country the affected institution is located. For example, the average demanded ransomware cost in the United States has been $700: however, in countries such as Israel, Russia, and Mexico, the average price has been $500. For this reason, companies in more developed nations such as the US are more popular targets as they are believed to be able to afford to pay a greater ransom (Everett, 2016).

Risk Mitigation and Information Security

The IBM Security Services Cyber Security Intelligence Index, an annual report complied with the results of forensic investigations into the security incidents of the year, detailed events of over 1,000 of IBM Security Services clients in over 133 countries in 2014. The findings of the report showed that in 2014, over 95% of all investigated security incidents were attributed to "human error" with the most common reason being a user clicked a malicious attachment or unsafe web link (IBM Global Technology Services, 2014).

At the 2016 Cryptography and Information Security-Related conference, a cybersecurity event, 200 information security professionals who attended were interviewed. The results of the interview showed that 58% of those interviewed reported their company had seen an increase in spear phishing in the last year. Spear phishing – sending an e-mail which appears to originate from a high-ranking member of the organization (Butler, 2016a) – has a much higher chance (70%) of being successful than simply sending an e-mail with an attachment on which the receiver can click to open (1-3%) (Mangelsdorf, 2017). Of those interviewed, 52% did not feel confident that their executives could successfully identify a phishing scam and 58% expected that their company had seen more spear phishing attempts in the previous year (Boose, 2016).

Employees are often the "entry point" for ransomware (Andt, 2017b). Based upon a survey of 618 individuals in small to medium-sized organizations who have responsibility for containing ransomware infections in their organization, 58% reported that negligent employees put their company at risk of a ransomware attack, while only 29% were very confident (9%) or confident (20%) that their employees would be able to detect risky links or sites that could result in a ransomware attack (Carbonite, 2017). In an empirical study conducted by PhishMe, 8 million simulated phishing emails were sent to 3.5 million enterprise employees. In this study, 87% of employees who opened the malicious attachment did so within the day. Of the users that clicked the malicious files in the initial email, 67% opened a malicious file again when sent a second simulated phishing email (Anonymous, 2016). This risk could obviously be mitigated by better employee education. One company, KnowBe4, was able to decrease the number of employees who clicked on a potential phishing scam from 15.9% to 1.2% (Zetter, 2016b).

Data backup has proven a critical step for any prevention plan: without a way to restore the encrypted files, businesses may have no choice but to pay the ransom in order to continue business (Siwicki, 2016). However, when it comes to ransomware attacks, it has not enough to simply backup data. Data must also be backed up in such a manner that the backup process itself is not connected to computers or networks, lest the backup also become encrypted and held for ransom. One example of this would be to physically store the information offline or in a cloud storage solution not attached to the network. Some instances of ransomware have even been known to seek out and destroy network backups (Zetter, 2016a), making the offsite physical storage of backup data even more important to prevent the backups from contamination. For years, many studies (e.g., Backblaze, 2015; Heat Software, 2016; Titan,

2016) have suggested a 3-2-1 approach to backup: have at least 3 copies of the data, utilize two different media formats, and have one of the copies be offsite (Backblaze, 2015; Heat Software, 2016; Titan, 2016). Veeam (2016) suggested adding an additional level of security (3-2-1-1), store one of the media offline, and allowing the implementation of an offline or semi-offline copy of the data. However, backups suffer from several inherent problems. While it would be a viable option to restore data that has not been frequently accessed, but they are always be a "snapshot in time," they will always be behind current data; i.e., some most current data will virtually always be lost (Tuttle, 2016). Also, if a digital backup was not quickly available, at least some, if not many, staff could be unfamiliar with "paper" forms, potentially further impeding patient treatment (Cox, 2016). Finally, because cybercriminals recognize that many organizations are moving their backups to the cloud, eventually a way may be found to attack this also (Phillips, 2017; Spector, 2016).

DISCUSSION

Results showed that if a ransomware attack is successful, healthcare providers can face substantial financial and even clinical consequences. Proper risk mitigation and disaster recovery are crucial to reduce costs and the likelihood of data loss.

During a ransomware attack, information systems are shut down and staff members suffer from a denial of access to key information systems that they have relied on for decision making. Following a successful attack, providers would likely notice a substantial increase in medication errors associated with the CPOE. This, and other built-in EHR functionality (e.g., current medications or medication allergies, are likely to result in increased errors by staff and impaired decision-making capabilities by physicians, resulting in increased liability for both the institution and the healthcare clinicians.

Some potential costs that may be incurred by an organization during and after an attack are the cost of an initial response team, the loss of potential business while the response team restores backup data and installs new equipment, and cost associated if a call center must be temporary set up to answer patient questions about the attack. Hospitals could also suffer actual damage to hospital property. In terms of ransomware, property damage may be any software, hardware, or EHR records that are lost or damaged during the attack. Equipment items such as servers could be so damaged with malware that there is no way to recover them which will then result in further costs to the hospital (Expert in Healthcare Information Technology, personal communication, 2016, see Appendix B). Fortunately, to date no patient deaths have been reported due to a ransomware attack on a hospital, although concerns about the possibility of such an occurrence abound (Condliffe, 2017; Scott and Perlroth,2017. Wong and Salon, 2017). However, the consequences of any patient death due to a ransomware attack are sufficiently severe that the Food and Drug Administration has begun to co-ordinate with other federal agencies regarding how to best respond should one occur (Sheber, 2017).

If only for business continuity reasons, it is very important for healthcare facilities large and small to have a disaster recovery plan with steps in place to recover from any malware attack. Not only must a business have this plan, but also have an adequate storage for data that does not include networked backups. Businesses must also make sure to test backups regularly to ensure information is being saved correctly and can be restored. Without this, businesses have limited options during a ransomware incident to either pay the ransom or to completely lose all data (Expert in Healthcare Information Technology personal communication, 2016, see Appendix B).

Although data backup and a recovery plans are essential, efforts should obviously be made to prevent an attack before it starts. Users have been identified as the weakest link for hackers, and user education as well as adequate detection of policy violations have the potential to make a significant difference in deterring risky end user behavior that makes a network vulnerable to attack. One specific suggestion regarding how to prevent users from inadvertently exposing hospitals to a ransomware attack is to prohibit individuals from opening personal e-mails using one the facility's computers, because "an organization's internal e-mail client is likely to have more sophisticated spam filters than web-based providers such as Gmail and Hotmail (Butler, 2016a)." Unfortunately, convincing busy physicians and healthcare staff to avoid this practice would be difficult, at best.

If the ransomware only encrypted files and did not steal information, it may not have been considered a HIPAA breach. However, if the ransomware also stole patient data before it encrypted it, there would be many factors

to determine if this had been a HIPAA violation. One factor to determine if a HIPAA breach occurred is what data media and equipment had been infected and if those devices had been encrypted at rest. This means that if a server with patient information just encrypted information being transmitted and not the information on the server, this information could be subject to theft and a HIPAA violation. If the server was encrypted at all times, even at rest, this would not be considered a breach if criminals copied the information since they would not be able to access the files (Expert in Healthcare Law personal communication, 2016, see Appendix A).

Notwithstanding financial losses, one of the biggest concerns for hospitals should be reputation loss. Much of the costs associated with an attack can be recovered by cyber security insurance. Hospital reputation, however, and the loss of public trust in the facility can result in irreparable harm and profit loss if patients decide to go to another hospital. With the loss of business, smaller hospitals simply would not be able to afford to stay in business long after an attack (Expert in Healthcare Law personal communication, 2016, see Appendix A).

LIMITATIONS

The literature review was limited by search strategy. This publication bias, along with the restricted number of databases utilized, may have constrained the contents of the review. Researcher bias may have also have been present which could have limited the review.

Another limitation of this study was the lack of current research that exists for ransomware in the healthcare settings. Little in-depth research has been conducted to determine the average cost per attack. Without this research information, the study relied on data from other business fields and expert interview information which may or may not be applicable to the average healthcare facility during and after a ransomware attack.

Due to how new the topic of ransomware is in healthcare, research information was also limited on what long-term consequences, effects, and damages a healthcare facility may face after a ransomware attack. There was also no available information on the impact to a business if a ransom was paid versus if the business was able to complete a full data recovery from backups. This information would have been useful to illustrate the benefits and challenges associated with both outcomes.

Practical Implications

Due to the recent payment of ransoms in 2016 by Hollywood Presbyterian Medical Centre and Kansas Heart Hospital, it is possible that in the future, the healthcare industry will not only be a major target for additional ransomware attacks, but will also become a target for other cybercriminal hacks such as other types of malware or denial of service. If the majority of healthcare facilities refuse to pay the ransom, this trend may decrease in time, but this seems unlikely. The downside risk to cybercriminal appears slight, as no convections have been noted in the literature, and the upside gain is substantial.

In addition, if ransomware is able to take advantage of the patient data, the anticipated trend in cyberattacks on healthcare facilities could potentially become a larger issue. Although currently ransomware does not appear to have been developed specifically to view patient information and therefore would not be a HIPAA concern, this may not continue to be the case in the future. If a server or computer is not encrypted at rest and only encrypted during incoming and outgoing transactions, a ransomware virus could be adapted to exploit this vulnerability and copy the information on the server. If this were to happen, the provider would be open to all the previously mentioned costs in addition to the cost associated with HIPAA data breach violations as well.

Hackers would also be able to leverage the public release of patient information to the hospital for a higher ransom to facilities. In this case, these facilities might be even more willing to pay the ransom. If successful, this would, of course, also certainly lead to an increase in ransomware attacks on healthcare facilities.

CONCLUSION

The number of ransomware attacks and variants has increased in recent years. Healthcare has become a major target for these attacks and in response to this increase it is crucial that they develop a proper disaster recovery plan and properly educate their users on information security. With proper planning in place, a healthcare facility is not only more likely to survive an attack but to also decrease costs associated with them and to mitigate the risk of reputation loss.

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Table: Details of Ransomware Events in Healthcare Immediately Following the Hollywood Presbyterian Medical Centre Incident

Hospital	Data Affected	Action Taken	Source
February 10, 2016 Lukas Hospital Neuss, Germany	Shutdown of all systems due to email attachment	No ransom paid, systems restored via backups and a few hours of data lost	Network Security Journal (2016)
February 12, 2016 Klinikun Arnsbury North Rhine-Westphalia, Germany	Detected on of 200 servers, network shut down to prevent infection	No ransom paid, systems restored via backups and a few hours of data lost	Network Security Journal (2016)
March 14, 2016 Ottawa Hospital,Canada	Four computers encrypted	No ransom paid, restored from backups	Pilieci, (2016)
March 18, 2016 Prime Health Care: Chino Valley Medical Center & Desert Valley Hospital Victorville, CA	Number of computers had locked data and some hospital servers	No ransom paid, backups restored	Winton (2016b)

March 21, 2016 Methodist Hospital Henderson, KY	Critical files encrypted	No ransom paid, systems restored via backups	Landi, (2016)
March 28, 2016 Medstar Health Baltimore, MD (a 10 hospital system)	No breach in patient data, but email and clinical support systems were unavailable	45 bitcoin ransom demanded ($19,000) but no ransom paid	Reed (2016)

APPENDIX A

Questions asked in a Semi-Structured Interview of Paul Smith, VP/General Counsel, Cabell Huntington Hospital, Huntington, WV, an Expert in Healthcare Law, August 26, 2016

- What are some of the legal implications involved with a ransomware incident?
- If the hospital is unable to provide key services what legal actions can be taken?
- How would a ransomware incident at a hospital's business associate affect the hospital?
- Would a ransomware attack be considered a HIPAA breach?
- How are criminals prosecuted in the case of a ransomware attack?

APPENDIX B

Questions asked in a Personal Communication of Dennis Lee, VP/CIO, Cabell Huntington Hospital, Huntington, WV, an Expert in Healthcare Information Technology, on August 31, 2016

- What do you think is the most likely avenue for a ransomware attack at a healthcare facility (ex: email phishing)?
- In the event of a ransomware attack, what are the procedures for response?
- What costs would be associated with response and recovery?
- What are some important aspects of a malware prevention plan?
- In your opinion, when a hospital suffers a ransomware attack would this be concerned a HIPAA breach?

TRACK
HEALTHCARE ECONOMICS AND FINANCE

ECONOMIC IMPACT OF CAREGIVING FOR DEMENTIA PATIENTS

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ABSTRACT

Objectives*: The study investigates the impact of caregiving for dementia patients on the health care service utilization by caregivers and examine its economic outcomes.*

Hypothesis: *Health care services utilization by caregivers of family members with dementia will greatly increase. The null hypothesis is that there is no change in health care costs for dementia caregivers.*

Data sources*: A non-probability convenience sample is used in this study. Instruments for the data collection included demographic information sheet, health care service utilization questionnaire, modified SF-36 scale, and disease specific SF-36 scale After acquiring the data on the rate of health care services utilization, and thoroughly searching through the literature on their cost per visit, we have calculated the average costs and used them to make estimates of how much dementia caregivers cost to the economy.*

Findings: *Utilization of health care services was significantly higher for caregivers in every category compared to non-caregivers. This, then, translates into healthcare resources utilization costing billions of dollars.*

Implications: *The research provides information about the healthcare service utilization of individuals who provide care at home. By measuring and identifying healthcare needs of the caregiver, it is possible to effectively address the economic impact of caring for dementia patients.*

Key words: caregiver burden, dementia, healthcare utilization, healthcare costs

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INTRODUCTION

Around 18 million people worldwide who have already been diagnosed according to the World Health Organization.[1,2] Dementia of the Alzheimer's type is projected to increase fourfold by 2050 globally due to declining birth and mortality rates, and increased life-extending medical care. Persons 65 and older is projected to represent 20 percent of the population by 2030, with those 75 years old and older comprising the fastest growing segment of the population, and the most vulnerable to both physical and mental disease.[3]

Many of these older adults continue living in the community, often with family members providing the majority of care services. This new "greying" of the US population has been associated with a dramatic rise of individuals diagnosed with Alzheimer's disease, which is an organic brain disorder and is currently incurable. It is also the most frequent cause of irreversible dementia, otherwise known as senile dementia of the Alzheimer type (SDAT) or primary degenerative dementia. Estimates suggest that 4 to 6 percent of persons diagnosed ages 65 and older are severely incapacitated, and another 10 percent are moderately impaired.[4]

Dementia symptoms range from confusion, forgetfulness, and short-term memory loss in the early stages, to unpredictable behavior, intellectual function, and personality deterioration in the late stages. The treatment focuses on symptom management and promoting independence in daily activities to the greatest extent possible, however due to the disease's progressive nature, patients will eventually need a caregiver. Families and friends are a primary source of home care and support for dementia patients, especially when this is the cultural expectation. They contribute to services that would otherwise cost hundreds of billions of dollars annually if they had to be purchased. In addition, caring for a patient with dementia is typically more challenging than caring for a patient with physical disabilities alone.

In 2016, 15.9 million family and friends provided 18.2 billion hours of unpaid assistance to those with Alzheimer's and other dementias. This contribution is valued at $230.1 billion.[5] With the increased responsibilities of caring for dementia patients, caregivers undergo stress, utilizing more healthcare resources due to different disease states; depression, hypertension (HTN), hypercholesterolemia, increased doctor visits, emergency room (ER) visits and hospital utilization. More use of healthcare sources and costs equates to a decreased quality of life, increased 'burden' and further health related deterioration.[1,2,6] Due to this, high level of burden and stress are reported for caregivers of dementia patients in studies published in the last decade.[1,7]

Many of them have looked at the prevalence of clinical depression and anxiety among caregivers when compared to non-caregiving populations, but the impact of caregiving on the health care services utilization by caregivers has not been made clear. The impact of health care service utilization could greatly impact the economy as the population continues to age and dementia prevalence increases. Since there is an increasing need for long-term care due to dementia, the economic impact with regards to cost is something that must be discussed and studied.

The purpose of this study is to investigate the impact of caregiving for dementia patients on the health care service utilization of caregivers. This study will also examine if caregivers utilize more healthcare services than a control group.

Caregiver burden has been defined as a multidimensional response to the negative appraisal and perceived stress resulting from taking care of an ill individual.[8] Caregiver burden threatens the psychological, physical, emotional and functional health of caregivers. They report more physical and psychological symptoms and use more

frequent prescription medications and healthcare services than comparable non-caregivers. Amongst Kim's study, it was found that caregiver burden is defined by diseased related factors of the dementia patient, socio-demographic and caregiver related factors, making up 16%, 15%, 11%, respectively. In addition, caregivers who are advanced in age, females and co-residents of dementia patients experience greater burden than young, male caregivers and those who live apart from the care recipient. In all it seems that many factors have an effect on the caregiver's quality of life, from culture to sex.

In 2007, approximately 10 million Americans were caring for a person with Alzheimer's disease or another dementia.[9] Caregivers face many obstacles as they balance caregiving with other demands, including child rearing, personal relationships and career.

Almost 60% of US family caregivers of people with dementia are also employed, of whom 2/3 reported that they missed work, 8% that they turned down promotion opportunities, and up to 31% that they had given up work to attend to caregiving responsibilities.[10]

Caregiving is a dynamic process characterized by changes in sleep, mastery, and stress that contribute to changes in caregiver mood and health. [10] It has been shown that caregivers of dementia patients often have higher levels of stress and depression when compared to caregivers of older adult patients, or patients who have suffered from another health issue. Overall, stress associated with caregiving leads to lower self-ratings of health.

In a meta-analysis, it was indicated that when compared to non-caregivers, caregivers had a prevalence of chronic illnesses, such as hypertension, arthritis and heart disease. [6] Female caregivers are also at a higher risk for depression and stress than their male counterparts, as well as older caregiver than younger.[2,11]It was also found in a study that caregivers taking care of patients with dementia had a higher consumption of drugs and nonpharmacological therapies. The found that caregivers consumed more anxiolytic, antidepressant, and antiplatelet medication than the control group. They also found that nonpharmacological therapies were used more than the control group by a large amount.[12]

Dementia eventually leads to death, it is a disease that cannot be cured or slowed at this time. This will affect informal caregivers greatly, mainly due to increased hours, complication, and the overall deterioration of the patient. One study looked at the end of life care and its effects on the bereavement of family caregivers.[2] It showed that more than half of the caregivers felt as though they were "on duty" 24 hours a day towards the end of life for the patient. Unlike non-caregivers, after death of the patients caregivers showed a clinically significant decline in levels of depression after three months and many reported the death as a relief to both the patient and themselves as caregivers. [2] Another study looked on the Hospice care and the effects on spouses health and mortality rates after the death of the patient.[13] The underlying thought to Hospice care is that patients who die "good deaths" impose less stress on their spouses. It was shown that with the use of Hospice care does in fact have an impact on the mortality outcomes of spouses.[14]

Some studies, such as the one by Svendsboe et. al. found differences in caregiver distress between caregivers of people with dementia with Lewy bodies (DLB) and Alzheimer's disease (AD) with the goal of improving support for caregivers. Caregivers to people with AD and 40% of caregivers for people with DLB experienced moderate to high burden with an increased risk of psychiatric disorders in the early stage of dementia. Caregiver distress differed between people caring for patients with AD and those with DLB. This study used a large cohort and the data confirmed that a high proportion of caregivers for people with mild dementia experiences moderate to high burden with increased risk of psychiatric disorders.[15] The findings show that people who care for DLB patients have a significantly greater burden compared with those caring for people with AD.

Nurse's role in home health care has expanded from being primary caregivers to teaching and assisting family members to provide care. Similarly, social workers now play a critical role in providing advice and support to caregivers. A prospective cohort study performed by Bleijlevens looked at caregiver burden and health-related quality of life in eight European countries; Estonia, England, Sweden, Finland, Spain, France, Germany and the Netherlands. The countries selected operate differently in terms of long-term care and welfare systems. Conclusions from this study were that there was a greater burden for caregivers in the at home setting in comparison to an institutional long-term care environment. Also, a transition from home to long-term care had a positive effect on caregivers. They experienced

a decreased burden and decreased psychological distress. Thus, interventions need to be country specific and tailored to the individual's' needs.[13]

The caregivers' view on the social support they are receiving is the most critical factor in how they are affected. A case study of by Monahan showed significant findings on personality and social support. The study demonstrated a correlation with personality and social support. [16] The use of support often times has a positive impact on the caregiver. Mittelman and Roth, et al. showed with regards to caregivers of patients with Alzheimer's disease, those offered supportive intervention showed a decrease in depression scores. The treatment group was given personal counseling sessions, a weekly support group, and a continuing support from an assigned counselor throughout the patient's treatment. Although the control group still received a basic line of support, they did not have all the resources the treatment group was able to utilize and still suffered from stress and depression, especially at particularly hard times of transition for the patient.[17]

The role of dementia care networks (DCNs) is valuable for caregivers of dementia patients. More formalized knowledge management in dementia care networks can lead to a more knowledge among family caregivers. Overall, DCNs increase the quality of information available and improve support for people with dementia and their caregivers through knowledge management.[18]

A number of studies, focusing on the impact of caregivers' knowledge in the disease of dementia, might build some resilience. A lot of caregivers would like to know the medical jargon so that way communication with the healthcare provider is better understood.[19] Better strategies that identify the needs of caregivers would be beneficial in what they do and will help them be more resilient while taking care of the patient.

In addition, some studies have determined that training is essential for caregivers to get the medical knowledge and skills needed to take care of a patient with dementia.[19] If caregivers are given training before they start to interact with their patient, they can learn coping skills. These programs will help promote understanding of the disease and will help provide education and support to the families.

A study performed by Richard Schulz looked at Alzheimer's caregivers in the REACH 1 project (Resources for Enhancing Alzheimer's Caregiver Health) to see if their health use was difference from non-caregivers and by how much. The result showed in the 19 months of the study, the caregivers' self-reported health declined steadily and significantly. Emergency room visits and hospital-based services doubled over time, showing an overall 25% trend in increased use of all types of health services.

Health care for family caregivers providing care for someone with Alzheimer's cost an average of $4766 more per year.[20] Due to these costs and the negative health outcomes of caregiving, it is important to look at the cost difference in caring for an individual at home or in a nursing home facility, as well as the quality of life the patient will have if they are living in a nursing home. From an economic standpoint, the least costly option that also has the least impact on individual's health is the best option.

By doing a comprehensive literature review, we found average costs of the healthcare services our sample was questioned on in the surveys. The services included visits to a general practitioner, a physical therapist, an optometrist, a social worker, a psychologist, a pharmacist, etc. Different sources listed different numbers for the cost of those healthcare resources.

One useful cost estimator is CPI codes, a web-based reference formulary of physician charges, published by the American Medical Association. For example, in 2011 in America, the average fee for a 15-minut doctor visit for an established level 3 (lower risk) patient was 104 dollars. Another source is the Healthcare Blue Book, an online guide to health care pricing. The process is based on the typical fees physicians all over the country accept from insurance companies. An example of this is a fee of 68 dollars for a 10-minute visit of a level 1 patient with very minor problem requiring counseling or treatment, that may or may not require coordinated care with other providers. For a patient, level 5 with complex medical problems requiring comprehensive evaluation a 40-minute visit may cost 234 dollars. If we calculate the average fee for a visit to a general practitioner throughout all 5 patient levels, we arrive at the cost of 150 dollars.

According to national Hospital Ambulatory medical care survey in 2013 emergency departments had 130.4 million visits. [22] It is estimated that more than $18 billion could be saved annually if those patients whose medical problems are considered "avoidable" or "non-urgent" were to take advantage of primary or preventive health care and not rely on ERs for their medical needs.[21] The average urgent care visits range from $50 to $150, depending on the patient's co-pay and level of treatment, while median emergency room costs for 2013, according to National Institute of Health study, was 1,233 dollars. Other sources estimate it to be about 2,168 dollars. [21] According to Kaiser Family Foundation, 87% of Americans are insured, but many are in high-deductible plans. The average high-deductible plan required patients to pay an average of 1,217 dollars before insurance coverage kicks in. Many high-deductible insurance policies are closer to 2,000 dollars for individuals and 4,000 dollars for families.[21] Addition of ambulance services, brings up the cost by anywhere from 25 to 1,200 dollars based on the insurance and plan. When calculating the average of all the numbers mentioned above, we arrive at about 1650 dollars. While health care services, such as flu vaccinations, sinus, ear and strep throat infections will cost 550 to 750 dollars in ER, in walk-in clinics they cost an average of 45 to 60 dollars- over 10 fold cheaper. [23] For the purposes of simplicity, we used the average of about 53 dollars to make our estimates.

For the lab tests, costs ranges anywhere from 60-190 dollars. [24] Hospital in patient visits range from 195 to 540 dollars depending on the length of the visit. A typical 25- minute consultation costs about 195, and a 110- minute visit costs 540 dollars. [24] This will bring the average to almost 370 dollars.

Optometrist visits are between 20 to 250 dollars, depending on the type of services the comprehensiveness of eye exams with the average calculated to be 135 dollars. [24].

As for the audiologist visit, according to Healthcare Blue book, it costs between 75 to 250 dollars, with the median cost of 92 dollars.[25] If hearing loss is detected, a patient will be a good candidate for hearing aids, which cost between $100 and $6,000. [26]

Although there is no set pricing, a podiatrist visit often costs less than a general practitioner's visit. Doug Richie Jr., DPM, FACFAS, writes in "Podiatry Today" that most podiatrist office visits cost from $400 to $600. Podiatrist may use X-rays and laboratory tests to diagnose foot ailments which could raise the cost of the doctor's visit. [27]

According to Blue Ridge foot & ankle clinic, cash prices for the patients with no insurance cost 145 dollars if it's a new patient consultation, 75 dollars for the first follow-up visit, and 50 dollars for the final follow-up. This makes the average fee to be 90 dollars. Procedures, such as ingrown nail surgery, wart treatment, cryosurgery and custom functional orthotics cost in the range of 165 to 570 dollars. [28]

Common dentist check-up and cleaning costs vary. Dentists charge different rates depending on the patient condition and the location. In most places, an average check-up costs about 288 dollars, which covers an exam, x-rays, and cleaning. [29]

As for a registered dietitian, a one-hour initial consultation typically costs about $100 to $200 to patients with no health insurance; usually on the higher end if the dietitian comes to your home. If follow up visits are required, they typically cost $50 to $150 each, depending on the duration of consultation and whether the dietitian comes to a patient's home. A registered dietitian might recommend classes on healthful cooking, which can cost $10 or more each. Some dietitians offer optional additional services, such as personalized grocery shopping and pantry stocking, that can cost $450 or more, plus the cost of groceries. [30] Thus, the range of fee will be 50 to 200 dollars not including the personalized services, and the average will be 125 dollars.

Costs for a therapy with a psychologist have an extremely wide range. They can be as high as 250 dollars for a one-hour session, but most will charge in the range of 65 to 150 dollars. [31] Sharon K. Anderson confirms in "Psychology Today" that a typical one-hour visit costs an average of 150 dollars. [32]

With regard to chiropractic services, they generally range from $30 to $200 per session. And each type of treatment has a different cost. An initial consultation with a chiropractor may be provided at no charge, while a typical therapy session costs about $65 on average. More intensive or advanced care, as well as the frequency of visits required for the treatment will most likely add to the expense of treatment. [33]

After the assessment, the physical therapist may perform varied sets of procedures for each session. Some procedures are billed by the minute. For instance, the charge for gait training could be $115 for each quarter hour. But most common procedures are charged for every 15 minutes. These can all cost between $75 and $135 per 15 minutes. [34] This adds up to be 300 to 540 dollars for a one-hour session. Health Cost Helper reports that the fee can be as low as 75 dollars and as high as 530 dollars per hour depending on the treatment procedure. [35] If we consider a range to be 75 to 540 dollars, the average ends up to be about 308 dollars.

Similarly, there is no set price for a pharmacist visit, but they are much more inexpensive. According to the APhA 2011 Medication Therapy Management (MTM) analysis, a 15-minute MTM session with a pharmacist costs 19 dollars. [36]

OTC medications are a conveniently available healthcare option for busy families and caregivers. Since the use of but over the counter (OTC) and prescription medications varies greatly person to person, we turned to statistics for help. On average, U.S. households spend about 338 dollars per year on OTC products.[37]
Regarding prescription medications, according to the nation's largest pharmacy-benefits manager (PBM) Express Scripts findings from 2013 through 2014, among 31.5 million insured Americans, the average American's annual prescription drug tab is 1,370 dollars.[38]

METHODOLOGY

Our research question was whether caregiver of family members with dementia utilizes health care services more frequently. We hypothesized that reported health care status, health care needs, and health care services utilization by caregivers of family members with dementia greatly increases. They pay more visits to health care practitioners compared to the control group. The null hypothesis is that there is no change in health care costs for dementia caregivers.

The study recruited 143 people through non-probability convenience sampling. The participants were recruited outside of local community centers, universities, churches, mosques and temples in the Illinois suburbs. The respondents identified themselves as caregivers or non-caregivers. The control group comprised of seventy-one people, whereas the experimental group had seventy-three participants.

Caregivers sharing a single household with dementia patient for the past year, not receiving financial compensations for taking care of the patients and bearing the primary responsibility for the impaired person were included in the study. Another inclusion criteria were evident symptoms of dementia, memory loss and disorientation.

Rights of all participants were protected. A cover letter and consent form accompanying the questionnaire stated that all responses would be treated confidentially, the participants will not be identified with their responses and have the right to withdraw from the study at any time.

After obtaining the IRB approval, the surveys were distributed to both groups. Four instruments for data collection were used; the Demographic information sheet, the Health care service utilization questionnaire, Modified SF 36 scale and the Disease specific SF 36 scale.

The questionnaire first asked the caregiver's relationship to the patient with dementia or Alzheimer's disease. The demographic section had questions on gender, race, marital status, monthly income and employment status. The Health care utilization part consisted of questions about the frequency of visits to support groups. The 10- point scale was used to determine how many times the caregiver utilized healthcare services in the past 6 months, with 0 not using any services and 10 utilizing such services 10 or more times in the last 6 months. Other questions in the same section asked whether the caregiver had a health insurance or had changes in health care utilization. The survey specified the visits to the type of health care provider, as well as the type of current pharmacologic therapy (OTC versus prescription) used by the caregiver.

The first part of our research aimed to determine whether there is an increased healthcare utilization among dementia caregivers by distributing the questionnaire. It first asked questions on the caregiver's relationship to the patient with dementia or Alzheimer's disease. The demographic section had questions on gender, race, marital status, monthly income and employment status. The Health care utilization part consisted of questions about the frequency of visits to support groups. The 10- point scale was used to determine how many times the caregiver utilized healthcare services in the past 6 months, with 0 not using any services and 10 utilizing such services 10 or more times in the last 6 months. Other questions in the same section asked whether the caregiver had a health insurance or had changes in health care utilization. The survey specified the visits to the type of health care provider, as well as the type of current pharmacologic therapy (OTC versus prescription) used by the caregiver.

A series of descriptive analyses were performed on the demographic variables. Chi square test and t test were used to assess and compare the health care utilization of caregivers and the control group. A 0.05 probability level was used for all analyses. The surveys were analyzed using univariate and multivariate analysis of variance via SPSS program.

The second goal of our study was to find average costs of the healthcare services our sample was questioned on in the surveys. This was done through a comprehensive literature review. For some of them we were able to find average national costs of such services, but for the rest the sources were mentioning a range of cost. In the latter case, we found the average of the ranges and reported the number in Table 2. The rate of utilization of healthcare resources or, other words, the number of visits to the health care providers listed in the survey (Table 2) for caregivers were compared to that of the control group. The difference was calculated. The number found was then multiplied by the average cost of that specific healthcare service. The number arrived was the cost for the period of 6 months, which was then multiplied by 2 to find the cost per year. Lastly, based on the statistics reported on the alz.org about the number of caregivers throughout US, we arrived at the annual cost estimate of each healthcare specialist visit by caregivers. After adding up the costs of all services, we finally projected the impact of dementia caregivers on the economy.

RESULTS

Seventy-three people responded to the control survey, while seventy-one responded to the caregiving study. The control and caregiver survey responses were compared to find any significant relations. The completed surveys were analyzed using Statistical Package for Social Scientists (SPSS) program. It was found that the majority of the caregivers and controls were female (**69**%). It was found that the majority of the caregivers and controls were female (**69**%). The largest ethnic group represented were Asians (**56**%), with both Caucasian (**31**%) and Hispanic (**13**%) ethnic groups also being present. Employment status varied. 50.7% of the caregivers were homemakers, and 14.1% worked full time. (Table 1)

Over the half of the caregivers in the experimental group were married.

Most participants were High School graduates (**22%)** and College graduates (**68**%), with the majority making a monthly income of $3500+ per month (**64%**).

The overall responses to the survey showed statistical significance ($p<0.05$) in relation to caregiving group and control. This indicates that caregivers in fact utilize more healthcare services than non -caregivers (Table 2).

The focus of the study was the health care utilization questionnaire, asking the caregiver "since you have started caregiving, has your use of health care services (including medication consumption): increased, decreased or remained the same. The 10- point scale was used to determine how many times the caregiver utilized healthcare services in the past 6 months. The 10 -point scale was graded from 0, meaning no service was utilized, to 10+, meaning the service was utilized more than 10 times over the 6- month span. Results were statistically significant for each of the healthcare service utilization when comparing caregivers to the control group.

All races stated that their health care service utilization has increased since caregiving. The findings were statistically significant ($P<0.001$), with 94% of Asians, 100% Hispanics, and 60% of Caucasians reporting increased healthcare utilization. (Table1)

After calculating the difference of visits to healthcare specialists and utilization of other healthcare services between the experimental and the control groups, we generalized the findings, and the final annual estimate was found to be about 225.5 billion dollars. This is an estimate of how much caregivers of dementia cost to the economy.

DISCUSSION

Utilization of health care services was significantly higher for caregivers in every category compared to non-caregivers. Visits to general practitioners or family doctors were three times more frequent than those in the control group. This trend was consistent throughout all health care services. Visits to pharmacists increased twice, and psychologist visits increased three times. The frequency of sociologist and occupational therapists follows a similar pattern. The use of OTC and prescription medications were also significantly higher compared to that of the control group. This leads to the implication that stress, lack of sleep, physical and mental exhaustion in caregivers leads to psychological difficulties, depression and anxiety. Thus, we suggest incorporation of support group meetings for dementia caregivers during regular doctor visits for dementia patients. This will ensure the availability of the resources, such as alz.gov to look for support group meetings and programs offered at different locations. The use of support groups significantly reduces the need of psycho-social services, indicating the importance of support group participation and health benefits for the caregiver.

The majority in the caregivers group had a monthly income of 3,500 dollars, also most of them were college graduate. The amount monthly income can be explained by their level of education, or may be related to their monthly pension rates.

Another finding of our study was that females were more likely to provide caregiver services, compared to males. This may be due to the fact that women are more available because of being home makers. Significant percentage of non-caregivers was single, while half of the caregivers were married. Even though caring for a person with dementia is a 24/7 responsibility and there is little to no time left for one's personal life, this trend was expected, since most of the caregivers are spouses of the patients or their married children in their 40s or 50s with their own families. In some cultures, caring for a sick family member is very natural. In such cases, children of sick older adult patients, who have families of their own, jobs and other responsibilities seem to handle the responsibility of intensively taking care of a sick person much better. Culture may have played some role in the fact that half of the caregivers group were Asians, followed by Caucasians and Hispanics. So, culture, upbringing and individual's believes are a few determinants of a person's ability to cope with stress. Our data also showed that the majority of the caregivers were homemakers or retired. The reason for this is that patients and their caregiver spouses are usually older adults. All the findings were statistically significant.

CONCLUSION

Caregivers of family members with dementia face many health challenges ranging from chronic illnesses to depression and anxiety. It is important to address this issue at the early stages of caring rather than face them at their critical phases. Support groups, such as dementia caregiving networks, support groups and lastly visits to psychologists can alleviate caregivers' burden and mental exhaustion that piles up due to lack of sleep, stress and physical depletion. Psychological problems that dementia caregivers face, translate into more visits to specialists, thus increased healthcare costs.

One limitation of our study was the sample size, even though the experimental group was matched with a similar size control group. Another limitation was that the caregivers were self-identified, and the researchers are not in the position to verify that. The sample was not randomized, but rather chosen on the basis of convenience sampling, thus the results can't be generalized. Future studies are recommended to use a larger sample. Our sample was a fairly good representative of the population in terms of including groups from Asian, Caucasian, Hispanic ethnicities. Future studies should also focus on the investigation of the use of support groups or developing information seminars and training programs for caregivers with the goal of teaching them coping mechanisms. These intervention or prevention techniques could be used to assist caregivers in maintaining their own health.

By accurately measuring and identifying health needs and health care services utilization of the caregivers, it is possible to more effectively address the special needs of caring for a dementia patient.

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Table 1. [1]Demographics	**Caregiver n=71**	**Control n=73**
Variable	**Percentage**	
Gender		
Male	18.3	42.5
Female	81.7	57.5
Race		
Caucasian	28.2	34.2
Hispanic	19.7	5.5
Asian	50.7	60.3
Marital Status		
Married	54.9	31.5
Widowed	29.6	0
Divorced	8.5	11
Single	7	57.5
Monthly Income		
$0-$499	0	2.7
$500-$1499	0	16.4
$1500-$2499	7	12.3
$2500-$3499	19.7	13.7

[1] The table shows the demographic data of the sample and the percent composition of gender, race, marital and employment statuses, as well as income per month in the sample of 143 participants.

$3500+	73.2	54.8
Employment Status		
Retired	23.9	6.8
Part-Time	2.8	20.5
Full-Time	14.1	60.3
Homemaker	50.7	1.4
Other	0	11

Table 2. Cost of Healthcare Service Utilization by Dementia Caregivers[2]

Healthcare Services	Number of Visits for Caregivers	Number of Visits for Control	Difference Between Visits of Caregivers and Control	Average Cost of Visit	Difference in Cost per 6 Months	Difference in Annual Cost	Number of Dementia Caregivers	Cost of Service
General Practitioner	4.3	1.6	2.7	$150	$405	$810	15.9 M[3]	$12,879,000,000
Walk-In Clinic	2.2	0.62	1.58	$53	$84	$167	15.9 M	$2,662,932,000
Hospital (in-patient services)	1.8	0.23	1.57	$370	$581	$1,162	15.9 M	$18,472,620,000
ER Visits	1.7	0.18	1.52	$1,650	$2,508	$5,016	15.9 M	$79,754,400,000
Medical Lab	2.1	1.1	1	$125	$125	$250	15.9 M	$3,975,000,000
Optometrist	1.7	0.64	1.06	$135	$143	$286	15.9 M	$4,550,580,000
Podiatrist	0.9	0	0.9	$90	$81	$162	15.9 M	$2,575,800,000
Audiologist	0.6	0.12	0.48	$92	$44	$88	15.9 M	$1,404,288,000
Nurse	2.4	0.85	1.55	$198	$307	$614	15.9 M	$9,759,420,000
Pharmacist	5.8	2.9	2.9	$19	$55	$110	15.9 M	$1,752,180,000

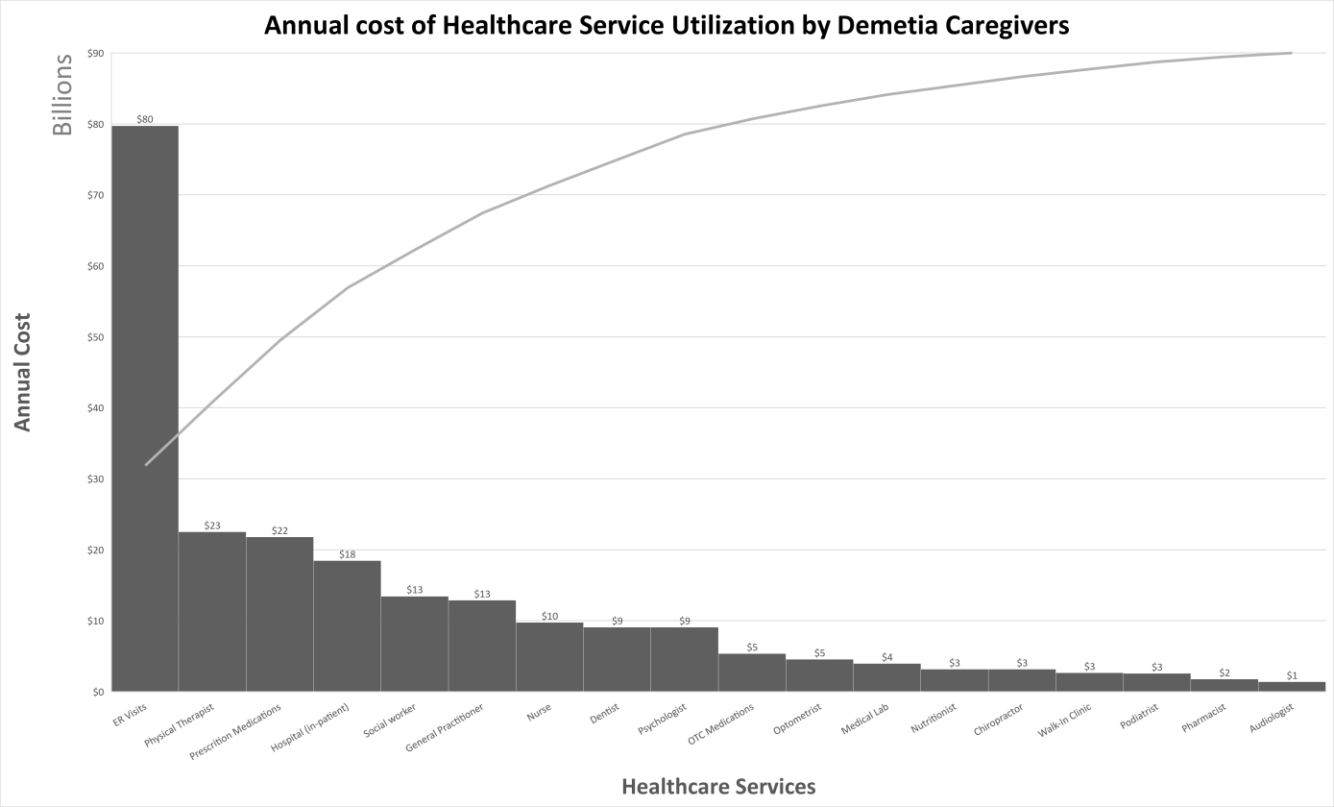
[2] The table reports the rate of utilizing healthcare resources by the caregiver and the control groups. The difference between the two rates, the average cost per visit to a healthcare specialist along with annual and 6-month-period costs of dementia caregivers visits nationwide are depicted.

[3] Million.

Chiropractor	1.6	0.07	1.53	$65	$99	$199	15.9 M	$3,162,510,000
Occupational/Physical Therapist	2.4	0.1	2.3	$308	$708	$1,417	15.9 M	$22,527,120,000
Nutritionist	0.84	0.04	0.8	$125	$100	$200	15.9 M	$3,180,000,000
Dentist	1.8	0.81	0.99	$288	$285	$570	15.9 M	$9,066,816,000
Social worker	3.2	0.38	2.82	$150	$423	$846	15.9 M	$13,451,400,000
Psychologist	2.9	1	1.9	$150	$285	$570	15.9 M	$9,063,000,000
Prescrition Medications	4.7	1.4	3.3	-	$685	$1,370	15.9 M	$21,783,000,000
OTC Medications	5.1	1.2	3.9	-	$169	$338	15.9 M	$5,374,200,000
Total						$14,176		$225,394,266,000

Figure 1[4]

[4] The figure depicts the cost of each healthcare service utilization for dementia caregivers annually nationwide.



PREVALENCE OF CHRONIC DISEASES AND ACCESS TO HEALTHCARE: TRENDS ANALYSIS THROUGH

THE IMPLEMENTATION OF AFFORDABLE CARE ACT CHANGES

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ABSTRACT

Chronic diseases account for most deaths in the United States and is responsible for billions of dollars in health care costs each year. Having access to primary and preventative care enables in obtaining early intervention and thus, reducing the mortality rates. Early detection and intervention will also result in decreased visits to emergency care and an overall reduction in the health care dollars spent due to expensive treatment options. Implementation of Affordable Care Act was aimed in providing preventative and primary health care coverage to most Americans. This study analyzes the trends in chronic disease indicators including obesity, type-II diabetes and hypertension from years 2011 through 2016 using BRFSS data. Access to health care will be analyzed by the following indicators: having any health insurance, having access primary care physician, and not seeking healthcare due to financial reasons. All the variables of interest will be analyzed by race, gender, educational attainment and income levels. Results of this study will demonstrate the impact of Affordable Care Act on the access to health care to the population who needs it the most.

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THE CONTRIBUTION OF LABORATORY AND IMAGING COST CENTERS TO THE FINANCIAL

VIABILITY OF RURAL HOSPITALS IN WASHINGTON STATE

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ABSTRACT

Maintaining efficient operations and ensuring consistent sources of income are critical foci of hospital administrators. With declining reimbursements from third party payers, and additional documentation and quality assurance requirements (for example, HEDIS reporting requirements and antimicrobial stewardship programs) tied to the receipt of those reimbursements, hospital administrators must closely monitor the ramifications of small changes in resource allocations on the hospital's overall bottom line. Because hospital production exhibits high degrees of both vertical and horizontal integration, and because outputs are produced by a number of different productive units (intensive care units, emergency room care, pharmacy services, etc.), each of which uses a myriad of different types of personnel and capital, it is challenging for hospital administrators to monitor the impact of small changes in resource allocations on the hospital's overall financial performance.

Two productive units in a hospital that may be especially crucial in the link between hospital efficiency and financial performance are departments that house imaging and laboratory services. These departments may be important for two reasons. First, the services provided by imaging and laboratory departments may be billed uniquely from physician services and standard hospital care. Third party reimbursement for these services ranges from modest to lucrative, depending on the service. But in either case, the sheer volume of diagnostic or laboratory services can, over time, generate substantial income flows for the hospital.

Second, the majority (but not the entirety) of imaging and laboratory services are used to inform clinicians in other units about the appropriateness of medical provided in those other units. Laboratory tests may, for example, be used to support a diagnosis of leukemia, which would necessitate the services provided in an oncology unity. An X-ray of a potentially fractured bone may guide a physician's decision to place the bone in a cast or refer the patient to orthopedics for surgery. If the imaging or laboratory departments are not operating efficiently and effectively, the productivity of the other units or departments utilizing these services may be impacted. The larger the number of departments that utilize imaging and laboratory services, the more pronounced is the effect on the hospital's financial performance as a whole.

Unfortunately, relatively little attention has been paid in the health services research literature to the impact of operating efficiency in laboratory and laboratory departments/units on overall hospital financial performance. As noted by Hollingsworth (2003), most studies of hospital efficiency focus on the hospital as a whole as the unit of observation. In fact, Hollingsworth identified only 13 studies conducted at the departmental level. Of these studies, most focus on a specific unit within the hospital as the unit of observation, such as hospital pharmacies (Capettini and Morey, 1985; Okunade, 1993, 2001).

More recently, studies have begun to examine the link between departmental/unit-specific activities and overall hospital performance. Murphy, Rosenman, McPherson, and Friesner (2011) examined linkages between the efficiency of various hospital cost centers and measures of overall hospital performance, and found that efficiency within the typical hospital's physical plant, emergency room, and a collection of minor departments (taken collectively) are associated with overall financial performance. Unfortunately, the effects of laboratory and imaging cost centers were aggregated with a group of other hospital cost centers. Hence, the individual impacts of these two departments on hospital performance were not analyzed. Friesner, McPherson, and Rosenman (2010), examined whether assigning generalist personnel (nurses) to work in more specialized practice settings (hospital pharmacies) enhanced or reduced efficiency in the pharmacy. Murphy, Friesner, and Rosenman (2013) extended this study by developing and testing a model that predicts the demand for nurses within hospital pharmacies. The value of these

studies is that they recognize, and present a framework, for understanding how shared personnel within hospital production impacts overall operations. Unfortunately, neither study examines these issues within the context of imaging and laboratory services, which are equally (if not more) important to aggregate hospital performance than pharmacies.

The purpose of this paper is to empirically investigate the relationship between operational efficiency within hospital laboratory and imaging cost centers and overall hospital financial performance. The analysis adopts a managerial finance, rather than a management science, perspective. That is, we define efficiency and financial performance using simple ratios derived from financial accounting statements, rather than use advanced modelling tools (such as data envelopment analysis or stochastic frontier analysis) to characterize a latent measure of technical or allocative efficiency. In doing so, our analysis is more accessible to hospital managers and health policy makers who base their decisions on these simpler financial metrics. The analysis is implemented using a panel of (primarily rural) critical access hospitals in Washington State over the years 2013-2016. We focus on critical access hospitals, both to ensure comparability in the use of laboratory and imaging services across facilities, but also because critical access hospitals have smaller operating budgets and face difficulties recruiting clinicians with specialized areas of practice, including those working in imaging and laboratory departments.

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THE FRAGMENTATION OF THE UNITED STATES HEALTH SYSTEM: AN ANALYSIS OF PLURALIZED HEALTHCARE FROM A TRANSATLANTIC PERSPECTIVE

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ABSTRACT

This paper outlines the characteristics of the United States healthcare system and compares selected areas to the National Health Service in the United Kingdom. The financing, structure and provision of healthcare services in each country are examined.

INTRODUCTION

On April 10, 1912, the Titanic began her maiden voyage. She was a symbol of grace, modern advancements in technology, and all of the best things money could buy. Like the current healthcare system in the United States, the Titanic was expensive to build, complex in design and destined for failure. We are not the first authors to suggest similarities between the Titanic voyage and various aspects of modern society, including the current health care system When the ship hit the iceberg in the early hours of April 15, 1912, two things became apparent. The first realization was that money was useless in the endeavor to keep it afloat. Despite the money that went into building the ship, the poor planning of the ship's leaders led to its ultimate demise. In a similar way, the United States spends the most on its healthcare system but has fallen behind in results compared to other industrialized nations who spend less on healthcare. The second realization was that the survival of Titanic passengers was directly linked to their socioeconomic status. Passengers with more money and prestige were given more access to life boats when the ship began to sink. Just the same, Americans who are financially stable and secure benefit from the structure of the U.S. healthcare system while the poor are systematically disadvantaged. Building on the analogy of the ill-fated Titanic, this project will analyze some of the strengths and weaknesses of the American healthcare system in contrast with Britain's National Health Service, comparing them through the lenses of finance, structure, and providers.

CHALLENGES IN THE UNITED STATES

Critical to the provision and access of healthcare services and products, financing is intertwined in all aspects of a healthcare system. Much attention must therefore be devoted to designing a sound financial system with respect to the needs of a nation. In the United States, there are four trends that uniquely affect the way in which the healthcare system is financed: the demographic transition, increased spending compared to similar industrialized nations, the allocation of money, and increased intensity in provision of health services

According to Williams and Torrens (2008), the "dynamics of population" are the most important "determinants of the need, demand, and use of healthcare services". The demographic trend in the United States shows an aging population. Ortman et al. (2016) discuss United States Census data and provide the following observations. Between 2012 and 2050, the United States' older population will experience considerable growth. Predicted to almost double its estimated population of 43.1 million in 2012, the population of Americans aged 65 and over is projected to be 83.7 million by the year 2050. In 2011, the members of the baby boomer generation started turning 65 which catalyzed this transition. By 2050, the majority of this age group will be at least 85 years old. The predicted growth of the older portion of the population in the United States will be a challenge to programs such as Medicare, Medicaid and Social Security as this age group will not be able to contribute to the workforce but will instead use up many healthcare resources (Ortman et al., 2016).

The second trend that directly effects the financing of the U.S. healthcare system is increased spending. Squires and Anderson compared the following high-income countries: Australia, Canada, Denmark, France, Germany, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States. The United States spends far more on healthcare than other high-income, industrialized nations (Squires and Anderson, 2015). Of the countries included in the comparison, the U.S. was the only country without a publicly financed universal health system; nonetheless, Squires and Anderson (2015) noted that the U.S. still spends more public dollars on health care than all countries on the list except Norway and the Netherlands. U.S. national health expenditures have grown at a rate substantially faster than the gross domestic product. Reinhardt (1985) outlines five major factors driving healthcare expenses in the United States: high GDP per capita, high price of services, lower supplies of professionals, facilities and equipment, administrative complexities and unwillingness to ration care.

Another facet of the nationwide struggle to finance healthcare in the United States is the increasing intensity in the provision of health services. With more technology and medical advancements in the field of healthcare than ever before, there are more expectations from American healthcare users (Williams and Torrens, 2008). Americans view healthcare from a consumer perspective, and their demand for new services and procedures is skyrocketing. In the 13-country comparison conducted by Squires and Anderson (2015), the U.S. had the "highest per capita rates of MRI, computed tomography, and positron emission tomography exams". Additionally, these authors state that American citizens are among the top consumers of prescription drugs, taking on average 2.2 prescription drugs per adult.

The final trend that affects the overall financing of healthcare in America is the distribution of money. Private health insurance finances 37% of all health expenditures, with out-of-pocket payment financing another 13% (Williams and Torrens, 2008). Nearly half of U.S. healthcare is financed publicly by federal, state, or local governments including programs such as Medicare and Medicaid. In addition to looking at how healthcare is funded, it is critical to examine how the funds are used. William and Torrens (2008) note that in 2004 41 % of the money spent on healthcare was used to buy hospital and nursing home services, 40% was used to purchase physicians' services and personal care products, 11% on prescription drugs, and the remaining 8% went to administration and health insurance costs. In the context of our aging population, there will likely be changes in the breakdown of health care spending in the U.S. In 2011, it was estimated that among individuals with the highest healthcare costs, only 11% were in their last year of life (Aldridge and Kelley, 2017)). Of the $1.6 trillion spent on personal health care costs in the United States, about 13% was used to care for citizens in their last year of life (Aldridge and Kelley, 2017). As such, it can be expected that some healthcare costs will balloon as a result of a larger portion of the U.S. population being reliant on services needed in old age.

CHALLENGES IN THE UNITED KINGDOM

Looking at the categories of health insurance in the U.S. sets the stage for a comparison with the NHS in Britain. Generally, health insurance in the United States is categorized as either voluntary, social and welfare. Voluntary insurance is linked to employment while social health insurance indicates the use of a government entitlement program. Welfare is significantly different than the other two categories because it reflects a lack of employment or inability to gain employment (Williams and Torrens, 2008).

Britain's National Health Service is drastically different than the pluralized healthcare system of the United States; however, a look into the demographic trends, spending, use of health services, and allocation of resources in Britain will demonstrate why the systems are designed so differently. The median age for the United Kingdom's population rose from 33.9 years in 1974 to 40.0 years in 2014, a rise of 6.1 years (Humby, 2016). This is its highest ever value, and the figure shows that the U.K.'s population has been consistently getting older much like the population of the United States. By contrast, the U.S. population grew by 13.2 percent in the 1990s, more than four times faster than that of the U.K. (Humby, 2016). According to the U.S. Census Bureau International Data Base, as of July 1, 2017, the United States population was 326,625,791, while the U.K. population was 64,769,452. Compared to Britons, Americans are slightly younger (Tunstall, 2005). The United States had a slightly higher proportion of residents in all age categories under 60, with a total of 83.8 percent of U.S. residents under age 60 in 2000 compared with 79.3 percent of U.K. residents in 2001. While both nations have been aging, the United Kingdom has been aging longer (Tunstall, 2005). Perhaps, this gives the U.K. an advantage over the United States in preparing their healthcare system for the influx of older people.

A 2016 report by the NHS Confederation notes that healthcare expenditure in the U.K. was 9.78% of the GDP in 2015 compared to 16.91% in the U.S., while expenditure per capita for the U.K. was $4,015 in 2015 compared to $9,451 in the USA (NHSCONFED, 2016)). This document also reports that in 2014, the NHS was rated as the best health care system in terms of "efficiency, effective care, safe care, coordinated care, patient-centered care and cost-related problems". Overall, compared to the U.S. healthcare system, the NHS spends less and gets better health results. In terms of life expectancy at birth, the U.S. sits at 78.8 years as of 2013, while the U.K.'s life expectancy is 81.1 years (Squires and Anderson, 2015). Looking at infant mortality, the U.S. had 6.1 deaths per 1,000 live births in 2011 compared to 3.8 in the U.K. (Squires and Anderson, 2015). The prevalence of chronic diseases is also higher in the U.S.; the 2014 Commonwealth Fund International Health Policy Survey found that 68% of U.S. adults age 65 or older had at least two chronic conditions compared to only 33% in the U.K. (Squires and Anderson, 2015).

When viewing health expenditures from a utilization perspective, the U.K. spends less because its consumers arguably demand less from it. In the U.K., less technology is made available and thus the avoidance of overuse translates into less abuse of technological resources (Schoen et al., 2016). The United Kingdom has 5.6 MRI machines per million people, 7.4 CT scanners per million people and 9.0 mammography machines per million people while the United States has 25.9, 34.3 and 40.2 machines per million people respectively (Schoen et al., 2016). The implication of these figures is that greater utilization of medical technology is a contributing factor to excessive healthcare spending; instead of using preventative care and visiting primary care physicians, Americans utilize acute care and more expensive technology (Squires and Anderson, 2015).

The NHS is funded primarily through general taxation and National Insurance contributions. In addition, a small portion of funding comes from patient charges for optical care, prescriptions and dental care services (King's Fund, 2016). Parliament decides how much money to give to the Department of Health to spend on the NHS (King's Fund, 2016).

The financing of healthcare systems largely determines their structure; therefore, the next point of analysis is structure. As discussed earlier, private insurance is the main source of healthcare financing in the United States. Unfortunately, insurance is linked to employment or lack thereof. This correlation results in an ethical dilemma. Those who are uninsured due to unemployment or inability to be employed have little to no access to healthcare (Williams and Torrens, 2008). When uninsured individuals can no longer avoid seeking medical care, they often pay for it out-of-pocket or seek emergency medical care. According to the World Health Organization, a central aspect of financing for universal health coverage is "sharing resources to spread the financial risks of ill-health across the population, (WHO, 2017). Arguably, the current state of the U.S. healthcare system does not adequately spread the risks of the population.

To critically evaluate the structure of healthcare in the United States, understanding the categorization of health insurance is important. Health insurance can be categorized by the typical combination of products. Williams and Torrens, (2008) discuss in detail various combinations of basic employee benefits which include "medical, dental, vision, and prescription drug benefits"; another combination is disability insurance which includes short and long-term insurance "offered as part of many employee benefit programs". A third combination is workers' compensation whereby an employee who was injured "in the course of employment" receives wage replacement and medical benefits in exchange for giving up their right to sue their employer. Health insurance may be categorized by the sponsoring organization; examples include for-profit carriers, Blue Cross and Blue Shield, HMOs, employers and unions. A third method by which health insurance can be categorized is by funding mechanism. Fully-insured programs are the primary way by which small businesses fund healthcare for their employees. Partial insurance is largely used by large employers because it enables them to pay claim expenses up to a predetermined limit. Self-insurance is essentially no insurance at all; it enables employers to avoid taxation, administrative fees and risk charges (Williams and Torrens, 2008).

Williams and Torrens (2008) discuss the structure of healthcare and insurance coverage in the U.S. and note that insurance coverage is largely connected with the type of healthcare plan a consumer has. An indemnity plan allows a consumer to direct their healthcare as they wish; it is a fee-for-service method of payment. A comprehensive plan usually has a "relatively small annual deductible that pertains to all medical expenses"; then, the patient is reimbursed a fixed percentage of the claims that exceed what the original deductible mandated. After a maximum out-of-pocket cap is met, the insurance plan covers the claims (Williams and Torrens, 2008). Capitation plans pay a

physician a set amount for every enrolled patient during a designated period of time regardless of whether a patient accesses medical care. Health savings accounts (HSA) give users choice of their healthcare providers; employers can establish a trust to cover the medical needs of employers who choose this plan (Williams and Torrens 118). However, HSA's are used in conjunction with high deductible health plans in order to cover current and unforeseen healthcare costs. Dental plans usually have a comprehensive design. Vision plans are viewed by some Americans as an example of what health insurance should not cover, but for consumers who are covered for vision care, benefits often include substantial discounts on vision products purchased through preferred providers. Prescription drugs are usually covered under the medical benefit plan; however, "mail-order plans allow employers and employees access to steep discounts and some drug use review". Long term care plans usually follow an indemnity format and provide fixed daily reimbursement payments (Williams and Torrens, 2008).

The structure of healthcare coverage within the NHS is simpler in comparison to the U.S. system. While Britons may have less of a variety of choices for providers than Americans, the efficient and user-friendly nature of the NHS arguably makes up for it. According to a 2013 survey, "U.S. adults are significantly more likely than their counterparts to forgo healthcare due to consuming insurance issues" (Schoen et al., 2016). In the U.K., healthcare is funded via general taxation. Because consumers do not have to worry about managing their private health insurance, people are more inclined to seek out care. As of 2015, only about 11% of Britons had private health insurance (Schoen et al., 2016). Similar to what occurs in the U.S. system, private health insurance access is correlated to better healthcare and higher socioeconomic status, an identified ethical dilemma in both countries.

Understanding healthcare from the context of providers is useful in evaluating the strengths and weaknesses of a system. The final point of analysis in this project will examine how healthcare is delivered in both the United States and Britain.

In the United States, delivery of care is being transformed. Ambulatory care, medical care provided in an outpatient setting, has increased drastically over the last thirty years because the healthcare system is following a trend of increasing integration and "seamless provision of care", (Williams and Torrens, 2008). Ambulatory services "provide an increasingly greater percentage of all direct patient care in the form of personal and preventative health services" and are taking on the role of "care manager" in the distribution of resources so that patients' needs are prioritized (Williams and Torrens, 2008). These services are typically less expensive, require less intensive surroundings and have the added benefit of complementing the current "technology and reimbursement pressures" (Williams and Torrens, 2008). The transition toward increased use of ambulatory services and more "sophisticated insurance" helps to control the use of services by consumers (Williams and Torrens, 2008). Specialization in healthcare has contributed to the focus on ambulatory care (Williams and Torrens, 2008). Interestingly, the concept of linking inpatient care with ambulatory services was first implemented in Europe (Williams and Torrens, 2008).

As a result of the transition toward ambulatory care, the role of hospitals in the U.S. is transforming. Hospitals are a hub of medical specialization, new technology, and "high standards and scientific applications" (Williams and Torrens, 2008). However, the number of hospitals and hospital beds have decreased dramatically in recent years. In 1975, there were 7,156 hospitals in the U.S. (Williams and Torrens, 2008). According to the American Hospital Association (2017), as of January 2017 there were only 5,564 registered hospitals. The number of hospital beds decreased from 1.5 million to less than a million in the last 35 years (Williams and Torrens, 2008). As of January 2017, the American Hospital Association reported that there were only 897,961 staffed hospital beds among all registered hospitals in the U.S. Despite the decline in the numbers of hospitals and beds, admissions have remained stable; however, length of days per stay has declined dramatically (Williams and Torrens, 2008).

Provision of modern healthcare in the U.K. is outlined in the Dawson Report of 1920. Sir Betrand Dawson was commissioned to evaluate the systematic provision of health services in 1919 (Dawson, 1920). He proposed that hospitals should be linked into a single system, suggesting that the current organization of medicine was failing citizens in the U.K. Dawson's report defined the structure that the "NHS would take nearly 30 years later", a structure that would enable the NHS to cope with "technological and medical advances". He believed that "preventive and curative medicine" could be united with the guidance of general practitioners. The report suggested that following surgery, patients should be able to access their doctors in their own homes or in their practice. It defined the role of primary health centers; "domiciliary services" were to include health visiting, pharmacy, community doctors and nurses. Preventative medicine would include the provision of medicine that is focused on prevention rather than

treatment. Primary health centers, according to Dawson, would incorporate both domiciliary and preventative services (Dawson, 1920).

If cases were too complex, they would be referred to secondary health centers which would "include operating rooms, radiography rooms, a public mortuary and a dispensary". These centers would be run by consultants and specialists and would be "aligned with a teaching hospital within a medical school" (Dawson, 1920). The services offered at a secondary health center would include "general surgery, obstetrics, dermatology and orthopedics, laboratories and services such as pharmacy and hydrotherapy". Patients would either be sent to outpatient clinics or would be admitted to inpatient beds upon their consultation or treatment (Dawson, 1920).

In contrast to the dominance of nonprofit hospitals in the United States, the Dawson Report suggested that "voluntary hospitals had fallen on 'evil days' " because of high priced supplies and wages as well as technological advancements. The report indicated that some hospitals' endowments were not enough to meet the needs of communities and were falling behind financially. Dawson and his committee proposed that grants should be given to voluntary hospitals. As a whole, the Dawson report shows the differences and similarities between the provision of healthcare in the United States and the United Kingdom.

CONCLUSIONS

For more than 70 years, the concept of national health insurance has been discussed as a solution for containing healthcare costs and ensuring healthcare access for the entire U.S. population; however, the plans proposed by the American Medical Association have never advocated for a National Health Service model (Williams and Torrens 103). The issue of healthcare reform in the United States is complex. While most policy makers are in agreement about universal access, there is no agreement on how such a system would be financed. What remains clear is that there must be a change; lives are at stake. Looking to similar, developed countries may provide U.S. legislators with enough insight to prevent the Titanic comparison from reaching full fruition. While it may not be a realistic approach to healthcare in the United States, the United Kingdom's National Health Service provides American policy makers with a quality example of how universal healthcare can be provided and achieved both financially and structurally.

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ENHANCING HEALTHCARE IN KENYA – A LOOK AT THE COLLABORATIONS WITH USA AND INDIA

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ABSTRACT

Healthcare sector of Kenya is dramatically changing a lot and it is moving towards a better healthcare both in terms of access and quality. Kenya Vision 2030 highlights its mission and policies which recapitulate the new structural and strategic plans for the Kenya under their government. On the other hand, Kenya has collaborated with India who is providing tremendous support to build an economical and sustainable healthcare for the people of Kenya. India plays a significant role in uplifting and promoting their healthcare system. Apart from India, Kenya has also receiving immense support from the USA, through SPARQ Project which is funded by the Bill & Melinda Gates Foundation and the David & Lucile Packard Foundation. This paper will also provide information of the Kenya's gross annual percentage expenditure on healthcare and role of the international funds and donation that is helping to evolve Kenya's Healthcare system to the full potential.

BACKGROUND

The new development plan for the Kenya is developed by the government under the banner of VISION 2030.The objective of Kenya vision 2030 is to construct "a globally competitive and prosperous country with a high quality of life by 2030". To achieve this goal of altering Kenya from a third world country into a more prosperous developed country with high industrialization and wealthy economic country. [2,3,5]

Health sector of Kenya has developed a health policy right after the launch of vision 2030 and proclamation of 2010 Kenya constitution. The health care policy was constructed in coordination with government policy and legal frameworks and also with the feedback received after implication of Kenya health policy framework(KHPF) 1994-2010. [3,4]

HEALTH SECTOR AND THE CONSTITUTION

Declaration of constitution of Kenya on 27th august ,2010 was the highly and important benchmark in the history of Kenya which completely change the fate of its nation. This was a major step towards a better health plans and magnificently high standard of health protocols. [4]

Constitution affirms the right to life all the citizens of Kenya. It also proclaims right to be free from hunger, right to the highest attainable standard of health including reproductive health and emergency treatment, right to clean, safe and adequate water and reasonable standards of sanitation and the right to a clean healthy environment.

The constitution of 2010 acted as stepping stone for the legal framework for ensuring a more comprehensive and people driven health services, and a rights – based approach to health is adopted, and applied in the country. [3]

HEALTH SECTOR PROGRAMME SUPPORT (HSPS)

For Several years, Danica supported the primary health care project which has focused on the poor and underserved population. During the initial phase it was restricted to coastal region but then its extended its help to north eastern region as well. The ***first*** phase of health sector program support started in 2005 which concentrated on health care policy and planning at national level. [3]

The ***second*** phase focused on the support of second national health sector strategic plan (NHSSP) which was initially planned for 5 years from 2005 to 2010 but later it was extended more to 2012.

The ***third*** phase of HSPS is extended from 2012 to 2016 is based on the past experiences and learning and focus on the achievements in key areas of health financing, essential drug supply, health system strengthening and support of sector wide approach (SWAp)for health. [2,3]

NATIONAL DEVELOPMENT AGENDA –KENEYA VISION 2030

All over the while, Kenya has been trying hard to improve their socio economies status and construct the policies which provide basic needs and health care to one and all as one of the most priority concerns. Kenya has been struggling from a long time to implement stronger policies in order to provide a better healthy life to its citizens. Some of the initiatives include the development and implementation of the Kenya Health Policy Framework (KHPF 1994−2010), Vision 2030, the promulgation of the Kenya Constitution 2010, and fast-tracking actions to achieve the Millennium Development Goals (MDGs) by 2015 has massively improved the result and founded the pillars for it development. The Government of Kenya (GOK) also uplift the fundamental right to health access for every Kenyan as envisaged in Vision 2030.

The implementation of KHPF 1994−2010 led to significant investment in public health Programs and minimal investment in medical services, resulting to improvement of health indicators such as infectious diseases and child health. [3,5]

However, the emerging increase of non-communicable diseases is a threat to the gains made so far. This policy aims at consolidating the gains attained so far, while guiding achievement of further gains in an equitable, responsive, and efficient manner. [3] It is envisioned that the ongoing government reforms, together with the anticipated sustained economic growth, will facilitate the achievement of the health goals.

Vision 2030 is the long term development blueprint for the country, aiming to transform Kenya into a "globally competitive and prosperous and newly industrialized middle-income country providing a high quality of life to all its citizens in a clean and secure environment by 2030". [3,4,5]

Health is one of the components of delivering the Vision's Social Pillar; given the key role it plays in maintaining the healthy and skilled workforce necessary to drive the economy. To realize this ambitious goal, the health sector defined priority reforms as well as flagship projects and Programs, including the restructuring of the sector's leadership and governance mechanisms, and improving the procurement and availability of essential health products and technologies. Other projects include digitization of records and health information system; accelerating the process of equipping of health facilities including infrastructure development; human resources for health development; and initiating mechanisms towards universal health coverage. The goal of the Kenya Health Policy 2014–2030 is attainment of the highest standard of health in a manner responsive to the needs of the Kenya population. In addition, policy principles and orientations have been formulated to facilitate the development of comprehensive health investments, health plans, and service provision within the devolved healthcare system. [2,3,4,5]

ORGANIZATION OF HEALTHCARE SERVICE DELIVERY SYSTEM

Health care delivery systems in Kenya are organized in chronological order and are number from Level 1 to level 6.

Level 1 demonstrate the broader system as community and moving upwards to most specific and complicated referred cases in level 6 called as Tertiary referral facilities which are designed the for bewildering cases. The current structure consists of the following six levels:

Level 1: Community
Level 2: Dispensaries
Level 3: Health centers
Level 4: Primary referral facilities
Level 5: Secondary referral facilities

Level 6: Tertiary referral facilities

HEALTH SECTOR FINANCIAL ALLOCATIONS AND EXPENDITURE

Kenya spends around 5.1% of their Gross domestic product (GDP) whereas public expenditure has been reduced to 4.6% which was previously around 8%.Health care still predominated by private sector and out of pocket spending.[11] Although there has been sign of dramatically fall in out of pocket amount from past few years and main reason behind this is certainly due to increase of the government involvement and donor resources whose contribution has more than doubled from 16% in 2001 to 35% in 2010.Per capita health expenditure has increased, from $34 in 2001/02 to $42 in 2009/10 but is way below the recommended World Health Organization (WHO) target of $64 to meet a basic package of healthcare. [11,12] Evidence has shown that more resources were spent on management functions than on service delivery. In actual expenditures, there was limited real improvement in human resources for health and infrastructure during the previous policy period. While the actual numbers of these investments improved, the numbers per person stagnated or reduced, reflecting the stagnation of real resources for health. But after the inclusion of health as a basic right in the constitution, level of investment is expected to increase.

Due of lack of resources, Kenya has failed to provide adequate health care to its population. Under financing has been a major reason for this failure. According to statistics, around 16%of total expenditure on health care of Kenya is depended on donors. [12]

Apart from lack of resources, Kenya is also lagging behind in efficient utilization of its resources wisely. There has been significantly increased in disease incidence.
These include: inefficient utilization of resources, the increasing burden of diseases and the rapid population growth.

WHO has stated that government of Kenya covers about 38.7% of the overall expenditure on health whereas majority of expenditure is covered by private sector accounting for almost 61% spending. Among private sector spending, out of pocket alone accounts for 80% of the private sector expenditure on health care. [3,11,12]

DONORS' CONTRIBUTION AND ISSUES

Kenya is highly depended on donor fund from several countries that have come up to help people of Kenya. Many of these fund supplement the development component of national health budget .According to statics in 2006,external fund has contributed to almost 14.8% of total health spending in Kenya .United states is one of the largest donor through different channels such as PEPFAR, the president's malaria initiative and USAID, according to data in 2009,PEPFAR alone has spent $529M .Not only united states but there are many other countries which have significantly contributed to Kenya to name some countries are United Kingdom, Denmark, Germany ,japan and Netherlands. Kenya receives fund from world bank and different agencies who have always helped Kenya to restore it health issues. Organization such as WHO, UNAIDS, UNICEF and UNFPA have massively worked hard to assist health care delivery system and policies of Kenya. [4]

Kenya has also been invited to submit a proposal to connect with the "first learning wave" of national strategy applications (NSAs). NSA is a platform where countries submit national disease strategy rather than general application to request monetary support.

The Fund will further be used to the initial "learning wave" process to determine the feasibility of adopting the NSA for all future application in an effort to enhance its application review process.

The Clinton foundation is committed in Kenya's health care, as are the other faith based organization such as catholic relief fund services, Lutheran world relief, and the Aga khan foundation. [4,7,8]

HEALTH SECTOR REFORM IN KENYA

Health sector reforms were introduced under the umbrella of Structural Adjustment Programs (SAPs) implemented in the 1980s, necessitated by the debt crisis. The economic crisis was evident in the diminishing financial abilities of government to provide social services such as health and education. With or without Structural Adjustment

Programs, African governments were faced with the challenge of sourcing funds in order to continue financing social service provisioning. One of the ways of sourcing funds was located in the potential to pay by users, hence the introduction of cost sharing. Cost sharing is variously called by such terms as user fees, co-financing, and cost-recovery. In Kenya, the introduction of user fees was the first reform in the health sector. As part of health sector reforms, cost sharing in public health facilities was meant to improve the provision of quality health care services. Funds generated from user fees would supplement government's diminishing expenditure allocated to health care services and, therefore, would ensure continued provision of health care services through supply of drugs and medical equipment, as well as in maintaining and expanding health facilities. Health sector reforms in Kenya were tailored to meet Kenya's health sector policy goal of providing accessible, affordable and efficient health care services to all Kenyans. Before their implementation, it was feared that health reforms would marginalize the poor and vulnerable in accessing health care. However, the government of Kenya took care of this concern by introducing the system of waivers and exemptions. Under exemptions, certain categories of patients were automatically exempted from user fees. These included those seeking family planning, children under five years, sexually transmitted disease patients, and those suffering from HIV/AIDS. Exempting children under five years was in realization of the fact that such children have a low immunity development, which predisposes them to sickness. Indeed, statistics on malaria morbidity attests to this fact, as children under five years are the most affected both in terms of morbidity and mortality. On the other hand, waivers were supposed to take care of those who could not afford to pay for health services because of their inabilities. Waivers and exemptions were put under the care of medical staff and social workers at the hospitals who were charged with the responsibilities of assessing the financial position of patients and waiving part or all of their bills. This paper discusses the impact of health sector reforms, especially user's fees, on Kenya's health policy objective of "Health for All'. [2,3]

KENYA HEALTH POLICY FRAMEWORK

In 1994,Government of Kenya (GOK)sanctioned the Kenya Health Policy Framework(KHPF) as a model for the improvements of healthcare and also for its smooth management at various sectors of health services .To make this model more viable and bring into the service , the Ministry of Health (MOH) developed the Kenya Health Policy Framework Implementation Action Plan and established the Health Sector Reform Secretariat (HSRS) in 1996 under a Ministerial Reform Committee (MRC) in 1997 to initiate the ground work force of the plan.[2]

The policy started under the health ministry was limited initially and concentrated on the important agendas which were given more preference such as follows:

A) Concentration on decreasing the healthcare expenditure;
B) Ineffective practice of resources was widely seen and government wanted to make sure that resources are utilized in a very appropriate manner;
C) Proposal of centralized decision making body was another important agenda under this policy. Centralized body that can understand the healthcare need and work on to decrease and bargain the cost with the manufacturers and companies producing medical equipment's and drug releasing pharmaceutical firms;
D) Restructure of laws. Some of the laws have not been amended from long time so under this policy government wanted to reframe all the outdated and inefficient laws;
E) Improve overall management system at district, state and national level;
F) Keep a check on the population growth and diseases statistics.

KENYAN –INDIAN RELATIONSHIPS AND HEALTHCARE

India has been making its presence in global marketing by exporting many high quality products in various sectors. Although IT has been the leading market but recent involvement of India in health care is significantly remarkable.

India has been exporting health services in the form of providing medical treatment to overseas patients, especially from Africa. The Indian healthcare players have also been able to establish their niche globally with the setting up of super specialty hospitals and clinics, diagnostic and treatment centers through collaborations. [6]

India has always come up to help its Neighboring countries. A recent collaboration between India and Kenya where India has extended its help to provide access to quality medical service for Kenyans. The goal of this

collaboration is to strengthen and support specialized health service for Kenyans. It has also aimed to reduce the medical cost in abroad for specialized care. Kenyan President Uhuru Kenyatta and India's Prime Minister Narendra Mondi support setting up Indian medical facilities within Kenya, which will save on the cost of traveling to India for treatment. Indian-Kenyan collaboration focuses on the specific issues like cardiac disease, cancer treatment and much other contagious disease which has been a major problem for Kenya population from long time. A&K Global Health often facilitates travel between Kenya and India, and help coordinate care for Kenyans at local Indian facilities. It also helps in assisting with organizing medical camps in Kenya Doctors from India to travel to Kenya to help build an international healthcare network between the countries' physicians as well as encouraging them to enrich and share their medical knowledge. [5,6,7,8]

INDIAN HEALTHCARE SUPPORT TO AFRICA

1. Medical Service provided via Interactive audio, visual and data communication. For example, services such as tele-medicine, tele-surgery, tele-diagnostic, medical transcription.
2. Establishing Infrastructure through collaboration. For example, establishment of super specialty hospitals and clinic, diagnostic and treatment centers in collaboration with domestic and foreign health service provider.
3. Medical Tourism- Patient from Africa seeking treatment in India. For example, medical value travel for super specialty medical services and alternative systems of healthcare.
4. Temporary movement of healthcare professionals to the African region to provide transfer of leading practices. [6,7]

INDIAN PHARMACEUTICAL ROLE IN KENYA

In the past decade, Kenya has observed and broadens existence of the Indian pharmaceutical companies, especially in the generic space. On the contrary, these vendors are among the largest providers of generic medicines across the world. African continent faces an enormous stipulation for cost-effective life-saving drugs. Constructing relations between the two could therefore effectively and efficiently create a commendatory situation for the economies of India and African nations. In the past five years from FY09 to FY13, the exports to Africa from India has been growing at the CAGR of 21 per cent,30 major contributors to this statistic being anti-malarial and anti-retroviral drugs and driven by South Africa, Nigeria, Ghana, some eastern and north African countries. [6,7]

SPARQ PROJECT: STRENGTHENING PEOPLE –CENTERED ACCESSIBILITY, RESPECT AND QUALITY

The SPARQ Project has been launched to improve the quality of people centered care for delivery and planning among the lower socio economic status population residing mainly in rural area. This project is funded by the Bill & Melinda Gates Foundation and the David & Lucile Packard Foundation led by the Principal Investigators from UNIVERSITY OF CALIFORNIA SOUTH FLORIDA. The project currently been launched in Kenya and certain parts of India. [9,10]

Objectives

1. To improve the proficiency of people-centered care challenges for maternal health and family planning, and develop test measures of people-centered care.
2. To implement the strategy for upgrading the facilities and quality of care been provided at maternal health care. [8,10]

Project Activities

- **Develop and validate** culturally appropriate **measures** of person-centered quality for (a) delivery and (b) family planning: This will include **systematic review** of existing measures, **expert meeting** to choose and narrow items, **cognitive interviews** in the field with items, narrowing of items, and then **validating** a sub-set of items to develop final scales.

- **Collect baseline measures** of experiences of person-centered care for delivery and family planning and association with health care seeking behavior and health outcomes: We will focus on high risk populations such as adolescents, minority groups, migrants.
- **Conduct facility-level observations** of people-centered care, and **in-depth interviews** with providers, staff, and managers of facilities to understand barriers to providing person-centered care
- **Develop interventions** to improve person-centered care, building off of research described above, and in partnership with Community Advisory Groups
- **Implement person-centered quality improvement cycles** in partnering facilities. These will last roughly 3 months each, including monitoring and evaluation. Interventions that work well in one facility will be adapted and scaled to other facilities for validation of effect.
- **Maintain continuous engagement of Global Expert Committee** throughout process [9,10]

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TRACK
HEALTHCARE EDUCATION

CHARACTERISTICS OF STRONG LONG-TERM CARE ADMINISTRATION ACADEMIC PROGRAMS: A 10-YEAR STRUCTURED REVIEW OF NAB ACCREDITATION REPORTS

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ABSTRACT

The National Association of Long Term Care Administrator Boards (NAB) accredits long-term care administration educational programs to ensure they meet prescribed criteria and reflect a standard of rigor and quality. Within the accreditation reports generated by each site team following a review lies a wealth of insight and knowledge that has not been systematically examined on an aggregate basis. The goal of this project was to extract and review data from these reports to help identify characteristics of strong NAB accredited academic programs along with specific supports and potential barriers to the development of strong long-term care administration educational programs. Four key identified strengths include programs having a critical mass of students and a solid student recruitment plan, a 1000+ hour internship experience with solid structure and supervision, a strong advisory board comprised of alumni and practitioners, and relationships with professional organizations, industry associations, and other practitioners within the local community. These aggregate findings can be used by academic programs themselves to become stronger or by new or developing programs as they attempt to build strong long-term care administration programs.

INTRODUCTION

Academic Accreditation is a process conducted by a third party to offer assurance that a university program meets prescribed criteria and reflects a standard of rigor and quality. It serves as voluntary validation of "quality assurance" to students and prospective students, as well as potential employers of graduates that the student attended a respectable program with integrity (Ibrahim, 2014). Most accreditation processes require educational institutions to complete a "self-study" and then submit ample evidence that they meet the standards required of accredited programs, and often may include a site visit by a team of their peers (Friedman, 2016).

The National Association of Long Term Care Administrator Boards (NAB) accredits bachelors or masters level academic programs in long-term care administration (NAB, 2017). They currently have 10 major criteria, which mirror similar standards established for the Association of Universities Programs in Health Administration (AUPHA) Certification or the Commission on Accreditation of Healthcare Management Education (CAHME), two widely recognized health administration education accreditation and standard setting entities (AUPHA, 2017; CAHME, 2017). Like most accreditation processes, NAB's also requires a program self-study and an electronic binder be submitted with evidence of certain content and elements within the curriculum, quality program direction and faculty, learning outcomes, resources, opportunities for student engagement and high impact practices, and more (see Appendix A for a complete list of current criteria). Teams of at least two peer reviewers (generally one academic and one practitioner) then review the submission and make a visit to the school to meet with faculty, administrators, students, and other relevant stakeholders as they assess whether the program has sufficiently met the outlined criteria and whether they will recommend their program become accredited. Upon completion of the site visit, the team prepares a final accreditation report that includes the following: description of program structure, a brief history, the evidence they have discovered (or that is lacking) in their assessment of each criteria, and an opportunity to share either mandatory post-visit actions or consultative recommendations (NAB, 2017). All schools must be re-accredited every 5 years.

NAB Accreditation reports are written by each site visit team on completion of their review. There is a wealth of insight and knowledge in these reports that has not been systematically examined on an aggregate basis. A

synthesis of this information is valuable for providing context for both what is working well, and what may be standing in the way of enhancing and developing strong, robust educational programs in the senior care administration field across the country. If a goal of NAB is to have both more and stronger programs, then they can offer information to current or prospective programs about key ingredients to help them improve quality. In today's educational environment, competition for resources can be fierce and "survival of the fittest" is a reality for many, so the value of developing strong academic programs has never been more important. Institutions that innovate have a strong natural advantage (Hoffman, 2011).

The goal of this project was to identify characteristics of strong NAB accredited academic programs along with specific supports and potential barriers to the development of strong long-term care administration educational programs. The aggregate findings can be used by academic programs themselves to become stronger or by new or developing programs as they attempt to build strong long-term care administration programs. The findings may also prove useful for NAB, as they potentially review and revise accreditation criteria, and related processes in the future.

METHODOLOGY

All available final accreditation reports from the past 10 years were obtained electronically from NAB, and a student research assistant was tasked with redacting any identifying information from each report, while labeling reports as School A, Report 1, School A, Report 2, School B, etc. so the researchers were not privy to which schools they were reviewing. There were a total of 19 reports: 3 from 1 school, 2 from 6 schools, and 1 each from 4 schools. After a broad review of a random sample of four reports (of varying comprehensiveness), the researchers used an inductive process to develop a rubric to extract data from each report. Background information from each report included where the program was housed within the university and the type of degree/major/track/etc. Additionally, since there was significant variation in how comprehensive the reports were, the researchers also noted the comprehensiveness of the report on a sliding scale from brief to comprehensive. Then, using a Strengths, Weaknesses, Opportunities and Threats (SWOT) framework, a grid was developed with rows for information related to Curriculum, Students, Faculty, Partnerships, Field Experience, and "other" along the left axis, and columns for strengths, weaknesses, opportunities, and threats across the top. Each Accreditation report was independently reviewed and data in all of the above categories was extracted. This data was also inputted into a large Excel file. Next, all extracted data was reviewed and collated into a single, comprehensive list of Strengths under each of the six information categories, along with comprehensive lists of Weaknesses, Opportunities, and Threats generated from the review. The majority of what was present in reports beyond demonstrating that a program had met accreditation criteria tended to highlight programs' strengths. Not surprisingly, in reports noted weaknesses or opportunities for programs, these tended to be the absence of items that showed up on the strengths lists along with a recommendation that they incorporate those types of characteristics that had emerged as strengths.

The two researchers and the student research assistant all had the opportunity to independently review the extracted data and generate ideas about what they assessed to be common characteristics of strong programs and other key conclusions related to common weaknesses or threats and overall conclusions. The three researchers conversed to share their perspectives on key characteristics and came to agreement about conclusions related to strengths and opportunities in each of the focus areas, as well as common threats.

RESULTS

Based on the review and analysis of available data from NAB accreditation reports, the researchers have identified the following characteristics and supports, across the areas of curriculum, students, faculty, partnerships, field experience, and "other", as being associated with strong, robust academic programs. Any program that is not currently engaging in practices outlined below are strongly encouraged to consider them as opportunities for improvement or possible ways to strengthen their program.

SWOT Findings - Characteristics of Strong Programs

Curriculum

- Offers a multidisciplinary education that meets AND exceeds the NAB Domains of Practice (aim for coverage of every item at "B" level or higher)

    - Focuses on the broader continuum of long term care
    - Curriculum stays current with contemporary changes and resources and ensures coverage of models beyond the local state delivery system (i.e. culture change, emergency preparedness, quality management tools, regulatory changes, ACOs and other reimbursement models)
    - High Impact Practices such as field trips and guest lecturers that offer interaction with LTC administration professionals and use of case studies and simulations in courses
    - Coursework emphasizes leadership, communication, critical thinking, and data-driven decision making skills
    - Business classes use health care examples or are health-care specific
- Use of Self-Assessment Tools and Career Development/Professional Development embedded into program/curriculum
- Has a clear mission and learning goals with a good Assurance of Learning/Assessment Plan where outcomes are measured, findings are analyzed, and program improvement changes are implemented on a regular basis
- Track graduates' NAB exam pass rates and graduates demonstrate above average NAB exam pass rates
- Students complete one or more capstone leadership/management project(s)

Students

- Increasing enrollment or has a "critical mass" of students who are:
    - High caliber, enthusiastic, eager, excited, professional students
    - Diversity in gender, race/ethnicity, LGBTQ, etc.
    - Meet or exceed university/college GPA requirements (perhaps by establishing program-specific admission standards)
    - In demand/employable after graduation
- Opportunities for students to interact – either through student organizations or through online forums
- Funds available to support student travel/opportunities to engage with professional organizations
- Good student advising program

Faculty

- Program Directors and Primary LTC Program faculty often have a combination of PhDs and Master's level practitioners and are well-respected in their fields
- LTC faculty are engaged, enthusiastic, and passionate about LTC, have camaraderie with each other, work effectively with faculty across disciplines-i.e. nursing, business, social work, nutrition, etc., and have strong relationships with experts in the field
- Financial support is available for faculty development/professional travel, especially to support faculty who may be new to LTC
- Processes are in place to ensure quality and successful teaching abilities of faculty and adjuncts using resources such as instructor evaluations/performance improvement plans, teaching and instructional design supports, and use of Quality Matters rubrics in online course development
- Faculty are accessible and responsive to students

Partnerships

- Advisory Board has adequate representation from service settings across the LTC continuum and includes stakeholders such as facility administrators/preceptors, CEO/Regional Directors/Corporate administrators, alumni, industry/professional associations, government agencies, etc.
- Advisory Board meets regularly to assist with:
    - Regular reviews learning goals/outcomes and curriculum to ensure up to date
    - Annual planning for the program
    - Recommend internship sties, assist with faculty development opportunities, offer ideas for student recruitment, hire graduates
- Strong linkages to: ACHCA, NAB, state/district associations, AHCA, Leading Age, AUPHA, ACHE, professional gerontology groups and local/regional providers
    - Offer expertise and help in developing programs, providing guest lecturers or possible adjunct instructors, finding internship sites, sponsoring scholarships or other financial resources to support

programs/faculty/student opportunities, can partner on CE/seminars/topical forums that appeal to students and local provider community

- Alumni are great ambassadors of program, they can be tapped for fundraising/development and strong alumni connections are a measure of a successful program
- Whether Program or student organization driven, a network of partnerships allows for better access to interactions between students and practitioners-guest panels, guest speakers, field trips to state professional organizations &/or local facilities, volunteer opportunities, etc.
- Partnerships with other academic programs can allow for synergy and resource-sharing

Field Experience

**The term "internship" refers to Internship/Practicum/AIT as programs use varying terminology*

- Opportunities to be involved in the field prior to internship: i.e. service learning, volunteer work, field trips, guest lectures, optional earlier internship
- Requirements/standards to be eligible to go out on internship-i.e. prerequisite courses, minimum GPA
- Program has a designated person (Program Director, designated faculty, or separate Field Experience coordinator) who works with preceptors and students on site recruitment, preceptor training, student placement, supervision/evaluation, visits, etc. with adequate time in their workload to accommodate these responsibilities
- Eligibility standards for sites/preceptors- i.e. in good standing, minimum years of experience as an administrator – commonly 2 or 3 years, using current patient care technologies, advancing person-centered care, prefer sites that offer multiple lines of service besides NHA-i.e. RCAL, Independent Housing, HCBS, etc.
- Internship requiring ***significantly more*** than NAB's previous 400 required hours, with a thoughtful pedagogical approach to student learning during internship/practicum that includes:
    - Learning expectations for internship are in alignment with Domains of Practice and are clearly laid out for both students and preceptors
        - Departmental rotations
        - Understanding of broader administrative responsibilities that cross departmental lines
        - Experience managing a project or a department
        - Opportunity to develop leadership skills
    - Opportunity for student reflection on applied learning activities/onsite experience (i.e. weekly or monthly reports, journal/log, reflection papers, online coursework that incorporates applied learning activities, final reflection papers, leadership project papers, peer discussions, etc.)
    - Effective 3-way communication/supervision/reporting system that includes faculty "visits" with student and onsite preceptor either in person or via technology (like Skype) and a robust evaluation of student learning
    - Orientation for internship students regarding expectations
    - Preceptor training (manual/guide, webinars, on site)
    - Opportunity for student to evaluate preceptor/site/faculty supervisor
- Sites pay a stipend to interns

Other

- University leadership (Chair, Dean, Provost) understand and support the value of the LTC program and consider it a "top"/"distinguished"/"program of excellence" within their university
- Adequate funding resources to support curriculum, student opportunities, faculty professional development/connections with profession, and LTC admin related research
    - Beyond standard University funding there is external fundraising specific to the program-i.e. endowed chair or earmarked fundraising dollars to support student/faculty opportunities
- Nice buildings/offices/space that fosters visibility of program and collaboration among faculty
- NAB bibliography/reference items are used in coursework/accessible to students
- Students are given access to publications like McKnight's, Provider, Long Term Living, ACHCA and state association communications
- Program has good online visibility internally and externally via websites and social media

***SWOT Findings* – Other "Opportunities" not already reflected as Characteristics of Strong Programs**

**All programs should review characteristics of strong programs, and consider how to implement anything they are not already doing. Other potential opportunities for programs to consider may include the following:*

- Integrate a good system of evaluation and feedback to ensure students are meeting NAB licensure competencies prior to graduation and consider using the NAB practice exam as part of the curriculum and competency assessment process
- Increase coverage of Domains of Practice items to at least a B-level or higher
- Foster student relationships with ACHCA-establish a student chapter of ACHCA, encourage student memberships, participate in poster session at Convocation
- Require a leadership project during internship
- Use more electronic/timely journal articles and industry publications to supplement textbooks
- Find ways to support/advance LTC research-and even involve students in these projects
- Develop a marketing strategy for student recruitment
- Increase ways to serve non-traditional students – perhaps by considering distance learning as a way to expand programs to non-traditional students or those outside your geographic area, or consider a grad program in LTCA
- Consider succession planning of program director as appropriate
- Share best practices with other schools (i.e. simulations: top gun assisted living, medical informatics, student recruitment models, partnership models)

***SWOT Findings* – Common Threats**

- Very low numbers of students in LTC program/track
- Program Director/Faculty lack time/resources to coordinate field experiences/supervision/and connections with the profession
- A program run/taught by a single person is viewed as a risky position
- University budget cuts and restructuring
- Turnover/lack of understanding by university leadership
- Licensing Boards who may not be recognizing accredited programs as meeting state licensure requirements (i.e. requiring additional AIT AFTER graduation, requiring additional coursework which is redundant with what has already been covered in the program)

DISCUSSION

***SWOT Findings* – Overall Conclusions**

Overall, current NAB accredited programs seem to be run by well-qualified faculty, with a broad array of PhDs & Masters level educations, and a variety of LNHAs and others with experience related to business/gerontology/other aspects of health care and/or long-term care, who are well-respected in their fields. In addition, many accredited programs have expressed strong support from their upper administration (Chairs, Deans, Provosts) as well as adequate funding, either internally or through external grants or fundraising.

A strong marketing/student recruitment approach is critical! There are likely many untapped opportunities with social media, and it is very difficult to have a strong, successful, program without a critical mass of students. When you have more students, there is more opportunity to have more than one dedicated faculty, which brings in a breadth of ideas and perspectives. In addition, there are more opportunities for long-term care administration students to engage in team-based learning as well as other applied activities, such as community service or other social events to keep them engaged. Finally, when you appear stronger, it is more likely that others (such as providers or associations) will be interested in investing or collaborating with you. In addition, current students and alumni from the program become some of its best ambassadors.

The field experience (or internship/practicum/Administrator-In-Training experience) is a critical part of the education in these programs! NAB recently increased its internship requirement from 400 to 1000 hours, which is moving in the right direction. It is very important to have a solid structure in place with adequate time devoted to faculty supervision to coordinate these internships, place students, train preceptors, and ensure there is a strong

structure in place for the experience. A well-structured internship experience should include clear learning goals, good communication between student, preceptor, and faculty, appropriate structure of assignments and/or reflections, periodic reports/evaluations, and assessment of the students' learning and their experience with the site and preceptor. Finally, especially with a new minimum internship/practicum/AIT of 1000 hours or more, having a monetary stipend for students becomes even more important.

A formal advisory committee with adequate representation across the care continuum and with participation by alumni, practitioners, preceptors, and other long-term care stakeholders should meet regularly. They can play a significant role in helping keep curriculum up to date, soliciting internship/practicum/AIT sites, recruiting students, serving as "experts" for guest speakers & field trip locations, and external fundraising for the program.

Relationships and connection with the profession is of critical importance. This may mean affiliations, such as NAB academic accreditation or a student chapter of ACHCA, faculty engaging in service roles with national or state associations, or a variety of other partnerships opportunities within the community. Faculty and students may also be involved or attend state-affiliated conferences hosted by LeadingAge or the American Health Care Association. There may also be local provider coalitions or opportunities for programs, students or faculty to work together with groups like the Alzheimer's Association, Gerontology Society, or other professionals such as the local Ombudsman, survey team, or care providers.

CONCLUSION

Limitations

This review was conducted using a structured qualitative review of NAB accreditation reports to find common themes of strong NAB-accredited programs and also to identify barriers and threats for these programs. There are some limitations of this study. First, the sample size of reports to review was modest, so results should be used with some caution and an understanding of a need to further validate findings. Secondly, there was some variation in the content of the reports-some reports were rather brief, only indicating that NAB Accreditation standards had been met (or not) while others were much more comprehensive in nature, highlighting unique strengths and making a variety of consultative recommendations. As such, it was important to realize that if something was highlighted in a report by the site visitors, it was important to take note of it, but the *absence* of such information in a report (unrelated to the 10 accreditation criteria) could not be interpreted as its non-existence or unimportance. This means that it is possible that important strengths or characteristics indeed exist in some programs, which simply did not happen to be highlighted by the review team writing the accreditation report. Finally, although this was a good representative sample to review to learn about characteristics of strong academic programs, it is acknowledged that it does not include any long-term care or senior care programs not currently NAB accredited.

Future Research

Several questions arose from the review of the accreditation reports and analysis of data that could serve as excellent opportunities for further inquiry. For example, what is NAB's role beyond establishing criteria and managing the processes that grant accreditation? Do they see a role for continuous quality improvement of accredited programs or supporting new programs as they develop and prepare for future accreditation? Do they make resources available to help strengthen programs? Or do they have an interest in increasing the number of accredited programs? This relates to another question about how University programs interact with or establish relationships with state licensing boards, and what role NAB could play to facilitate that. From a research perspective, several studies would be interesting. One idea might be examining what factors from the educational program (either program or student based) are correlated to stronger performance outcomes as successful LTC administrators. Another might be to examine whether bachelorette or master-level programs are the appropriate avenue for long-term care administration education. Finally, it would be interesting to investigate whether programs that use a curriculum-integrated competency model (e.g. the NAB Practice exam) are correlated with better performance on the licensing exam and better quality outcomes once practicing (Campbell, 2006).

CONCLUSION

This study has successfully identified several features and characteristics of strong, NAB Accredited long-term care administration academic programs, along with additional opportunities for continued quality improvement,

which could serve as good advice for programs wishing to improve or become even stronger. It also serves as a useful foundation and primer for future research designed to strengthen education and training of long-term care administrators. Finally, it offers important insights for consideration of the role NAB and others may play in developing quality educational opportunities to ensure competent and caring individuals are available to care for our growing senior population.

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APPENDIX A

NAB Academic Accreditation Criteria, 2017

1. Evidence of incorporation of contents of the Domains of Practice in the program.
   NHA: *Incorporation of DOP as they relate to the SNF setting*
   HSE: *Incorporation of DOP as they relate to the HSE (emphasis on SNF setting/core) as well as exposure to what is unique to RC/AL and HCBS*
   RC/AL: *Incorporation of DOP as they relate to the R/AL setting*
   a. Early "real life" field experience
   b. Internship
   c. Course requirements

2. Incorporation of an internship program.
   NHA: *NHA programs being reaccredited must have a 400 hour (minimum) internship at present and must have a 1000 hour (minimum) internship in place by July 1, 2018.*
   HSE: *A 1000 hour (minimum) internship is required. The* ***majority*** *of the 1000 internship hours must still occur in a skilled nursing facility, although it may also include some exposure to RC/AL and HCBS.*
   RC/AL: *A 500 hour (minimum) internship is required in an RC/AL setting.*
   Recommended review criteria:
   a. Admission criteria
   b. Policy manual
   c. For the NHA track use experienced nursing home administrators and for the RC/AL track use experienced assisted living administrators
   d. Regular interim evaluations of intern performance, no fewer than three times.
   e. The facilities must be licensed as long term care facilities by the state; no chronic licensure problems, comprehensive array of services including rehabilitation; provide organizational chart of the facilities.
   f. Designation of an internship advisor.

3. Quality Program Direction. Recommended review criteria:
   a. Designation of a faculty member to direct/lead the program, with ample release time to direct the program and engage provider relationships to support the program and internship needs of the students.
      1) Doctoral or master's degree in relevant field.
      2) Preferred: Three years of direct relevant experience with long-term care administration
   b. Program Mission, Vision and Goals
   c. Assurance of Learning Plan/ Assessment Plan
   d. NHA Exam results tracked (for NHA & HSE programs, and RC/AL exam results if NAB RC/AL exam is used in their state)
   e. Advisory committee to LTCA program
      *NHA/HSE: Committee should include representation from across the continuum of care
   f. Effective process of evaluating teaching effectiveness for tenure and adjunct faculty
   g. Opportunities for professional engagement in the field
      1) Student organization
      2) Active relationships/ linkages with ACHCA, ACHE, AGHE, state industry associations, etc.

4. Faculty to meet the needs of the program. Recommended review criteria:
   a. Academic degrees relevant to the contents taught. LTCA courses taught by faculty with a master's degree, dependent upon the institution's hiring practices.
   b. Student/faculty ratio and course load comparable to the standards of the regional accrediting body.

5. Other staff adequate to the program. Recommended review criteria:
   a. Knowledgeable and adequate support staff to meet the needs of the program.

6. Fiscal resources. Recommended review criteria:
   a. An identifiable and sufficient budget to sustain the educational program.

b. A copy of the institution's annual report sent to the accrediting/approval body, highlighting the budget for the long-term care administration program.

7. Physical resources. Recommended review criteria:
   a. Classrooms, offices, and other facilities equipped to meet the needs of the students in the program.

8. Long-term care library holdings and student access to these holdings. Recommended review criteria:
   a. Long-term care administration literature fully accessible to the students.
   b. Resources available to keep library holdings continually relevant and expanding.

9. Access to current technologies. Recommended review criteria:
   a. Faculty access to modern technologies in classroom and office.
   b. Faculty and student access to modern technologies for learning and communicating.
   c. Program access to nursing facilities with latest patient care technologies.

10. Other criteria
   a. Evidence of involvement among the faculty.
   b. Evidence of support from the university administration.
   c. Evidence of involvement in the long-term care community.
   d. Evidence of LTC Community involvement in the curriculum.

COLLABORATIVELY TEAMSTEPPING THROUGH EDUCATION INTO PATIENT-CENTERED CARE

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COLLABORATIVELY TEAMSTEPPING THROUGH EDUCATION INTO PATIENT-CENTERED CARE

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ABSTRACT

Previously, the Student Interprofessional Education Council (SIPEC) at Washburn University in Topeka, Kansas conducted a study that demonstrated the benefits of an interdisciplinary education and training of healthcare students. The current objective is continuing to improve interdisciplinary professionalism, communication, and patient-centered care through TeamSTEPPS® training, a system that builds communication and teamwork techniques, in a healthcare simulation. Studies have shown the effectiveness of TeamSTEPPS® at a professional level, but few have looked at interdisciplinary care and TeamSTEPPS® at a collegiate level.

INTRODUCTION

In today's healthcare system, it is not uncommon for a patient in a hospital to be in contact with dozens of healthcare workers during their stay. From engaging with the registrar when they initially arrive, to interacting with nursing staff, communicating with social work, and working with physical therapy and occupational therapy to aid in recovery. In this type of system, multiple handoffs are made amongst healthcare workers in any given day. Therefore, it is essential that there is sufficient communication and teamwork with not only the healthcare staff, but also the patient and family.

One tool that was developed by the Department of Defense (DOD) and the Agency for Healthcare Research and Quality (AHRQ) is an initiative known as Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS®). "TeamSTEPPS® is an initiative based on over 25 years of research related to teamwork, team training, and culture change" (King, Battles, Baker, Alonso, Salas, Webster, Toomey, & Salisbury, p. 1, 2008). In 1999, an Institute of Medical (IOM) report called *To Err is Human*, was published and it indicated that medical errors cause up to 98,000 deaths per year. Since the report, patient safety has become the number one focus amongst healthcare organizations. By utilizing TeamSTEPPS®, organizations are provided specific tools and strategies to improve communication and teamwork, therefore reducing chance of error, and providing safer patient care.

TeamSTEPPS® is broken down into an instructional framework. Our performance, knowledge, and attitude all affect our leadership, communication, situation monitoring, and mutual support skills (Figure 1). Those four skills are broken down into modules that help "identify the tools and strategies that can be used to overcome common barriers to achieve desired outcomes" (King, et al., p. 10, 2008). Examples of these tools include utilizing briefs prior to starting patient care, doing huddles while patient care is ongoing, and debriefing once the patient is discharged. Other communication tools that TeamSTEPPS® encourages is the use of "CUS" (I am *concerned*, I am *uncomfortable*, this is a *safety* issue) when you feel that a patients safety is at risk, using "SBAR" (Situation, Background, Assessment, Recommendation) when communicating critical patient information that requires immediate attention, and using "check-back" as a form of closed-loop communication to ensure that information conveyed by the sender is understood by the receiver as intended.

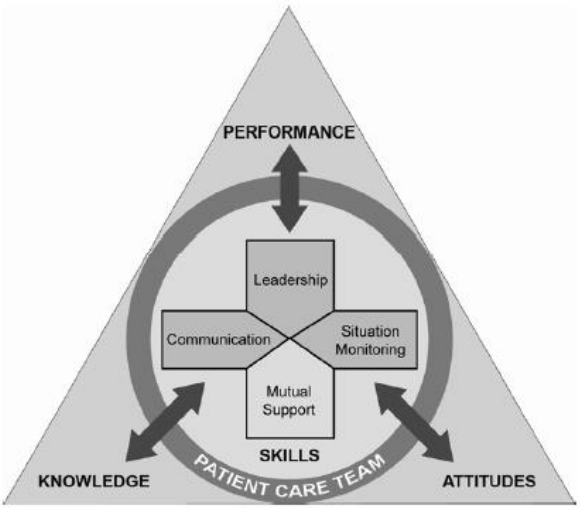

Figure 1: Instructional Framework (King, et al., p. 10, 2008)

With this increasing emphasis on patient safety and interprofessional collaboration in the workforce, there is a need to increase the interdisciplinary approach on a collegiate level. Interprofessional Education (IPE) "occurs when members of more than one health or social care profession (or both) learn interactively together, for the explicit purpose of improving interprofessional collaboration or the health/well-being of patients/clients (or both). The wide spread advocacy and implementation of IPE reflects the premise that IPE will contribute to developing healthcare providers with the skills and knowledge needed to work in a collaborative manner" (Reeves, Perrier, Goldman, Freeth, Zwarenstein, p. 4, 2013). Ultimately, through this interprofessional communication, students will gain a better understanding of different healthcare disciplines and patient care will improve.

One way that Washburn University is integrating IPE into their curriculum is through a program called Collaborative Outreach Advancing Community Health (COACH). This program engages in community outreach within the Topeka community. Students from allied health, applied sciences, and nursing programs at Washburn University go to different community partners on a weekly basis and provide health screenings and education for individuals within that community. Examples of education and screenings that are offered include cholesterol and glucose testing, blood pressure screenings as well as other vital signs, and education on obesity, nutrition, physical activity, heart disease, and diabetes (Washburn University, 2017).

The purpose of the current study was to give students the opportunity to step outside their discipline, learn in an interprofessional environment, and challenge their perspective on team collaboration. This study also evaluated the benefit of interprofessional education, simulation training, and TeamSTEPPS® communication strategy framework, within the COACH program.

METHODOLOGY

The participants of the research were all Washburn University students from the following healthcare disciplines; nursing, physical therapy assistant, occupational therapy assistant, athletic training, and health information technology. Everyone involved consented to participate with the understanding that they could withdraw at any time. The only incentive that was provided for their cooperation was TeamSTEPPS® training and a certificate of completion to add to their resume. Washburn University Institutional Review Board approved the research ethics.

The students were divided into two separate groups; a variable and a control. The students were at the same academic level within each healthcare discipline. Using the simulation lab at Washburn Tech, the variable and control group worked interprofessionally in an identical simulated healthcare case study. Prior to the case study, the students were given a survey that asked questions about their perspective on interprofessional education and collaborative teamwork communication and strategies.

After the case study, the variable group received TeamSTEPPS® training and education. The variable group utilized the recent tools and skills to collaboratively work together as a team through the COACH Program. They provided health screenings and education for Topeka residents within two communities where communication and making the patient the center of the interprofessional team could be a challenge.

The COACH program was utilized for this research project, because the healthcare students and faculty have been going into the El Centro community for over six years. This neighborhood had a lack of access to healthcare, and the COACH program helped them gain the access they needed. This allowed a relationship of trust and respect to be built amongst the members of that community and Washburn University. Since this relationship had been established, it opened up the opportunity for an interprofessional team of students to provide holistic care to a vulnerable population and learn how to effectively communicate with not only each other, but also with members from that community.

The interprofessional team of students also had the opportunity to provide care via the COACH program at The Topeka Rescue Mission. The COACH program had established a relationship with the leadership at Topeka Rescue Mission and provided the students a transient population that was vulnerable with healthcare needs that differed than that of El Centro based off their current situation. A majority of the residents at the Topeka Rescue Mission are without a stable living environment, lack access to transportation should they need healthcare services, and are in a state of transition. The leadership at the Topeka Rescue Mission invited the COACH program in to help care for their residents, which created a platform of trust. This allowed the interprofessional team of students to step in and deliver comprehensive care for this population.

The control group did not receive TeamSTEPPS® training and did not provide health screenings through the COACH Program. Both groups completed a post-simulation in the same environment, utilized the same available tools, and case study. Afterwards, the participants were surveyed to evaluate the differences in perspectives.

In both simulations, the students were asked to document the treatment. The documentation was then submitted to the health information technology students for medical coding. The purpose of involving health information technology was to evaluate the impact of interprofessional collaboration on written communication. The question we wanted to answer is whether or not we are all communicating similarly. Thus, simplifying medical coding by eliminating the process of deciphering what level of function or assistance the patient has achieved because the interprofessional team is documenting comparably.

RESULTS

The current study did include quantitative data. The surveys utilized for this study were developed by TeamSTEPPS®. The surveys assessed the students' prior experience with interprofessional teamwork and training, gathered the participants' perspective on the value of interdisciplinary collaboration, evaluated their views on simulation education, and directed the participants to answer questions about their ability to effectively perform within a team.

The pre-simulation survey asked the students in both the variable and the control group their perspective on the following subjects within a simulated environment and with an interprofessional team: familiarity working and training with teams, interprofessional training, benefits of training, learning and performance, learning environment, skills, team structure, leadership, situation monitoring, mutual support, communication, and essential practice characteristics. The post simulation survey asked the same questions. However, the variable group was given additional questions about their interprofessional training experience and how the effects of TeamSTEPPS® changed their perspective. The results of both surveys were compared and the following qualitative data was provided. Both groups became more passionate about interprofessional education in a simulated environment after participating in the research. The variable group also observed the importance of learning collaborative communication strategies such as TeamSTEPPS®.

Listed below were statements that were provided when asked, "What is the most important learning experience you took away from the interprofessional training (TeamSTEPPS®)?" The nursing student stated, "Learning to work together as an interprofessional team has been beneficial. I have tools now that I can actually use

to implement this practice." According the physical therapy assistant student, "I learned ways to improve communication and problem solving in order to reduce patient safety and prevent risks." The occupational therapy student commented, "I learned how to work with other professions effectively." The athletic training student stated, "Conflict happens, good communication reduces and solves conflict." The observer said, "Everyone's voice and what they want or need to communicate is valuable and important."

The quantitative results of our study were based on the observation of the collaborative interprofessional performance of the control and variable group in a simulated environment before and after receiving TeamSTEPPS® training. TeamSTEPPS® designed a form that would remove any bias of the observers. The observation forms were used for both the pre and post simulation and required the observer to use a Likert scale rating. During the pre-simulation, the control group's overall team performance Likert score was 45 out of 115. The variable group scored a 27 out of 115. During the post-simulation, the control group scored 54 out of 115. The variable group scored 71 out of 115. The performance of both groups showed an improvement. The control group's interprofessional interaction increased in relation to their educational growth, exposure to collaboration within their fieldwork experience, and the opportunity to work a second time with their team members in a similar simulation and environment. The variable group's achievement would have been accomplished through the same methods. However, the influence of TeamSTEPPS® training, working collaboratively together through the COACH program, and learning from each other also impacted their results.

The results were also based on the comparison of the written documentation and the ability to properly code and bill for the treatment. The health information technology (HIT) students were able to code the documentation from both groups and in both the pre and post simulation. However, the documentation from the post simulation was more detailed which decreased the amount of time spent deciphering the information and increased the performance of the coding process. The HIT observer stated that even though the documentation had improved, communication is critical in making advancements to the system. The HIT observer also stated that the procedure could be simplified by thorough, specific, and concise documentation.

DISCUSSION

The current study evaluated the use of the TeamSTEPPS® approach to improve interdisciplinary collaboration and communication amongst students in a simulated case study. The results of the study not only exemplified the need of interdisciplinary education, but also demonstrated the desire of students to learn in a similar environment and with a collaborative interprofessional team.

Several limitations were identified with this study. The current study was limited by its small sample size of students and of the absence of other healthcare disciplines. A larger and more diverse sample of students as well as a more varied healthcare team such as respiratory therapy, radiology technology, diagnostic medical sonography, magnetic resonance imaging, radiation therapy, health information coding, health science, psychology, and social work would have benefited our results. Including more disciplines would have provided increased collaboration and a larger poll of the students' interest in interdisciplinary education.

Unfortunately, 19% of the original participants were not able to complete the post simulation and had to withdraw from the research due to scheduling conflicts which impacted the results. The current study was an example of the challenges that occurred when attempting to "break the silos" and come together as a collaborative team. However, the participants that were not available for the post simulation expressed regret in having to withdraw from the research, which could be an argument for the necessity of embedding an interdisciplinary approach into healthcare education.

REVIEW OF LITERATURE

Paul M. Schyve, the Senior Vice President of The Joint Commission on Accreditation of Healthcare Organizations, recognized that the current challenge with healthcare "is not whether we will deliver care in teams but rather how well we will deliver care in teams (Clancy & Tornberg, p. 214, 2007)." A patient will be assigned a professional medical team that will strive to reach a good prognosis. However, this does not necessarily mean that the team is collaborating with each other and the patient to reach the best possible outcome. When the Institute of Medicine

(IOM) investigated the quality of medical care, the IOM observed that the system wide failures outweighed the inefficient performance of individuals (Clancy, et al., p. 214, 2007). "The most frequent subject of patient safety publications before the IOM report was malpractice (6% *v* 2%, $p<0.001$) while organizational culture was the most frequent subject (1% *v* 5%, $p<0.001$) after publication of the report (Stelfox, Palmisani, Scurlock, Orav, & Bates, p. 175, 2006)."

The IOM's report was the driving force for the development of TeamSTEPPS® which is a "science of teamwork that has evolved over the past 2 decades (Clancy, et al., p. 214, 2007)." TeamSTEPPS® has been utilized by the Department of Defense and other "high-risk" industries such as nuclear power and commercial aviation which increased interprofessional collaboration and communication which ultimately decreased systemic error (Clancy, et al., p. 214, 2007). "For a number of reasons, however, the field of healthcare has been slower to adopt the science of teamwork. Healthcare professionals are rarely trained together. Instead, they are trained to function as individuals in hierarchical arrangements. Alonso and colleagues describe a common situation where these factors produced friction in medicine (Clancy, et al., p. 215, 2007)."

The results of the IOM's publication has encouraged the healthcare industry to develop programs to facilitate team collaboration which will improve interprofessional communication and quality care. However, the establishment of interprofessional collaboration at a collegiate level is rarely offered which could alleviate a majority of these types of situations before entering the workforce. The Accreditation Council for Graduate Medical Education has required "interpersonal and communication skills as one of their core competencies to graduate. The residents have to effectively demonstrate information exchange with other healthcare disciplines (Clancy, et al., p. 215, 2007)."

"Interprofessional education has been championed as a critical strategy for improving healthcare outcomes. To guide other institutions considering implementing IPE, our intent is to describe the developmental process and content of IPE programs at Western University of Health Sciences, Thomas Jefferson University, and Rosalind Franklin University of Medicine and Science (Aston, Rheault, Arenson, Tappert, Stoecker, Orzoff, Galitski, & Mackintosh, p. 949, 2012)." Thomas Jefferson University and Rosalind Franklin University of Medicine and Science use strategies similar to TeamSTEPPS®. Western University of Health Sciences in Pomona, California has developed and implemented a three phase interprofessional education curriculum that includes the TeamSTEPPS® approach since the 2011 and 2012 school year (Aston, et al., p. 950, 2012). During Phase I, TeamSTEPPS® was utilized in case discussions and to submit an interprofessional group assignment. Phase II was a two semester online and face-to-face course. The first semester incorporates patient safety and ethical dilemmas. The second semester entails morals and ethics that requires the students to resolve patient safety issues. During Phase III, the students experienced the benefits of providing collaborative patient-centered care through the clinical portion of their academic requirements in the Western Diabetes Institute (Aston, et al., p. 951, 2012).

The current study wanted to place emphasis on the effect of written communication on the healthcare system as wells as the communities they serve. Communication within the healthcare setting can be difficult because clinical documentation is separate from accounting which is different from claim processing and coding systems which is nothing like the reimbursement information system. The struggle is that these systems do not always communicate well with each other which leads to denial of coverage and medical write offs (Terra, & Byrne, p. 74, 2016).

Another issue that contributes to the problem is the lack of "cross-departmental communication" which means to resolve the situation interprofessional communication is critical (Terra, et al., p. 74, 2016). Precertification, authorization, and medical necessity are determined through the interpretation of clinical documentation (Terra, et al., p. 76-78, 2016). Unfortunately, this becomes a nightmare for the community that need treatment and are turned away simply because technology and personnel are not speaking to each other. This study utilized medical coding of the written clinical documentation provided by both the variable and control group as a guide to demonstrate whether or not interprofessional communication can affect the system that determines reimbursement.

CONCLUSION

Our predecessors (Washburn University Student Interprofessional Education Council) posed the following idea and question:

> The major question is how will healthcare professionals be prepared to work together as a team? Currently, healthcare students are being trained in silos. Students are taught in separate courses and classrooms, and often in different buildings. Many never come in contact with a student of another discipline until they go into the field. This poses a problem: upon graduation, students are expected to enter the workforce and become part of a high functioning team of interdisciplinary professionals without prior experience. How will they know how to effectively communicate with their new team members when they only know how to communicate within their discipline (Oswald, Meeks, Faulkner, Gnagi, & Ure, p. 2, 2015)?

The current study went a step further. Where do universities and colleges begin to "break down the silos", bring students from different disciplines with varying curriculums together so that they can collaborate as a team?

Our research suggests starting with the basics. Every post-secondary education requires general education courses to achieve an associates or bachelors level education. Public speaking, written communication, and oral communication usually are a prerequisite within these programs. A course that offers the tools and strategies within TeamSTEPPS® could be beneficial because it awarded the participants of this study the opportunity to communicate with each other and helped them define the entire team and their role in patient-centered care. The link between basic communication and this study of simulation as well as the use of the COACH program speaks to the curriculum outcomes in fieldwork, clinicals, internship, and eventually will become beneficial during their interprofessional career.

The current study challenged a small group of Washburn students to "break down their silos", educate each other about their discipline, learn the TeamSTEPPS® strategies, and practice those skills by providing collaborative interprofessional care to the residents of Topeka through the COACH program. Together as a team the participants began their journey to collaboratively TeamSTEPPS® through their education which will assist in building their patient-centered care.

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COMPARATIVE CONCEPTUAL STUDY ON HBCU'S COMPUTATIONAL CHEMISTRY AND HEALTH IT RESEARCH: WHERE ARE THE PARALLELS?

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ABSTRACT

With the current climate of agency research budgets dwindling, research funding opportunities have diminished. Larger institutions have buoyed this effect with large endowments and private donations, while smaller schools are being forced to either close programs, raise tuition or change focus. This is the plight of Historically Black Colleges and Universities (HBCU's). Typically, HBCU's have been known as teaching colleges not only for their emphases on teaching rather than research, but also their origins as institutions for the training of educators. With the advent of legal drivers such as Land Grant allocations, affiliations with the United State Department of Agriculture and Affirmative Action and Title III programs HBCU's have carved out several niches in the academic research arena. However, there remains large discrepancies between HBCU's and majority institutions. For instance, in Chemistry there are only 5 HBCU's with Ph.D. granting programs while almost every major university in the nation has a Ph.D. program not only in Chemistry but also in almost every field of Science Technology Engineering and Mathematics (STEM). One of the major issues preventing the creation of more Ph.D. programs in areas such as Chemistry at HBCU's besides politics is the lack of resources and infrastructure. Capitol cost to build a successful program in the physical sciences run well in to the millions if not hundreds of millions of dollars. It is this lack of infrastructure need or the ability to port research on preexisting computational infrastructure or leverage computational resources that has spurred the introduction of HBCU's into the area of computation, Computational Chemistry for instance. One example is Jackson State University, a relative smaller university of about 6,000 or so students. With the recruitment of outstanding researchers in computational chemistry, partnerships with the Army and the Army High Performance Computing Research Center (APCRC) program, Jackson State has been able to garner research dollars totaling in the millions over a short period of time. The capitol cost remained low by leveraging high performance computing resources using the partnership through the AHPC and University of Minnesota. Once the expertise was proven research at JSU expanded by using the computational research to produce strong research collaborations with larger research focused institutions such as the University of California Santa Barbara, most notably with the Materials Research Laboratory and the Chemistry Department. The Materials Research Science and Engineering Center (MRSEC) program at UCSB partnered with JSU to produce partner based National Science Foundation a Partnership for Research and Education in Materials (PREM) grant. Success such as this continues but as the research needs of the nation grow and change other areas of importance emerge. This work seeks to explain and give examples of the next potential avenue for research and development despite infrastructure deficiencies with HBCU may be in Health Information and Technology (IT). Health IT has been deemed one of the largest areas of national security vulnerability by the FBI. Also with the advent of the Cloud, personalized medicine and use of analytics, Health IT is also very dependent on computing infrastructure. Using large data analysis, cooperate partnerships, and emergence of Centers of Academic Excellence in Information Assurance Education and new programs in Facilities Management, HBCU's such as Florida A&M University can take the lead just as JSU did in Computational Chemistry in producing productive Ph.D. programs; meeting this critical national need.

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DO TENURE AND PROMOTION REDUCE FACULTY RESEARCH PRODUCTIVITY? EVIDENCE FROM A PHARMACY PRACTICE DEPARTMENT

David M. Scott, North Dakota State University
Michael Kelsch, North Dakota State University
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ABSTRACT

The concepts of tenure and promotion are central to academia. As eloquently expressed in its 1940 Statement on Principles of Academic Freedom and Tenure (https://www.aaup.org/report/1940-statement-principles-academic-freedom-and-tenure), the American Association of University Professors argues that academic freedom is essential to promote the disinterested pursuit of knowledge, and to convey that knowledge to students and the general public. In other words, to broaden our understanding within a discipline, and more broadly to generate new knowledge that benefits society as a whole, faculty must be free from influence of business, political and other organizational forces that have very specific vested interests, and who may be incentive to suppress or distort the creation and dissemination of new knowledge to those ends. Tenure (or automatic contract renewal) and/or promotion are crucial levers to ensure academic freedom. At most institutions, faculty who have earned tenure (and, to a lesser extent, promotion) may only be released from employment for one of three reasons: a loss of a program or department in which the faculty's primary job responsibilities lie, the institution at which the faculty is employed becomes financially insolvent, or gross misconduct on the part of the faculty. By providing tenure (and, to a lesser extent, promotion) as an employment protection, faculty are free from the worry that they will become unemployed, possibly permanently, if they teach or conduct research in an appropriate manner, but on controversial issues.

Tenure (and to a lesser extent, promotion) are often criticized on two, general grounds. One is the assertion (drawn from a variety of sources, including but not limited to certain types of libertarianism and authoritarianism) that the disinterested pursuit of knowledge is unnecessary. For example, some (but not all) libertarian theory suggests that markets themselves, in the absence of market failure and/or significant transaction costs, will produce knowledge (whether interested or disinterested) of equal or greater value (https://www.theatlantic.com/business/archive/2013/09/study-tenured-professors-make-worse-teachers/279480/; https://hbr.org/2013/03/its-time-for-tenure-to-lose-te). The distinction between disinterested or interested knowledge is moot, since markets will determine which types of knowledge have "value". Authoritarianism argues that a nation or society's leadership determines national or social "values", and as such determines whether disinterested or interested knowledge has value. Hence, no protections that conflict with leadership's views are necessary (http://theauthoritarians.org/Downloads/TheAuthoritarians.pdf).

The second argument against tenure (and, to a lesser extent, promotion) is based on economic efficiency. Even if the disinterested pursuit of knowledge has unique universal value (whether in a free market, an authoritarian regime, or a regulated market), ensuring that faculty can pursue teaching and research in a disinterested fashion accrues costs. If those costs are sufficiently high as to exceed the benefits of that knowledge, the pursuit of disinterested knowledge may be reconsidered. Within the context of tenure as a means to unsure academic freedom, the contention is that faculty, once tenured and assured of employment protection, reduce their research and teaching efforts to the point where they produce and disseminate little academic knowledge. As such, the use of tenure to ensure academic freedom is inappropriate.

The first grounds is purely philosophical, as it is fundamentally rooted in broader socio-economic issues; namely, what is "value", who determines "value" and who has a claim to any "value" from disinterested teaching and scholarship that is produced? There is an extensive literature underlying these issues, and a single manuscript is unlikely to unambiguously resolve any of these questions (for example, see: https://fee.org/articles/a-libertarian-defense-of-tenure/ for the libertarian case for tenure protection). The second grounds is a fundamentally empirical issue. Faculty who are prestige-seeking, who want to maintain employment mobility, and those who align (some or

all of) their personal identities with their professional responsibilities may find incentives over and above promotion and/or tenure to remain productive teachers and scholars. Other individuals may not inherently experience these incentives, and their productivity may decline post-promotion and/or tenure. As a corollary, and in such settings, accreditation requirements (especially in professional schools), post-tenure reviews, and merit pay raises also mitigate the incentives to decrease productivity.

The purpose of this manuscript is to provide a simple empirical assessment of this issue within a single academic unit, focusing on research, rather than teaching. More specifically, we analyze scholarship trends within an accredited Doctor of Pharmacy program to determine whether faculty scholarly activity increases, decreases, or remains the same following tenure and/or promotion. We also examine whether the distribution of scholarly productivity changes during this time frame. In doing so, we formalize (using principles of evidence-based practice) evidence for or against promotion and/or tenure. Perhaps more importantly, conducting this assessment within a Doctor of Pharmacy program exhibits several advantages consistent with a natural experiment. First, teaching loads are standardized and static via accreditation; individuals have a well-defined area of practice and a workload policy that codifies teaching expectations (with regard to both quality and quantity) regardless of promotion and tenure. Second, a Doctor of Pharmacy program contains a relatively even mix of tenure-track and non-tenure track faculty, as well as a broad array of clinical, social, and bench scientists. Promotion is treated distinctly from tenure, and conversion from tenure-track to non-tenure track is possible. Faculty who are on the tenure-track may apply for tenure by itself, combined with a promotion to Associate Professor, or combined with a promotion to Full Professor. As a result, it is possible to separate the incentives provided by promotion at various ranks from tenure.

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EFFECTIVENESS OF LEADERSHIP CAPACITY IN DELIVERING SIMULATION EDUCATION: A CATAYLST FOR CHANGE IN NURSING

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ABSTRACT

Nursing professionals today work as a part of an interdisciplinary team with colleagues educated at the highest level and recognize the complexity involved in providing patient care and understand the value for higher education. The leaders in nursing education desire to create a more highly educated nursing workforce in the interest of improving patient safety and nursing care. Simulation in nursing has become an important part of the education and recommendations have been made around the use of simulation in nursing training. Simulation education provides countless benefits in the areas of knowledge, skills and behaviors. Successful simulation requires planning and effective leadership capacity to advance simulation education and lead change in practice. This underscores what many nursing educators have experienced firsthand. The simulation education are newly used as practicum training in nursing programs in Saudi Arabia

Yet, rules, regulation and validation for simulation education are not yet established. The rapid expansion of health care simulation, standards for best practice is increasingly important for quality, consistency, outcomes, and improvement of simulation programs and learning strategies. The purpose of this study is to demonstrate the differences among national and international effectiveness of nurses' leadership capacity to advance simulation education and lead change for improving student competency. This study had a nonexperimental, cross-sectional comparative design surveying 115 nursing faculty across two universities, one in Canada and the other in Saudi Arabia. Our key findings show that members of both universities attested to their capabilities to effectively execute tasks such as to "support a safe learning environment which advocated learning", "provide constructive feedback", "assess students' acquisition of knowledge and skills", "model professional integrity", "clearly communicate the objective and expected outcomes to participants of the simulation process", and "instill students with the confidence to approach the simulation experience as a serious evaluation of their abilities". Thus. as nursing simulation continues to become increasingly utilized universally, it is imperative for faculty and students alike to understand the ways in which optimal experiences can be achieved and effective outcomes be attained.

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INTRODUCTION

As nursing simulation education has evolved, others have implemented a number of forecasting models to predict behaviors of students, faculty, and health care providers. In addition, the revised standards for simulation practice was published and presented to national and international nurse simulation educators. The adoption of these standards demonstrates the importance of using up-to-date evidence when implanting simulation in nursing education. As developed by The International Nursing Association for Clinical Simulation and Learning or the INASCL, new simulation programs and advanced programs have used standards such as confidentiality, professionalism and respect as their foundation to ensure high quality competency based learning (Gloe et al., 2013). Furthermore, challenges such as the restricting students activities to observing patient care only may limit clinical educational and learning opportunities (J. K. Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). Although more nursing programs

have begun in Saudi Arabia, many are facing limitations of access to, and competition, for clinical sites. Some of these nursing programs have used medium- or high-fidelity simulation in their programs. Leadership development for simulation faculty is highly needed. Faculty who roles demanded to assume a leadership role in simulation education must be prepared to design, manage and directing simulation learning activities. Effectiveness of leadership capacity will foster health provider growth and emphasize to advance simulation education and practice.

BACKGROUND

There has been much controversy surrounding nursing simulation and its effectiveness on nursing education. This is mostly due to the lack of homogeneity in relation to what is measured and how the analysis is interpreted (Adib-Hajbaghery & Sharifi, 2017). However**,** due to the potential implications of learning and its subsequent effect on nursing education and the nursing profession as a whole**,** many argue that high fidelity simulations must be considered when developing the curricula. Curl, in her latest publication, argues that not only are high fidelity simulations effective but if done correctly have the potential to replace clinical experiences by up to fifty percent (Curl, Smith, Ann Chisholm, McGee, & Das, 2016). She goes on to further state the power of high fidelity simulation by establishing a one to two, time based effectiveness ratio, when comparing it to traditional clinical models (Curl et al., 2016). Critical to this model she concludes are the pre lab and debriefing exercises (Curl et al., 2016).

According to Gaba (2004) "Simulation is a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion" (p. i2). Nevertheless, providing students with standardized simulation clinical education is a fundamental change requirement in clinical education that allows the nursing students to assess, intervene in and re-evaluate client's condition and response to treatment (Buckley & Gordon, 2011; Gaba, 2004; Lapkin, Fernandez, Levett-Jones, & Bellchambers, 2010). Additionally, successful simulation requires planning and effective leadership capacity to advance simulation education and lead change in practice.

In Korea, Lee led a study designed to understand the effectiveness of this same high fidelity simulation. Though limited in size, a key understanding was conveyed through the use of simulation driven education. Not only did the students perform better in problem solving and academic self-efficacy but the students increased their core competencies significantly (Lee, Lee, Lee, & Bae, 2016). In a similar study Lee also focused on both the strengths and weaknesses of the simulation environment in an effort to establish guidelines for subsequent analysis (Lee et al., 2016). When focusing on the learning environment Lee discovered that an overwhelming majority of students learned not only from the situation but from their peers in a collaborative environment (Lee et al., 2016).

To further expound on the benefits of team based learning in nursing simulation Rice offers her United States simulation research in the context of a trauma based environment. Not only were performance, attitudes, and perceptions improved but communication also increased (Rice et al., 2016). Not only does this type of group simulation improve the individual's understanding it also improves how the team interacts as a whole. This leads to the further implication that with increased communication team based simulation could also decrease future patient errors (Rice et al., 2016). Due to a lack of international guidelines A New Zealand Study highlighted the benefits of simulation as established by the Oregon Consortium of Nursing Education. Their research indicated that, in addition to increased assessment skills and confidence, the students are more prepared to enter the workforce upon graduation (Wordsworth, 2013).

While there are many studies highlighting the benefits of high fidelity simulation versus low simulation environments there are few that study this in addition to where the simulation occurs in the curriculum of the nursing student. In Basak's study, where the data was taken from the University of Alabama Birmingham's nursing program, the researchers aimed to discover whether applying high fidelity simulation in the beginning of a nursing curriculum or the end of a nursing curriculum would provide the most benefit to the student. After thorough analysis the conclusion was found that the more novice student perceptions were higher than that of their more senior cohort (Basak, Unver, Moss, Watts, & Gaioso, 2016). While the high fidelity simulation was perceived at a higher rating for both cohorts the delta between the senior cohort was noticeably less than the more novice cohort. Although this could be due to the technological nature of high fidelity simulation implications of further benefit illicit more positive implications for earlier deployment of high fidelity based simulation.

Exploring methods that contributed to successful simulation practice, Brewer (2011) concluded there was need for more studies to demonstrate the importance of using simulation in nursing education and its impact on student outcomes, despite the difficulty of doing so. Such further study is necessary in Saudi Arabia (Brewer, 2011). This study attempts to investigate nursing faculty members' perspectives about the impact of simulation on student competence. When developing curriculums, the pedagogy related to nursing simulation becomes of paramount importance. With many countries contributing to the refined outcomes of nursing education**,** the industry creates a multifaceted approach therefore developing other outcomes in the world over. In Kelly's Paper Titled *Simulation in Nursing Education-International Perspectives and Contemporary Scope of Practice***,** she argues that the international study of these practices "benefit(s) student's performance in subsequent clinical practice" further developing the student's skill set (M. A. Kelly, Berragan, Husebo, & Orr, 2016). This not only has implications for each program benefiting from their own changes but the entire profession of nursing education as a whole. Limitations of high fidelity simulation are further exacerbated when establishing criteria for simulation based examinations. Not only are situations made more complex but leadership**'**s role in the learning experience is even further relied upon**,** thus citing a greater need for processes and strategies interdepartmentally. This creates the need for "rigorous preparation in advance, training and retention of proficient personnel, and reliable student assessments" in addition to "immediate and supportive debriefing" from the professor to the student and vice versa (Ha, 2016). Review of published material has identified the types of courses that used simulation and how it was implemented. The researchers reported that it helped in fundamental and advanced courses (J. Hayden, 2010; Katz, Peifer, & Armstrong, 2010; Kirkman, 2013). Unfortunately, Nehring (2010) found only three studies examine skill performance and competence, as depicted in 13 reviewed studies, all in developed countries and none in Saudi Arabia (Nehring, 2010). None of these studies examine role of leadership in advance simulation education. Furthermore, none literature retrieved related to Saudi Arabia leadership role of simulation in nursing education. Enhancing leadership capacity will promote health provider advancement in simulation education and practice. The purpose of the study is to attempt to answer these research questions:

1. What factors support faculty as leaders to provide effective leadership capacity to advance simulation education?
2. What best practices are being used nationally and internationally in simulation education?

METHODOLOGY/PROCEDURES

Design

This study had a nonexperimental, cross-sectional comparative design. This method was utilized because it was best appropriate for a cross-cultural study which seeked to identify, analyze and explain similarities and differences across societies (Babbie, 2013).

Setting

The study was conducted in an undergraduate nursing program in two nursing schools affiliated with universities in two different countries, namely Saudi Arabia and Canada. Each nursing program provided simulation training and is a baccalaureate nursing program.

Sample and Participant

The sample of this study consisted of nursing faculties in both nursing programs. Non-probability sample for faculty was utilized. The target population was nursing faculty in both nursing programs in the King Saud University College of Nursing (KSU) and University of Ottawa (UOttawa) School of Nursing. A total number of faculty participants were 115 nursing faculty, 6 from The UOttawa and 109 from KSU. The eligibility criteria of the faculty nurses were that they were full-time or part-time who prepared, taught, and had at least one simulation experience.

Measurement

This study employed a faculty survey, developed and designed by Kelly Sausan in 2014. The survey conveyed nursing faculty perceptions of high-fidelity simulation using the Likert scale format. The scale for the survey

had four response options: disagree, somewhat disagree, somewhat agree, and agree. The survey was developed by the researcher after extensive literature review (S. Kelly, 2014). It is consisted of two sections. The first section possessed twelve questions related to faculty characteristics. The questions were on age, years teaching and education level, whether they graded students as a group or on an individual basis, and their leadership capacity to advance simulation education (S. Kelly, 2014). The second section included a part A and a part B, with a total of 12 questions, five in part A and seven in part B. The questions focused on student learning, objectives, and faculty knowledge in simulation. The results yielded data on the leader to support nursing faculty development in simulation teaching to enhance student competency.

Data Analyses

The data entry and data verification were performed using the up-to-date SPSS software package to compute and analyze the data at a significance level of $p < 0.05$. To acquire fresh, exciting insights and a deeper understanding of issues, a comparison test was applied. Both parametric and nonparametric statistics were used in data analysis. In addition to investigating the research questions, a profile of the participants was prepared by analyzing the demographic and data characteristics included in the questionnaire with descriptive statistics (mean, range, and standard deviation). Data was examined using analysis of variance (ANOVA), which analyzed the differences among group means and their associated procedures. In addition, Kruskal-Wallis tests, t-tests, and linear regression were employed to adjust for sample size differences.

RESULTS

The descriptive statistics of the nursing faculty at both campuses depicted in Table 1, display faculty members' positions on the topic of simulation training and education. Compared to their counterparts, KSU closed to Ottawa's in both the categories of "Continuing education course on simulation" and undertaking an "Evaluation or student assessment course". Riyadh's University percentage for both categories were (48.6%) and (39.4%), while Ottawa's University faculty surpassed with (50%) for both categories. In regards to simulation topics of interest, over one third (37.6%) of KSU nursing faculty reported that debriefing students after a scenario was the most enjoyable aspect of the simulation development follow up with (35.8%) for "Evaluating students". Compared to the above, members from Ottawa's nursing faculty indicated divergently by reporting that all three categories: "Developing simulation scenarios", "Evaluating students/grading simulations", and "Debriefing students after a scenario" were all equally enjoyable aspects of the simulation development.

Table 1 Descriptive Statistics of Nursing Faculty

Category	Frequency Riyadh, KSU	Ottawa, CA	Percent Riyadh, KSU	Ottawa, CA
Gender				
Male	45	0	41.3	0.0
Female	64	6	58.7	100.0
Highest degree				
Bachelors	18	4	16.5	66.7
Masters	45	2	41.3	33.3
Doctorate	46	0	100%	0.0
Age				
< 30 years	22	2	20.2	33.3
30-39 years	40	1	36.7	16.7
40-49 years	31	1	28.4	16.7
50-59 years	14	2	12.8	33.3

60 years or more	2	0	1.8	0.0
Teaching experience				
< 1 year	9	1	8.3	16.7
10 years or more	41	2	37.6	33.3
1-5 years	42	3	38.5	50.0
More than 5 years but less than 10	17	0	15.6	0.0
Evaluation or Student Assessment course				
Yes	43	3	39.4	50.0
No	66	3	60.6	50.0
Continuing education course on simulation				
Yes	53	3	48.6	50.0
No	56	3	51.4	50.0
Faculty development course on simulation topics of interest				
Learning how to properly utilize the technology	14	0	12.8	0.0
Developing simulation scenarios	15	2	13.8	33.3
Evaluating students (grading simulation)	39	2	35.8	33.3
Debriefing students after a scenario	41	2	37.6	33.3
Faculty development course on simulation topics of least interest				
Debriefing students after a scenario	33	2	30.3	33.3
Evaluating students (grading simulation)	29	1	26.6	16.7
Learning how to proper utilize the technology	17	1	15.6	16.7
Developing simulation scenarios	30	2	27.5	33.3

In addition to faculty characteristics, Table 2 presents faculty perspectives regarding student learning, simulation objectives, and faculty knowledge were gaged within the answers rendered by survey participants. When surveyed on the topic of faculty knowledge, members of both universities attested to their capabilities to effectively execute tasks such as to "support a safe learning environment which advocated learning", "provide constructive feedback", "assess students' acquisition of knowledge and skills", "model professional integrity", "clearly communicate the objective and expected outcomes to participants of the simulation process", and "instill students with the confidence to approach the simulation experience as a serious evaluation of their abilities". However, out of all six faculty components, only three possessed statistical significance. 1) Faculty clearly communicated the objectives, 2) Faculty members were able to assess the students'' acquisition of knowledge and skills and 3) The students approached the simulation experience as a serious evaluation of their abilities.

When asked about their responses to student learning and simulation objectives within the six categories given as options, faculty responses did not possess any statistical difference between faculty perspectives.

Table 2 Difference between King Saudi University Faculty and University of Ottawa Faculty n=115

	Sum of Squares	F	P-Value
Best Practices of High-Fidelity			
The faculty supported a safe learning environment that advocated active learning.	0.00	0.00	0.99
The faculty clearly communicated the objectives and expected outcomes to the participants of the simulation scenarios.	2.49	7.03	0.01
The faculty provided constructive feedback and discussion after the simulation scenarios.	0.04	0.08	0.78
The instructor modeled professional integrity during the individual scenario.	0.01	0.01	0.91
The faculty member was able to assess the students' acquisition of knowledge and skills during the individual scenario.	2.56	6.88	0.01
The students approached the simulation experience as a serious evaluation of their abilities.	1.40	3.12	0.08
Student competency			
The knowledge gained through the simulation experience can be transferred to the clinical setting.	0.52	1.82	0.18
The full 8-hour day performing simulation scares promote better learning outcomes for students than an entire 8 hours of clinical.	1.41	1.24	0.27
Students were prepared to provide specific rationales for their actions during the simulation scenario.	0.25	0.47	0.50
Students demonstrated their ability to communicate with other providers of the healthcare team.	0.23	0.49	0.48
The students demonstrated their ability to obtain pertinent subjective and objective data and report findings to the instructor.	0.79	1.24	0.27
The students demonstrated their critical thinking skills learning through the nursing program during the simulation.	0.045	0.087	0.768

DISCUSSION

The results from this study conveyed several findings, which proved pertinent to concluding factors significant to the leadership capacity in simulation education process. Components such as faculty effectiveness, simulation best practices, faculty development, and the differences between national and international academic institutions were analyzed to assess their correlation, if any, to simulation education. The overall purpose of this study was to determine whether or not leadership capacity in simulation education within nursing courses could be advanced through the designing, implementing, and directing of simulation education.

While evaluating possible factors that may have been significant in aiding faculty provide effective leadership simulation education, elements such as develop professional integrity, plan constructive feedback, clear communication, design a safe learning environment, and direct assessment of students' acquisition of knowledge were examined for significance. After assessing each characteristic, the study concluded that none but one of the above possessed a statistical significance. Faculty's assessment of students' acquisition of knowledge and skills during

individual simulation scenarios proved to be the only factor that assisted faculty advance simulation education. This finding may be in part due to the fact that faculty assessment of students' knowledge internally revealed possible process improvement opportunities and even further, inefficient faculty teaching styles (Podlinski, 2016). Podlinksi contests that awareness to students' simulation knowledge allows faculty to both ensure that repetitive simulation practice is administered to students who may be in need, as well as establish multiple learning strategies and individualized learning that is tailored to each student. With this in mind going forward, alternative factors that could be taken into consideration are faculty emotional intelligence scores, reactions to student feedback, and ability to formulate various learning strategies for students according to their comprehension level and familiarity with assigned simulation scenarios.

The study highlighted several best practice methods being utilized at both Universities. Methods included were constructive feedback from faculty, a safe learning environment conducive for active learning, and faculty's professional integrity. These methods which conveyed what faculty regarded imperative for effective nursing simulation education, were congruent with past research simulation studies (Franklin et al., 2013). The above methods foster effective decision making and constructivism within simulation training. Findings such as these present a strong argument for the incorporation and perhaps comprehensive regulation of the above practices into the curricula of nursing programs. Moreover, in advancing best practices within nursing simulation, several studies offered auxiliary applications that can be further implemented. Within her study, Franklin urged nursing faculty to integrate prebriefing and debriefing orientations at the commencement and conclusion of simulation exercises. Franklin goes further to contest that these orientations possess advantages in regards to student understanding and overall simulation development. (Franklin et al., 2013).

Because simulation is unique from the standard classroom teaching methods, faculty will often require more time and preparation to become accustomed. Henceforth, the development of faculty for leadership role to effectively utilize simulation in designing and developing scenarios is imperative to properly evaluating student performance and ensuring positive student outcomes (Kelly, 2014). A critical component in providing effective simulation education to students is the availability of faculty developmental opportunities and the faculty's willingness to undertake such training. However, this study indicated that the majority of faculty within King Saud and UOttawawere averse to this assertion. According to their responses, most faculty fail to undertake simulation development opportunities to broaden their knowledge and leadership capacity on the subject. This proves costly to promoting learning continuity and may pose negative repercussions on students' simulation education. While this study did not analyze factors which contributed to faculty failure in undertaking development opportunities, future research should be conducted to develop solutions to combat this fact. Possible solutions may include the establishment of initiatives such as faculty grants, sabbatical allotments and even mandating simulation development credits as a prerequisite for faculty tenure. Perhaps the combination of these proposals may prove beneficial to increasing faculty participation in development opportunities.

CONCLUSION

The findings drawn from King Saud University and University of Ottawa's nursing faculty response sheds light on the effectiveness of simulation as well as areas for process improvement. To establish leadership role in simulation education, require effectiveness of leadership capacity to examine related issues in the designing simulation-learning environment, implementing and integrating simulation in nursing education. Furthermore, the simulation leader educators will lead simulation initiatives national and international nursing program by working on a group projects that creates and expand simulation content and innovation resources.

Several congruent studies were utilized to both support and counter the study's identification of key factors and hypothesis. Statistical significant best practices were identified, student and faculty competencies were analyzed, and further simulation methods were developed to enhance the effectiveness on student outcomes. As nursing simulation continues to become increasingly utilized universally, it is imperative for faculty and students alike to understand the ways in which optimal experiences can be achieved and effective outcomes be attained.

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OPTIMIZING GROWTH: RETENTION STRATEGIES IN HEALTHCARE ADMINISTRATION PROGRAMS

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OPTIMIZING GROWTH: RETENTION STRATEGIES IN HEALTHCARE ADMINISTRATION PROGRAMS

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ABSTRACT

This paper examines a startup healthcare administration program that has surpassed the five year projection for enrollment in only two years. To retain momentum, encourage students' educational engagement, and ensure program retention, an online survey was conducted to characterize healthcare majors. The survey design obtained data about student experiences with the healthcare sector, attitudes about healthcare delivery, preferred learning styles, and self-assessment of values and soft-skill capabilities. Results will be used to influence curriculum delivery, improve the program, define future direction, and formulate strategies to enhance retention. This process may be applicable across disciplines and impact other program implementation and evaluation.

INTRODUCTION

Universities across the nation continued to experience declining enrollments in 2016. Of course, not all universities are equally affected, but all universities are aware of the trend. Those universities that have fallen victim to the trend are trying to determine how to adjust from missed tuition revenue, while those unaffected are taking pre-emptive steps to soften the blow if they fall prey to the trend. Declines may have various causes. For example, stronger economic conditions tend to result in lower enrollment, particularly in Master's programs. Additionally, schools that have relied heavily on international students may be suffering from the political climate. However, all universities know they are under scrutiny and are taking heat about high costs and limited access to low-income students. In a time when the value of higher education is disparaged, state funding is declining, and vulnerable groups feel unsafe on campuses, universities are compelled to work harder to demonstrate value, show support for students, and reexamine programing (Rudgers & Peterson, 2017).

This paper provides a case study of the growth of a start-up healthcare administration program at a regional, comprehensive university located in the Mid-West with approximately 11,500 students. Located in a community of 40,000 which serves a 50-mile region of more than 300,000 people, it is the largest center for retail, medical, manufacturing, communications, and cultural activities between two large metropolitan areas. The authors of this paper provide an introspection on their views on optimizing growth through retention strategies.

The university's college of business, like most colleges of business, has a commitment to promoting student learning and student success. One dimension of the college's vision statement is to offer "a relevant curriculum that connects theory with practice and a personal environment that passionately engages students." True to that spirit, combined with strong market demand and increased student interest, the college explored the opportunity to develop a healthcare administration program. With the blessing of relevant parties, an interested faculty member took the lead on spearheading this effort. All the painstaking due diligence lead to fruition and the new program was launched in the fall semester of 2015. The approved program resulted in three degrees: a BS in Healthcare Management (designed to serve associate degree clinicians and traditional undergrads unable to get into a clinical bachelors program earn their BS), a BSBA in Healthcare Administration (designed as a traditional business degree set within the context of the healthcare industry), and a MS in Healthcare Management (designed to allow individuals working in the industry to continue their education while maintaining a full-time position).

The enrollment projection (required by the state for approval) indicate 55 undergraduate students (30 for BS and 25 for BSBA) and 20 masters' students at the end of the five years. This number is used as a benchmark by the state at the five year program review as a measure of programmatic success. As of the Fall 2017 official census

(Figures 1 – 3), enrollment in the undergraduate programs is 111 (47 for BS and 64 for BSBA). Enrollment for the graduate programs is 22 (xxx University, nd). With the MS at 47% over Fall 2017 projection, the BS at 88% over projection, and the BSBA at 433% over projection, the program has far surpassed expectations for student interest and enrollment. The success of this program encourages faculty to put forward the best possible effort toward supporting students to achieve their goals in the learning process through degree completion.

The college's health administration program is primarily an online program. Faculty who have been accustomed to face-to-face interaction have an adjustment period teaching online and sometimes come away from the online instructional process less gratified than they expected. Therefore, this same phenomenon may be happening with students. The author's own apprehension has provided an acute level of awareness of the need to proactively reach out to students to offer them support both academically and socially (Moorer, 2014). As a teaching-focused institution, this proactive approach aligns with that mission, as well as the faculty's intrinsic need to provide the best learning experience possible for students.

While the authors are confident in the academic content of the program, the growth of the program has raised concerns that a full understanding the backgrounds of the students in the program is missing, thus resulting in a possible disconnect between academic content and application to the student's lived experience. The survey was designed to obtain information about the students' experiences with the healthcare sector, to determine preferred learning styles, ascertain attitudes about healthcare delivery, and establish self-assessment questions relating to values and soft-skills. The objective was to utilize survey results in deciding how best to deliver curriculum. Results will be used in developing programmatic changes and defining future direction of the programs. Understanding that an engaged student is more likely to complete a degree program, reliance on these survey findings to direct us in formulating strategies to engage students and enhance retention in healthcare majors. Strategies will serve as practical and meaningful avenues to keep students engaged (Alexson & Flick, 2011).

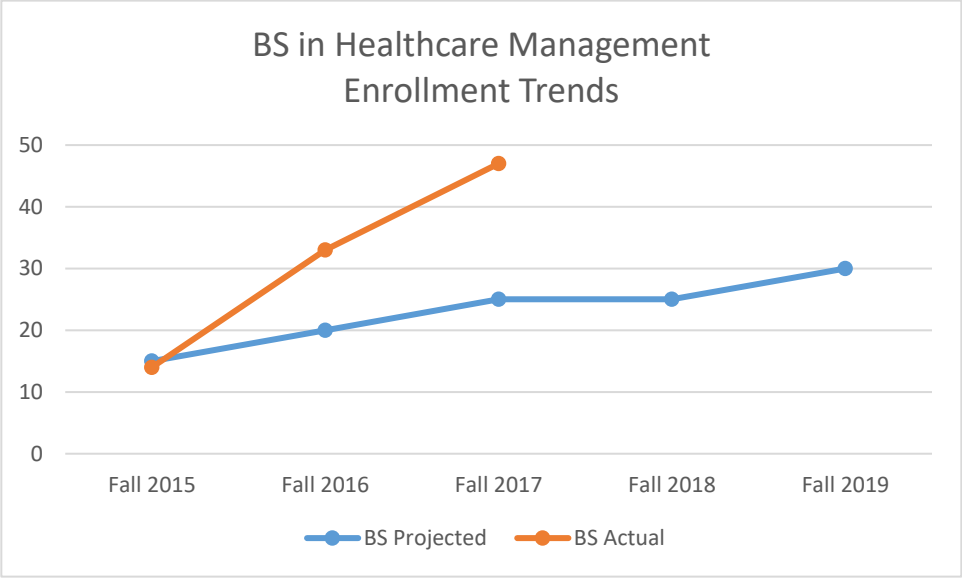

Figure 1: BS in Healthcare Management

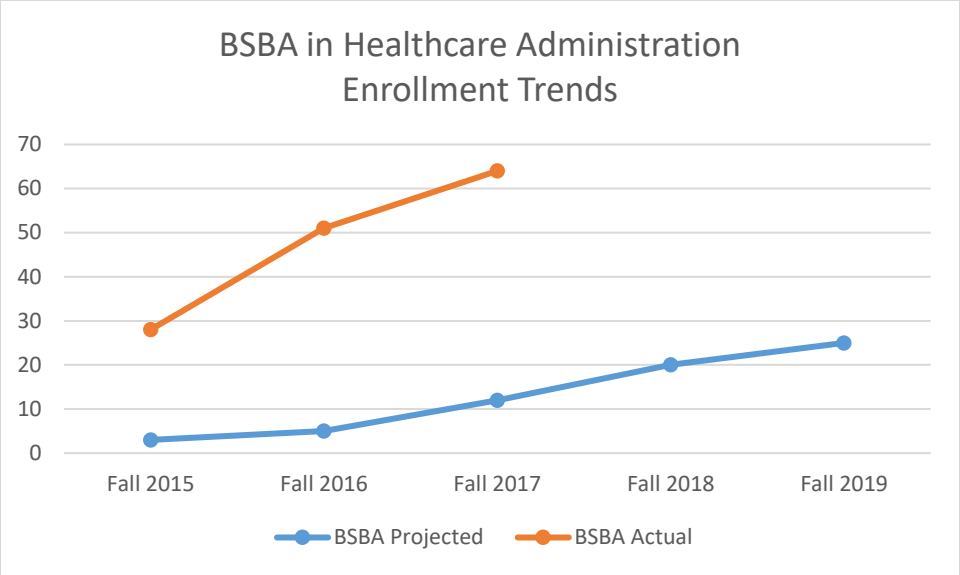

Figure 2: BSBA in Healthcare Administration

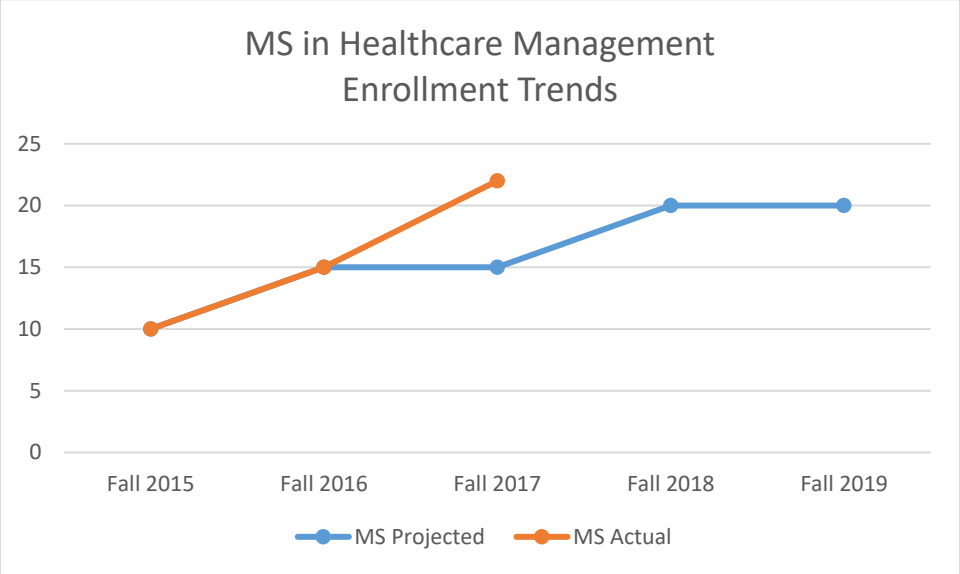

Figure 3: MS in Healthcare Management

Student retention can be defined in numerous ways. This program uses "persistence to degree completion" as the measure for retention. A focus on retention exists not only because of an obligation to students, but also an obligation to the university's strategic goals. From the university's perspective finances must always be considered. Logically, it is more efficient and less costly to retain students than it is to recruit students. Another financial consideration is that, in some areas, university funding is being tied to performance indicators. Several aspects of student retention are significance beyond the student and the university. The Bureau of Labor and Statistics confirms that college graduates can earn significantly more, up to 70% more, than those with only a high school diploma. Higher earnings contribute to economic growth. It follows, that a strong economy along with human capital helps sustain the US' position among other nations. Focusing on retention is not only the right thing to do but it is also very pragmatic (Moorer, 2014). In perusing knowledge about students and with the intent of enhancing retention, the general modus operandi was to assume Professor Edward Anderson correct in 2006 when he said, "Student who need services the most refer themselves the least. Effective retention services take the initiative in outreach and timely intervention with those students" (as cited in Simpson, 2017, p 32).

METHODOLOGY

It was determined the best way to reach students was to send an online survey asking them questions not only about their education experience, but also about their individual backgrounds. Written by the authors, the survey addressed experiences in employment (in and out of healthcare), learning styles, whether the respondent or family member has received medical services, and general impressions of the healthcare industry. Before administering, the survey proposal was sent to IRB, where it was determined the survey is exempt since no identifying information was collected, and the survey data present minimal risk if disclosed.

Anonymity was maintained by sending a general survey link to the healthcare student email listserv, consisting of the 133 majors. Seventy (70) students acknowledged consent to participate in the survey, however, only 62 completed the survey, resulting in a 46.62% completion rate.

DEMOGRAPHICS

Undergraduate students represented the majority of respondents (73%), with the bulk of those (44%) self-reporting as BSBA students. Eighty-seven percent of the respondents were female. Concerning respondent age, 31% were 20 or younger, 39% were between 21 and 29, 15% between 30 and 39, and 16% were over the age of 40. The majority (42%) of undergraduate students were in their first year of the program (less than 30 completed hours). An additional 40% of respondents reported a sophomore (31-60 completed hours) or junior (61-90 completed hours) status at 20% each. Finally, 18% of undergraduates reported a senior-level status (90 or more completed hours). These results are not surprising considering the program is entering its third full year.

The overwhelming majority of students reported paid employment (98%), with 35% reporting 5-10 years and 27% reporting over ten years of employment. Of those employed, 35% have never worked in a healthcare setting, 10% have volunteered in a healthcare setting, 16% have previously worked in healthcare, and 39% percent are currently working in healthcare, with 18% in patient care and 21% in administration. Additionally, 81% reported having close friends or family employed in the industry. Finally, 48% of students reported they chose to study at the university because of the availability of healthcare administration programs. These demographics reflect program enrollment by traditional and non-traditional students, and suggests that students who are pursuing degrees to advance in their workplace are being reached, which is a primary goal of the program.

RESULTS

The survey asked a set of questions dealing with personal experience with healthcare services. One question centered on finances in relationship to a serious illness and one on having had a bad experience when receiving services. Regarding the impact of serious illness on finances, 27%, revealed that they, a family member or close friend, had experienced financial difficulties because of serious health issues. An equal percentage reported that they, a family member or close friend had experienced serious health issues, but without resulting financial difficulties. The remaining 46% had not experienced a serious health issue themselves, nor had a family member or close friend. On the question concerning bad experiences when receiving healthcare services, 66% reported having had a bad service experience in healthcare either for themselves, a family member or both.

Students were asked a set of questions pertaining to the beliefs they hold about healthcare. Specifically, students were asked their belief about how healthcare organizations should be classified, i.e., healthcare is a traditional business, healthcare is a special category of business, healthcare is not a business. Overwhelmingly, 89% of respondents indicated that healthcare is a special category of business, with a mere 2% indicating that healthcare should not be considered a business. Eighty-five percent of respondents believe that healthcare is a right and should be provided to all regardless of ability to pay, with the remainder indicating that healthcare is a privilege that should be extended only to those with the ability to pay.

While the previously discussed questions provide background into the experiences and beliefs of the students, of considerable importance to the program was why students chose to major in healthcare administration. As mentioned in the demographic section, 48% of students chose to study at the university because of the availability of healthcare programs, but Table 1 illustrates the primary reason why they chose to study healthcare administration at all.

I want to improve the way that healthcare is delivered and/or the quality of healthcare provided.	46%
I think there will be lots of employment opportunities	25%
I chose because it is a growing sector of economy	19%
I think that I will make a higher salary than I would in other areas	5%
I was advised to choose Healthcare Administration by a university recruiter, advisor, or another faculty member	3%
I was advised to choose Healthcare Administration by a family member or friend	2%

Table 1: Reasons for Studying Healthcare Administration

Students were asked to review a list of values and rank them for importance to themselves (Table 2). This question was chosen because an understanding of values influences the educational process, but also is reflective of the values that students have, or will bring, into organizations.

	Not Important	Somewhat Important	Important	Very Important	Never thought about it
Integrity	0% (0)	2% (1)	11% (7)	87% (54)	0% (0)
Authenticity	0% (0)	5% (3)	23% (14)	72% (45)	0% (0)
Courage	0% (0)	2% (1)	37% (23)	61% (38)	0% (0)
Service	0% (0)	0% (0)	15% (9)	85% (53)	0% (0)
Humility	6% (4)	5% (3)	37% (23)	50% (31)	2% (1)
Wisdom	0% (0)	7% (4)	39% (24)	54% (33)	0% (0)
Trust	0% (0)	2% (1)	9% (6)	89% (54)	0% (0)
Accountability	0% (0)	0% (0)	11% (7)	89% (54)	0% (0)
Honesty	0% (0)	0% (0)	9% 96)	91% (55)	0% (0)
Self-Improvement	0% (0)	0% (0)	33% (20)	67% (41)	0% (0)

Table 2: Value Matrix (n respondents)

As shown in Table 3, students were asked to provide a self-assessment of their abilities relating to ten soft skills. The response rankings give a glimpse of how students view themselves, personally and in working with others. In the survey the term "soft skills" was never used. This was intentional due to the belief that students will need command of these skills in the healthcare workplace.

	Not Capable	Needs Improvement	Somewhat Capable	Very Capable	Don't Know
Communication	0% (0)	8% (5)	8% (5)	84% (52)	0% (0)
Collaboration	0% (0)	3% (3)	23% (14)	74% (46)	0% (0)
Time Management	0% (0)	3% (3)	26% (16)	71% (44)	0% (0)
Critical Thinking	0% (0)	6% (4)	21% (13)	73% (45)	0% (0)
Reliability	0% (0)	0% (0)	2% (1)	98% (61)	0% (0)
Adaptability	0% (0)	2% (1)	19% (12)	79% (49)	0% (0)
Positive Attitude	0% (0)	0% (0)	19% (12)	81% (51)	0% (0)
Self-reliance	0% (0)	0% (0)	16% (10)	84% (52)	0% (0)
Emotional Mastery	0% (0)	5% (3)	37% (23)	56% (35)	2% (1)
Respect	0% (0)	0% (0)	3% (2)	97% (60)	0% (0)

Table 3: Soft Skill Matrix (n respondents)

Finally, the survey asked for each student to assess their preferred learning style. Students were given phrases describing each learning style and asked to select the one that best describes them. Not surprising for this group of students, the majority of students (51%) indicated a preference in learning by words and reasoning, while a mere 2% indicated an auditory style in learning.

Verbal-Linguistic (I prefer learning using words, both in speech and writing)	28%
Logical-Mathematical (I prefer learning using reasoning, logical thinking, and logical systems)	23%
Visual-Spatial (I prefer learning using pictures, images, and three- or four-dimensional tools)	17%
Social-Interpersonal (I prefer learning in groups or with other people)	12%
Solitary-Intrapersonal (I prefer learning by working alone or in self-study)	12%
Physical-Kinesthetic (I prefer learning using the sense of touch with hands or body)	6%
Aural-Auditory-Musical (I prefer learning when listening, using sounds and music)	2%

Table 4: Preferred Learning Styles

DISCUSSION

The survey results have allowed the authors to have a greater understanding of the students enrolled in the program, including belief structures, environmental influences on their educational choice, and learning preferences. Interestingly, students raised a strong voice in declaring their belief that healthcare is a right and should be provided to all regardless of the ability to pay. Likewise, when students were asked the primary reason they chose to study the non-clinical side of healthcare the largest category of response was that they want to improve both delivery and quality of healthcare. This kind of rich survey results strengthened the author's resolve to focus on student retention at a program level.

In keeping with Astin's (1999) student involvement theory, the researchers were motivated to conduct the survey to gain insight into how students can best be engaged in the educational process. The concept that student engagement cultivates student retention is broadly accepted. Further, there no shortage in the literature on student retention that supports that hypothesis. Having that concept confirmed was the starting point. Initially, the intent of the survey was to find out more than administrative information about students. The authors believed that more than a superficial acquaintance with students is necessary to retain them in a program that will result in their graduation and send well prepared leaders to the workplace (Powell & Powell, 2011). The time, effort and energy students invested in completing the survey is considered a step in providing students a link to program commitment (Astin, 1999).

Because an engagement continuum exists, and all students will not respond favorably to all retention and engagement efforts, the authors believe that efforts must begin the progress with smaller, targeted interventions (Coley, Coley, & Lynch-Holmes, 2016; Astin, 1999) Examination of the survey results has led us to formulate five strategies for engagement at the program level. These strategies seek to improve retention and augment learning in healthcare administration programs. These strategies will give multiple access points to engage students both academically and socially. Even though these strategies are budget neutral and localized at the program level, enacting these strategies takes commitment from faculty in the healthcare programs, the department chair and the dean of the college as well as students. The attempt to impact retention at a program level will not interfere with funded retention efforts that are university wide.

First, a healthcare student online network will be formed (Coley, et.al. 2016). Most classes are delivered online, therefore, some less motivated students are at risk of isolation, putting them in jeopardy of dropping out of the program (Simpson, 2017). Evidence from the survey revealed that a body of information relating to the subjective experiences the students have had with the healthcare industry can be optimized. One of the targeted questioning areas sought information related to healthcare work experience. While the majority of students are currently or have worked in the healthcare industry, a significant percentage (35%) have no experience in the industry. Creating this network will connect these unexperienced students with the experienced students in an attempt to motivate both groups. As an informal mentoring program, experienced students will be encouraged to present a realistic picture of the workplace sharing both challenges and fulfillments.

Further, results suggest that students who have experience with instances where serious illness has resulted in financial hardship, can provide firsthand knowledge to those students who haven't had a similar experience. Having a personal connection with the "consumer" side of healthcare can make a lasting impression on fellow students. Students will be encouraged to discuss these areas and offer suggestions to mitigate these problematic issues that exist in healthcare. Groups will be formed with students' input. For example, students will decide if these groups will communicate via a forum or a blog. The goal of this strategy is to increase student communication with peers to allow reciprocal learning (Moorer, 2014). Each group will be enriched by participating in sharing with their peers.

Second, bridges will be built between the instructional setting and the local healthcare community. Faculty will secure occasions for students to take part in short term projects in a healthcare facility near the student's physical location. Unlike traditional internships, these learning experiences will be focused on contributing to a single project. These projects may involve a variety of needed tasks such as, updating an employee handbook, researching and writing a policy for keeping the board of directors updated on regulatory changes, or writing step-by-step directions for a new process in the organization. The survey result tells us that students recognize healthcare as a business, but in a special category. This chance to interact within a healthcare facility, to meld classroom content with what is happening in the workplace, will reinforce students' commitment to the non-clinical side of healthcare (Coley, et.al. 2016). This learning experience will highlight the need for students to develop themselves in areas where a personal short-coming may exist. For example, a student who prefers a solitary learning style will quickly grasp that working in healthcare is not a solitary endeavor. Faculty will be ready to point to concentrated learning activities for the student when needed. Further, this experience will give students a point of commonality and cohesion with family and friends that are already working in healthcare.

Third, student introductions will be merged with a "statement of expectations." Each student will be asked to write a statement of expectation about expected learning in the class. The student may have a curiosity about a healthcare topic that needs to be satisfied or may need clarification on a concept that has surfaced in other course work. This exercise will help the student become conscious of program continuity. Further, writing a statement of expectation enhances the students' communication and critical thinking skills and, over time, should level out some of the notable differences found in the self-assessed survey data relating to soft-skills development. The students' expectations statements will be followed up on by faculty around the middle point of the course and at the end of the course or more often if possible. Faculty will initiate frequent and meaningful feedback to the student. This direct one-on-one communication with faculty will instill a sense of confidence in the student that their success is important to faculty. That contact may influence the student to stay in school and continue being an active learner (Moorer, 2014). Likewise, faculty will present clear and consistent expectations for students to achieve success in the class (Tinto, 2010).

Fourth, a new approach to advising will be developed so that the pathway to a successful university experience will be clear for healthcare majors (Tinto, 2010). Evidence from the survey demonstrates that students are at all stages in credit hour accumulation, therefore, it is plausible to assume they are at various stages of degree completion. A visually appealing checklist, in addition to the institution's program degree map, listing the requirements for each degree will be prepared. Groups will be formed with students that are at similar stages of credit hour completion and in the same degree program. Groups will be set up for advising sessions that will be conducted both in person and using video conferencing. These sessions will design a blueprint for successful degree completion. Survey data validates that in large part that students have persons with whom they have a close relationship working in healthcare. No doubt these personal connections with the healthcare industry have made students knowledgeable of the job growth in healthcare. However, these relationships may offer a limited perspective about the possibilities for employment. Faculty can confirm this suspicion from experience with students who repeatedly inquire about the kind of job they can get with a healthcare administration degree. This consideration necessitates that students are informed about the breadth of employment available to them after degree competition. These advising efforts, designed to interpret course requirements and broaden knowledge of employment prospects, will minimize student frustration during the educational process. This effort will motivate students to be well prepared for the future and it will likely lessen the risk of students falling through the cracks or even avoid the disaster of students getting to the point of graduation only to discover they have not completed all university graduation requirements.

Finally, a real-world problem-solving forum online for healthcare majors will be developed. Each week a scenario centering on a different kind of problem will be posted. Faculty will develop and post the weekly scenario.

Students, especially those working in healthcare, will be invited to submit scenarios but all postings of the weekly problem will initially be posted by faculty to ensure that no privacy regulations are violated. Students will post possible solutions to the issue at hand. Proposals will be offered for dealing with the situation. Proposals will quickly begin to converge. After solutions are considered, students will be asked to describe what leadership values were reflected in making decisions and what soft-skill attributes were applied in resolving the problem or issue. For example, a situation could be described where technology is being used to fill a void in organizational efficiency.

A sample scenario might be: Nurses are assigned to assist physicians who work at various locations both inside the hospital and at other healthcare settings during the work day. Each of those nurses carry new cell phones purchased and paid for by the organization for whom they work. The nursing supervisor has purchased software that will clock the nurses time automatically when they arrive at predetermined work location. This software was purchased to eliminate an ongoing problem of nurses forgetting to track their working hours for payroll. Now, nurses are very angry that "location services" know where they are "every minute of every day." Students would be asked to offer suggestions about how to resolve this issue. They would also be asked to identify the elements of the problem and be directed to explain the leadership values and soft-skill attributes utilized to resolve the issue. The survey results pointed out that students have a good understanding of important leadership values. Additionally, students self-identified that they consider themselves capable in several soft-skill areas such as reliability, respect, and self-reliance. However, these characteristics—values and soft-skills—are worthy of ongoing emphasis for healthcare leaders.

CONCLUSION

Universities are compelled to work harder in the current environment of declining enrollments. This case study of the university's healthcare administration degree programs indicates that in order to provide the best possible learning experience for students, student engagement is needed along with a solid curriculum. Collecting and analyzing data on students' attitudes, values, soft-skills and learning styles can provide strategic guidance to program administrators. Survey results can guide programmatic changes, help define future direction of the programs, and assist in formulating strategies to keep students engaged thereby improving retention in healthcare majors.

The set of student engagement strategies discussed in this paper fit university's online program in practical and meaningful ways. These engagement strategies will enrich the learning experience of students throughout their program completion by connecting them more closely with their peers, healthcare faculty, and the healthcare community. Most importantly, these strategies will aid in producing graduates ready to make a positive contribution in the healthcare industry.

It would be expected that these strategies could be used for a variety of degree programs whether online or face-to-face. Certainly a face-to-face degree program would have unique opportunities for student engagement that an online program would not have. Measuring student success and the effectiveness of the strategies over time will be an important consideration. Using the survey instrument on an annual basis to assess changes in student attitudes, values, learning styles and skills will keep the university's program administrators current in regard to understanding the healthcare administration student population.

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PREPARING STUDENTS FOR A FUTURE IN HEALTHCARE

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ABSTRACT

Students are being prepared for careers in Healthcare that will cover a span of forty years or more. Forty years ago, in the 1970's, providers were paid based on the cost and quantity of services provided. Currently, the payment programs are, in part, based on quality of services and outcomes. This paper explores the trend towards improving quality of services and health of individuals and what students might expect as they prepare for a future in healthcare.

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THE STRUCTURE & ORGANIZATION OF GLOBAL ACCREDITATION IN HEALTH MANAGEMENT EDUCATION

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ABSTRACT

Global health management has a unique body of knowledge with specific competencies. The International Hospital Federation (IHF} has adopted a competency directory to be used globally by healthcare providers. The IHF has a Strategic Interest Group (SIG) in health management~ and one of the strategic priorities is to develop collaboration with academia and education accreditation agencies. This session offers a structure and organization for HME accreditation that would insure quality in graduate education. Applying accreditation standards and criteria in other regions requires adaptations and harmonization. Several unique features are offered for discussion in addition to innovative strategies including public~private partnership models.

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TRACK
HEALTHCARE MANAGEMENT

BENEFITS PACKAGES FOR MILLENNIALS AND THE POTENTIAL INFLUENCE OF THE AFFORDABLE CARE ACT

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ABSTRACT

When a person is offered a job, they start asking themselves questions such as, "How much is my salary?" "Am I covered under health insurance?" or even "how many vacation days do I have?" These three factors are only some of the aspects included within a benefits package. A benefits package is the total amount of pay and all other advantages that an employee may receive such as bonuses, health insurance, a company car etc. In regards to benefits packages, employers are researching ways to persuade people to work and continue to work for a company because of the benefits they receive. Specifically they are targeting Millennials, the generation of people born between 1981 and 2000 who have recently started entering the workforce. This paper incorporates a variety of research based off the topics of benefits packages and Millennials entering the workforce to form an opinion on an ideal benefits package for Millennials. From there, the paper relates these findings to the Affordable Care Act and the election of Donald Trump and how these forces may impact the Millennials and the benefits they receive.

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EVALUATING THE IMPACT OF MINORITY POPULATION PRESENCE ON HOSPITAL-ACQUIRED CONDITIONS PERFORMANCE SCORES

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ABSTRACT

Longstanding efforts to reduce costs and increase quality brought about Hospital-Acquired Conditions (HAC) penalties, introduced by Section 3008 of the Patient Protection and Affordable Care Act (ACA). HACs are targeted by the government because they are preventable conditions that lead to unnecessary decreases in patients' health and increases in avoidable health care costs to both patients and health care providers. In this study, we examined the association between diversity of a U.S. hospital referral region (HRR) and hospital-acquired conditions. Well-established research suggests that hospital structures may be correlated with HAC, yet it is unknown if particular hospital community characteristics can be used as a proxy for patient characteristics, which may lead to a higher likelihood of HAC penalization.

In this study we evaluated whether the percent of minority groups in an HRR influence hospital HAC scores. We used a cross-sectional analysis of the 2017 Centers for Medicare and Medicaid Services (CMS) Hospital Acquired Conditions (HAC), 2013-2014 American Hospital Association (AHA) database, 2014 Area Health Resource File (AHRF), 2014-2015 US Census Bureau Current Population Survey and 2014 Dartmouth atlas HRR dataset. The 2017 hospital-acquired program evaluates discharge records from 2013-2015 for scoring purposes. All databases were merged using CMS Provider Number and County Federal Information Processing Standards (FIPS) to conduct this analysis.

Multiple logistic regressions were used to explore the influence of community diversity on the risk of incurring high or medium Hospital-Acquired Condition scores. We found that hospitals in diverse communities fared worse than homogenous communities across all elements of the HAC program and had greater odds to receive reduction in Medicare reimbursement. Our results identify the importance of community and hospital relationships regarding the quality of care provided. This information will be important in addressing the effect of HACs on patients and the community.

INTRODUCTION

Hospital-Acquired Conditions (HACs) are evidence of poor quality of care and pose problems for patients and hospitals. These problems include longer lengths of stay and an increase in the risk of additional healthcare complications. These complications typically occur because HACs are not quickly diagnosed, thereby causing delayed treatment for the condition.[1,2] Moreover, HACs are associated with notable increases in patients' health care costs among a variety of conditions [3-7] due to the additional medical attention and resources required to treat patients' HAC(s) in conjunction with their original ailments. There is also evidence that the U.S. healthcare system differentially treats patients based upon race.[8-12] This disparity in treatment further exacerbates issues with healthcare costs related to the quality of services provided. As a result, the Patient Protection and Affordable Care Act's (ACA): section 3008, introduced the Centers for Medicare & Medicaid Services (CMS) HACReduction Program in conjunction with longstanding efforts to reduce costs increase quality, and reduce inequity. Under the program, providers with high HAC scores (lowest twenty-fifth percentile) are not reimbursed for associated services rendered to patients and will

receive a 1% payment reduction penalty.[2,13-16] The HAC reduction program, have garnered some success in reducing the incidence and effects of HACs. . Between 2010 and 2015, it is estimated that HAC incidence decreased by 21%, thereby decreasing $28 billion in health care costs, and as a result, saving 125,000 lives.[17] However, there is a large gap in the literature of the impact of community diversity on hospitals performance on such programs.

CONCEPTUAL FRAMEWORK

In this study we adapted the input-output framework to guide our examination of the relationships between community diversity and hospitals' risk-adjusted HAC rates within CMS HAC program (Figure 1). We defend our key enablers as hospital, market and community characteristics, and our quality gains (outcomes) as hospitals' performance in the HAC program across its elements (Domain 1, Domain 2, Total HAC score, and payment reduction). Therefore, in this study our main research question is whether community diversity influences hospitals' HAC rate. We hypothesis that hospitals with higher rates of Hospital-Acquired Conditions are located in hospital referral regions with greater community diversity using our conceptual model outlines in Figure 1.

The first component of the proposed conceptual framework model is that hospitals located within diverse communities are at a higher risk for being negatively impacting by CMS HAC program. For years, racial and ethnic minorities have experienced disparities in quality of care within the healthcare industry, despite national efforts aimed at transparency in order to help reduce disparities between population groups.[18-20] For example, patients hospitalized with pneumonia, major surgery, or acute cardiovascular disease are more likely to contract an HAC if they are Asian and Hispanic, as compared to non-Hispanic whites.[21,22] In 2009, a risk factor survey identified 28 different minority communities across 17 states experienced socioeconomic disparities, access barriers, and higher risks and burden of diseases than the general population in the same region.[23] In addition, hospitals located in communities with high uninsured and low-income populations generally have low community index scores, as measured by the community health needs index, suggesting they fail to address or meet their communities' health care needs.

The second component of our framework suggests that other market factors may need to be considered when examining the relationship between community diversity and hospitals performance in the HAC program. The impacts of hospital competition on the inpatient quality of care produced have been investigated, however findings have either been inconclusive or contradictory due to differing methodologies and quality measurements utilized.[24] One study found that increased competition leads to higher mortality but lower unplanned readmission rates.[25] The findings contradict themselves in that as competition decreases, quality as measured by mortality increases, however quality as measured by readmission rates decreases. Another study found that in more competitive areas, health care providers experience higher quality of demand elasticities than hospitals in less competitive areas, suggesting that patients are responsive to the quality of care provided.[26] This elasticity provides opportunities for health care providers to obtain more consumers by improving their quality outcomes. In addition to sensitivity to quality, sensitivity to health care insurance prices by racial/ethnic minorities and low-income households have been identified.

The third component of our framework suggests that community factors may play a significant role on hospitals ability to successfully perform under the HAC program. Studies suggest that socioeconomic factors that may affect the long-term sustainability of hospitals. Findings indicated that hospitals were more likely to close if the community has a lower income per capita, a high percentage of black residents existed in the community, or a hospital serviced a disproportionally large amount of Medicaid patients.[27] Therefore, socioeconomic and demographic characteristics may inadvertently affect the degree of competition amongst hospitals, who have long served as safety-net hospitals.[27] In addition, with respect to surgical outcomes, HACs were found to be associated with racial, ethnic, and socioeconomic factors, including access to insurance.[28]. In additional, researchers found that race, insurance, and income are also associated with an increased likelihood of postsurgical complications. African American and non-Hispanic patients were likely to acquire inpatient postsurgical complications, while uninsured and publicly insured patients were found to be 30% to 50% more likely to have complications after surgery. [28,29] In addition patients residing in low income communities were 12% more likely to experience a postoperative complication than patients residing in highest income communities. [28,29]

The last component of our conceptual framework suggest that hospital structure may impact its ability to adapt to a diverse community and succeed under the HAC program. We found that, Safety-net hospitals, specifically those suffering financially, have a higher rate of HACs than non-safety-net hospitals for all CMS-listed HAC conditions. [30] The reason for the higher rate of HACs could expose an underlying disparity and patient characteristics associated with HACs. Most safety-net hospitals serve a large volume of underserved populations, including individuals with low income or the uninsured; the majority of these individuals are minorities and immigrants that live in diverse, disadvantaged communities. [31] Previous inquiry has also indicated that uninsured individuals are unlikely to be admitted to an emergency department because they use them as a safety-net for their low-acuity health needs, while communities with low income populations and less access to resources were most likely to be admitted to an emergency department. [32] Other researchers dispute the likelihood of HACs occurring in hospitals which serve a large amount of Medicaid beneficiaries: hospitals serving high volumes of Medicaid beneficiaries were found to be more likely to experience zero HACs and hospitals serving high volumes of Medicare patients were less likely to have zero HACs.[33] It is likely that the increased rate of HACs in safety-net hospitals negatively affects minorities' and Medicaid beneficiaries' outcomes of care.

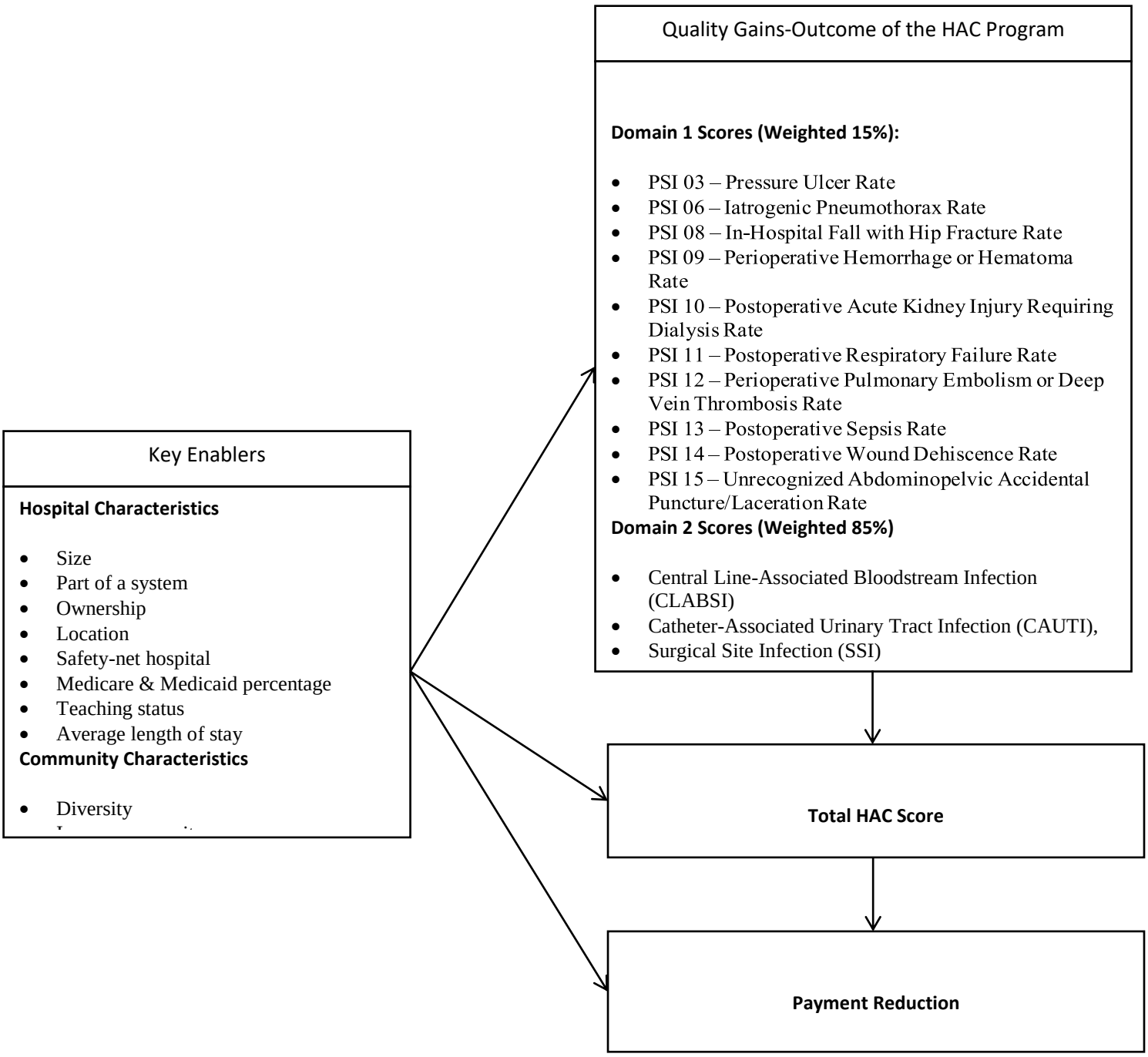

Figure 1: Community Diversity and Hospital-Acquired Conditions Program Conceptual Framework

METHODOLOGY

Study Population and Design

In this study we used a secondary cross-sectional design to analyze census data of non-federal hospitals in the United States. We used the 2017 Centers for Medicare and Medicaid Services (CMS) Hospital Acquired Conditions (HAC), 2013-2014 American Hospital Association (AHA) database, 2014 Area Health Resource File (AHRF), 2014-2015 US Census Bureau Current Population Survey and 2014 Dartmouth Atlas Hospital Referral Region (HRR) dataset. The HRR dataset provides geocodes for geographic boundaries of hospital referral regions, whereby a least one hospital is capable of providing specialized services and complex surgeries, specifically cardiovascular procedures and neurosurgery.[34] Furthermore, HRRs provide health services researchers with critical information regarding referral patters and service utilization of care.[35] The 2017 HAC dataset analysis hospital discharge records between July 1, 2013 and June 30, 2015 and reports the risk-adjusted quality measures scores. Data sets were merged using CMS Provider Number and County Federal Information Processing Standards (FIPS).

Variables

Our dependent variables were Hospital-Acquired Conditions quality measures grouped in to two Domains, a Total Score, and indication of whether the hospital received a payment reduction. Domain 1, Domain 2 and Total HAC scores are reported on a 1 – 10 scale where 1 indicates best performance and 10 indicates poor performance. As a result, the domains and total score were grouped into good (2.4-5), average (5.1-7.5) and poor (7.5-10) categories. Payment reduction is reported as a binary variable indicating whether the hospital received a payment reduction not, and as a result we report 0 as no reduction and 1 as received payment reduction. The entropy index score consists of the proportions of the 6 ethnic groups found in the US. A high score is indicative of a greater diversity. In this study we included several hospitals and HRR control variables that were identified in the literature. Hospital variables included, hospital size, ownership (for-profit, not for profit and government), hospital location (rural and urban), size (0-99, 100-199, 200+), Medicare discharges percentage of total discharges and Medicare days as a percentage of total inpatient days, and safety-net hospital classification measured if the Medicaid admission rate was more than one standard deviation above the state average). In our analysis a total of 247 HRRs were included. HRR variables included income per capita and the Herfindahl- Hirschman Index (HHI), which was estimated by dividing a facility's total inpatient days by the county's total inpatient days and then aggregated to the HRR level. An HHI closer to 1, represents a monopoly.[36]

STATISTICAL ANALYSIS

We summarize our findings using descriptive statistics of the HAC program for all hospitals. All analysis was performed using Stata 14 SE.[37] Multiple multilevel logistic regressions were used to explore the influence of community diversity on the risk of incurring high Hospital-Acquired Condition scores. All variables were tested for multicollinearity. Akaike's and Schwarz's Bayesian information criteria was used to determine model fit. In accordance with the policy of the University, the Institutional Review Board (IRB) categorized the research as exempt since the study analyzed secondary data that is publicly available.

RESULTS

A total of 2,055 hospitals had publicly reported HAC program scores across 247 HRRs. Within each HRRs there is an average of 16 hospitals (minimum =1 and maximum=54). See Table 1 and Table 2 for a description of the hospitals and their HAC scores. Approximately 38.64% of hospitals had poor HAC domain 1 scores (averaging a 8.57 score out of maximum score of 10). However, a large number of hospitals (58.1%) had average HAC domain 2 scores (7.66 out of maximum score of 10). In addition, approximately two-thirds of out hospitals scored average on overall HAC total score (7.55). Our sample consisted largely of urban (74.36%), large (40%), non-safety-net hospitals (89.44%) and not-for-profit hospitals (62%). In addition, there is an almost equal distribution of teaching (49.30%) and non-teaching hospitals (50.71%). The mean Medicare and Medicaid percentages were 51.18% and 19.33%. The average entropy score was 0.80 (highest diversity score is 1.8) indicating that on average hospital referral regions are not highly diverse, however, our HHI was 0.10, indicating an overall high level of competition. Furthermore, we found

that about 23% of hospitals were negatively impacted by the HAC program and received payment reduction in Medicare reimbursement.[38]

Table 1: Descriptive Characteristics at Hospital Referral Region Level

	Frequency	Percent	Sample Size
Hospital-Acquired Conditions			
HAC Domain 1			2,055
Low	673	32.75	
Medium	588	28.61	
High	794	38.64	
HAC Domain 2			2,055
Low	404	19.66	
Medium	1,194	58.1	
High	457	22.24	
Total HAC score			2,055
Low	357	17.37	
Medium	1,271	61.85	
High	427	21	
Hospitals Receiving Payment Reduction			2,055
No	1,580	76.89	
Yes	475	23	
Safety-Net Hospitals			2,055
No	1,838	89.44	
Yes	217	10.59	
Size			2,055
Small	653	32	
Medium	583	28.37	
Large	819	40	
Part of a System			2,055
No	528	25.69	
Yes	1,527	74.31	
Hospital Ownership			2,055
Government non Federal	275	13.38	
For-Profit	502	24.43	
Not-For-Profit	1,278	62	
Hospital Location			2,055
Urban	1,528	74.36	
Rural	527	25.64	
	Mean	Standard Deviation	Sample Size
Hospital Medicare percentage	51.18384	13.84783	2055
Hospital Medicaid percentage	19.32764	12.01057	2055
Hospital referral region income per capita	43437.68	12328.9	2041
Hospital referral region HHI	0.0964391	0.1624913	2055
Hospital referral region Entropy Index Score	0.8009086	0.3064533	2055

Table 2 displays our cross-tabulation analysis. Out of the 475 hospitals that received a payment reduction, more than half were large hospitals, and 84% were urban non-safety net hospitals. When examining entropy scores, hospitals with a good total HAC scores and hospitals not receiving a payment reduction were located in HRRs with lower mean entropy scores (i.e., those that are more homogenous).

Table 2: Descriptive Characteristics at Hospital Referral Region Level

	Total HAC Score			Payment Reduction	
	Low	Medium	High	No	Yes
Hospital-Acquired Conditions					
HAC Domain 1					
Low	133	493	47	611	62
Medium	160	327	101	487	101.00
High	64	451	279	482	312
HAC Domain 2					
Low	341	63	0	404	0
Medium	16	1,118.00	60	1,101.00	93.00
High	0	90	367	75	382
Total HAC score					
Low	--	--	--	357.00	0
Medium	--	--	--	1,223.00	48.00
High	--	--	--	0	427
Hospitals Receiving Payment Reduction					
No	357	1,223.00	0	--	--
Yes	0	48.00	427.00	--	--
Safety-Net Hospitals					
No	326	1,147.00	365	1,430.00	408
Yes	31	124.00	62.00	150	67
Size					
Small	257	311	85	567.00	86
Medium	73	416	94	478	105
Large	27	544	248	535	284.00
Part of a System					
No	144	269	115.00	407	121
Yes	213	1,002.00	312.00	1,173.00	354
Hospital Ownership					
Government non Federal	65	146	64	207.00	68
For-Profit	125	298	79	413	89
Not-For-Profit	167	827	284	960	318
Hospital Location					
Urban	197	975	356	1,128.00	400
Rural	160	296.00	71.00	452	75
	Mean (SD)				
Hospital Medicare percentage	51.47(17.27)	51.59(12.87)	49.73(13.38)	49.94(13.23)	51.56(14.01)
Hospital Medicaid percentage	16.01(13.52)	19.63(11.14)	21.2(12.65)	21.14(12.6)	18.78(11.78)
Hospital referral region income per capita	40019.9(9598.45)	43657.52(12680.29)	45657.39(12727.8)	45782.56(12625.74)	42730.33(12153.48)
Hospital referral region HHI	0.11(0.18)	0.1(0.16)	0.09(0.13)	0.08(0.13)	0.1(0.17)
Hospital referral region Entropy Index Score	0.7(0.3)	0.8(0.31)	0.89(0.28)	0.9(0.28)	0.77(0.31)

Our multi-level analyses are illustrated in Table 3. Regarding Domain 1 of the HAC program, we found that for-profit hospitals were at a lower risk (OR 0.73, 95% CI [0.58,0.92]) than not-for-profit hospitals to score poor vs. good or average on domain 1. Teaching (OR 1.39, 95% CI [1.14,1.69]) hospitals had significantly higher adjusted odds than non-teaching hospitals to score poor vs good or average on domain 1. Safety-net hospitals (OR 1.58, 95% CI [1.01,2.47]) were at a higher risk of scoring poor vs. good or average on domain 1. When examining Domain 2, we found that small (OR 0.19, 95% CI [0.14,0.26]) and medium (OR 0.52, 95% CI [0.42,0.65]) size hospitals were at lower risk than large hospitals to score poor vs. good or average on Domain 2. Similar to Domain 1, for-profit hospitals were at a lower risk (OR 0.67, 95% CI [0.51,0.87]) than not-for-profit hospitals to score poor vs. good or average on Domain 2. For every one unit increase in hospitals' Medicare (OR 1.01, 95% CI [1.00,1.02]) and Medicaid (OR 1.02,

95% CI [1.00,1.03]) percentage the higher the risk to score poor vs. good or average on Domain 2. High diverse communities (OR 1.48, 95% CI [1.15,1.91]) had higher adjusted odds than low diverse communities to score poor vs. good or average on Domain 2.

When we evaluated the overall Total HAC score, we found that high diverse communities (OR 1.64, 95% CI [1.24,2.17]) had an increased odds of scoring poor vs. good or average. In addition, small (OR 0.22, 95% CI [0.16,0.29]) and medium (OR 0.56, 95% CI [0.45,0.70]) size hospitals were at lower odds of scoring poor vs. good or average. For-profit hospitals were at a lower risk (OR 0.66, 95% CI [0.51,0.86]) than not-for-profit hospitals to score poor vs. good or average on total HAC score. Teaching (OR 1.37, 95% CI [1.11,1.68]) hospitals had significantly higher adjusted odds than non-teaching hospitals to score poor vs good or average on total HAC score. For every one unit increase in hospitals Medicare (OR 1.01, 95% CI [1.00,1.02] and Medicaid (OR 1.02, 95% CI [1.00,1.03]) percentage the higher the risk to score poor vs. good or average on total HAC scores.

The multilevel results for hospital payment reduction showed that both medium (OR 1.47, 95% CI [1.06,2.06]) and high (OR 2.00, 95% CI [1.43,2.81]) diverse communities were at greater odds of receiving a payment reduction. Small (OR 0.43, 95% CI [0.31,0.60]) and medium (OR 0.53, 95% CI [0.40,0.70]) size hospitals were at lower odds of being penalized by a payment reduction compared to large hospitals. Teaching (OR 1.36, 95% CI [1.05,1.76]) hospitals had significantly higher adjusted odds than non-teaching hospitals to receive a payment reduction.

Table 3. The Effects of Hospital Referral Region Diversity on Hospital-Acquired Conditions, Holding Community and Hospital Characteristics Constant

	Model 1: Total Hospital Acquired Conditions (HAC) Score N=2041				Model 2: Total Hospital Acquired Conditions (HAC) Domain 1 Score N=2041				Model 3: Total Hospital Acquired Conditions (HAC) Domain 2 Score N=2041				Model 4: Pay Reduction N=2041	
Variable	Low HAC vs high HAC		Medium HAC vs high HAC		Low HAC vs high HAC		Medium HAC vs high HAC		Low HAC vs high HAC		Medium HAC vs high HAC		Payment reduction vs no payment reduction	
	OR	P-value	OR	P-value	OR	P-value	OR	P-value	OR	P-value	OR	P-value	OR	P-value
Hospital size (referent: Small)														
Medium	3.58	0.00	1.13	0.47	0.67	0.00	1.29	0.05	3.31	0.00	1.40	0.04	1.27	0.16
Large	12.06	0.00	2.13	0.00	0.72	0.02	1.70	0.00	13.38	0.00	2.67	0.00	2.58	0.00
Part of a system (referent: No)														
Yes	1.60	0.00	0.80	0.11	1.06	0.60	1.06	0.60	1.48	0.01	0.97	0.81	0.85	0.22
Hospital ownership (referent: Government)														
For-profit	0.67	0.02	0.67	0.02	0.62	0.00	0.62	0.00	0.74	0.07	0.74	0.07	0.75	0.17
Not-for-profit	1.32	0.11	0.93	0.66	0.88	0.38	0.88	0.38	1.42	0.04	0.93	0.64	1.05	0.80
Rural (referent: Urban)	0.85	0.21	0.85	0.21	1.11	0.38	1.11	0.38	0.72	0.02	1.05	0.78	0.90	0.52
Safety Net Provider (Referent: No)	0.90	0.60	0.90	0.60	1.42	0.07	1.42	0.07	0.41	0.00	1.12	0.62	1.14	0.57
Hospital Medicare percentage	1.01	0.00	1.01	0.00	1.00	0.55	1.00	0.55	1.01	0.01	1.01	0.01	1.01	0.06
Hospital Medicaid percentage	1.02	0.00	1.02	0.00	1.01	0.04	1.01	0.04	1.03	0.00	1.00	0.85	1.01	0.20
Hospital referral region income per capita	1.00	0.08	1.00	0.08	1.00	0.14	1.00	0.14	1.00	0.29	1.00	0.29	1.00	0.27
Hospital referral region HHI	0.78	0.41	0.78	0.41	1.22	0.46	1.22	0.46	0.69	0.22	0.69	0.22	0.81	0.58
Hospital referral region Entropy Index Score	2.41	0.00	2.41	0.00	1.03	0.87	1.48	0.03	1.95	0.00	1.95	0.00	2.84	0.00
Log-Lik Full Model	-1664.38				-2146.84				-1735.66				-1029.00	

DISCUSSION

In this examination of the relationship between community diversity and hospital risk-adjusted HAC rates, we consistently found that hospitals in diverse communities fared worse than homogenous communities across all

elements of the HAC program. We found that hospitals in diverse communities were more likely to receive a payment reduction. Disparities in access and quality of care amongst minority and low-income populations have long been documented and the battle in eliminating disparities continues. The U.S. government continues to implement or improve existing programs with the goal of increasing health care quality. HACs are a burden to both patients and the health care industry as they lead to poor quality, causing longer lengths of stay, and additional costs. For instance, in total hip and knee arthroplasty procedures, race and ethnicity, were found to be predictors of deep vein thrombosis and pulmonary embolism, which is measure within the HAC program Domain 1.[8] In addition, several factors that influence the occurrence of HACs in post-surgical patients are female gender, African American race, and comorbidities.[39] Our study findings emphases the importance of community diversity and hospital relationships regarding the quality of care provided.

Our analysis showed that other hospital characteristics were also associated with the HAC program. Whereby, larger hospitals were at higher odds for scoring worse on the HAC program. Researchers have found that hospital performance among HAC scores can be independently influenced by hospital size, irrespective of quality.[40] In contribution to the literature[40] we found no relationship between competition and hospitals performance on the HAC program. we believe this is due the policy mandate nature of the HAC program., Hospitals with a high reported number of HACs are likely to be large teaching hospitals.[41] Typically such hospitals are within high competitive markets.

Some research suggests that the HAC payment reduction model needs to be reevaluated as hospitals are penalized multiple times for the same event.[42] One researcher suggests that a major flaw in the HAC payment prevention program is that case-by-case reductions imply that the preventability of a HAC for a specific patient is known, but the preventability of most inpatient complications cannot be known—as such, the measurement of HACs are limited to complications that are preventable.[43] Another researcher suggests that important patient quality may be lost due to improper reporting; this is because providers have little to no incentive to report HACs or submit a complication code; the submission of a complication code will only lead to a payment reduction for the hospital.[44,45] Furthermore, researchers found that hospitals penalized in 2015 provided advanced medical services, performed better on process and outcome measures, and were more quality accredited.[46] Furthermore, hospitals with a high reported number of HACs are likely to be teaching hospitals, and safety-net hospitals.[41] Despite several critiques of the HAC payment reduction policy, research does suggest that the penalty has produced positive results. A study found that the nonpayment policy led to an 11% decrease in the rate of central-line associated bloodstream infections (CLABSIs) and a 10% decrease in the rate of change in CAUTIs.[47]

CONCLUSION

Pay for performance programs, such as the HAC Payment Reduction program, continue to financially 'reward' and 'punish' organizations based on their quality performance. These programs incentive providers to monitor and improve their quality metrics. Issues including the improvement of quality, decrease of wasteful spending, and elimination of health care disparities will continue to be at the forefront of the health care industry. As such, the opportunity for future research exists as the literature points to possible associations between ACOs and quality among racial/ethnic patients, as well as, the association between nurse education/staffing and hospital-acquired conditions.

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HEALTHCARE PROVIDER RESPONSES TO THE AFFORDABLE CARE ACT (ACA) 30-DAY READMISSION POLICY

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ABSTRACT

In 2010, the Patient Protection and Affordable Care Act (PPACA) was passed and introduced a myriad of changes for the health care industry. Among those changes, one component of the legislation affected the way hospitals would be reimbursed regarding readmitted patients; specifically those discharged and readmitted to the hospital within 30 days for the same health problem.

"Early hospital readmissions have been recognized as a common and costly occurrence, particularly among elderly and high risk patients. One in five Medicare beneficiaries is readmitted within 30 days, for example, at a cost of over $26 billion per year" (Jencks, Williams, & Coleman, 2013, p. 1418). Statistics show rates of readmissions and their respective costs, such as in 2013, congestive heart failure having a readmission rate of 23.5 percent, costing approximately $13,000 per readmission (Fingar & Washington, 2015). Readmission issues are affecting most hospitals as "only 799 out of more than 3,400 hospitals subject to the Hospital Readmissions Reduction Program performed well enough on the CMS' 30-day readmission program to face no penalty" (Rice, 2015, p. 1).

Various strategies seeking to reduce readmissions have been utilized and studied with varying results. Research is still needed when considering that "a complex interplay of personal, medical, and social factors determines whether a patient successfully recovers from a hospital stay or, instead, experiences a deterioration that leads to readmission" (McCarthy, Johnson, & Audet, 2013, p. 351). However, the Centers for Medicare and Medicaid has identified the following primary causes for readmissions, which include: 1) Medication management, 2) Literacy, 3) Adherence, 4) Transportation, and 5) Finances. Furthermore, Silow-Carroll, Edwards, and Lashbrook (2011) reported that primary and preventative care, community-based education, health promotion, enhanced communication, and sharing of best practices contributes to lower admissions and avoidable readmissions.

This paper is a qualitative study observing the approaches various healthcare providers are taking to adjust to the Affordable Care Act (ACA) 30-day readmission policy. The data will be gathered through interviews with personnel from several healthcare organizations, who are knowledgeable about their facilities practices to prevent readmissions from occurring. Healthcare providers are responsible for costs associated with patients who return to any hospital for various health conditions and are penalized based on readmissions going back three years. Additionally, as stated, Illinois has some of the highest rates of 30-day readmissions in the country. Therefore, this study will report current practices among Illinois healthcare providers in the Chicago region.

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SINGLE-PAYER HEALTHCARE SYSTEM: WHY NOT

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ABSTRACT

The payment mechanism of the American healthcare system is currently in a state of chaos and disarray. As Americans, we can't seem to figure out how healthcare should be involved in our lives, and if we do, we can't seem to articulate it clearly to our government. The introduction of the Affordable Care Act in 2010 has changed the way that our country is involved in healthcare. Now, the current administration is looking to dismantle the ACA, which would once again change the healthcare landscape.

America's healthcare system has been disorganized in part because of what American's value and how our values have changed. Many American citizens value individuality, achievement, and hard work. The idea of the "American Dream" and the possibility of being "self-made" help drive these ideals. Unfortunately, these ideas don't seem to relate to a single-payer system of healthcare.

To help America adopt a single-payer system, American's need to become open to the concept and that we need to change how we pay for healthcare in America. Attempts have been made to establish a single-payer system outright, but they have all been shut down.

One way that Americans can become open to the idea of a single-payer system is by making the system appeal to what Americans value. The main values that have been consistent over time are a strong work ethic, a good education, honesty, persistence, and taking responsibility for your own actions. When formulating a healthcare system, it will have to pertain to these core values for it to find favor with the American people.

The other factor that would need to be considered in passing a sing-payer system through the government would be how Americans think about money and the role it plays. Money has been a dominant factor in American life, and it has showed with the hybrid structure of their healthcare system. Care is delivered to those who can afford it or have reached the age where it is covered by Medicare or Medicaid. Americans don't want to pay for other people's health care. A single-payer system of healthcare needs to include all Americans and allow for even access to healthcare across all segments of the population.

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TRACK
HOSPITALS AND HEALTHCARE FACILITIES

DESIGNING HOSPITAL ENVIRONMENTS SUITABLE FOR VISUALLY IMPAIRED PATIENTS AND FALL INJURIES PREVENTION

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ABSTRACT

According to the World Health Organization, about 246 million individuals have low vision. What is my project intends to do is determine the accommodations of individuals in hospital settings in Pennsylvania, assessing the feasibility of low vision environment in those healthcare settings, and to determine whether or not regulations by the national LVDC (Low vision Design Committee, established in 2011 by the National Institute of Building Science) are being implemented and followed in hospital settings (in Pennsylvania).

Qualitative data will be collected via structural interviews, with ophthalmologists and other healthcare staff, within participating hospitals. These interviews will collect anonymous data regarding the number of low vision patients at each hospital as well as the staff knowledge of existing low vision built environment and facility protocols, adherence to these protocols, and the perception of the sustainability of these environmental protocols. Structured surveys will also be distributed to patients, for both in – patient and outpatient services, in order to gain patient perspectives on the low vision accommodations available to them, what these patients need, and what is missing from these low vision built environments.

We study hospitals in Pennsylvania which has one of the oldest populations in the United States. This is important, since older individuals have significantly more vision problems than their younger counterparts. The researcher's aim is to secure participation at least 20% of hospital across Pennsylvania. The innovative interview methodology will demonstrate whether or not the implementation of low vision built environment in hospitals has been followed. The qualitative data obtained will be supplemented by quantitative data that will be obtained from secondary sources such as the Center for Medicare and Medicaid. Finally, a multivariate logistic regression model will be utilized to determine the important low vision factors that are necessary for the safety of low vision patients. .
Since the study is in its initial stage, there are no findings yet. In fact, so far, the category of vision disability conducted, by other researchers, has only focused on individuals who are blind or have impaired sight. Thus ,this study conducted is one of the first ones that wants to study hospital environment (accommodations) for individuals with low vision.

There researcher is in the process of conducting the study of accommodations of low vision patients in hospital settings. Hopefully, specific results will be relevant to hospital management that covers a spectrum that includes development of clinical indicators and study of the use and impact of information on patients with low vision, their caregivers that include ophthalmologists, nurses and others, as well as students of health administration and those who conduct research in this area.

Enhancing our understanding of hospital accommodations for individuals with low vision will help patients with low vision in hospitals regardless of their age, by lowering their likelihood of being injured, since individuals with low vision are more likely to fall. This is particularly true of older patients who also have lower vision. In fact, as population ages, the vision impairment increases, thus, by improving hospital vision environment, we would especially help older persons to function better.

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IMPORTANCE OF EMERGENCY PLANNING IN HEALTH SYSTEMS: NATURAL DISASTER POLICY AND IMPROVEMENT

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ABSTRACT

Natural disasters are large events that disrupt infrastructure and result in population-wide detriments such as injury, displacement and mass casualty throughout the United States. These disasters include hurricanes, tornadoes, earthquakes, blizzards, etc. Hospitals and other health systems have suffered tremendously, with the most recent disaster of Hurricane Irma. This hurricane alone left organizations without power, supplies, or resources. A nursing home is Florida suffered deaths of fourteen of their residents due to lack of policies and preparation. As you can see the important of emergency planning in health systems is vital for the organization and patient survival.

The methodology for this qualitative study was a literature review using peer reviewed journals and scholarly articles pertaining to current health care policies and procedures. The search was limited to sources published in the last ten years due to the unpredictable factors that are a result of natural disasters. We wanted to limit our focus to the importance of emergency preparedness and the need for flexibility in disaster response planning within healthcare organizations.

Hospitals and healthcare organizations are required to have emergency plans in place to respond to the needs of patients and surrounding communities during disaster situations. These needs can include caring for the sick and injured, providing food and protection, and coordinating recovery. With the unpredictability of a natural disasters, it is essential for healthcare organization to have a plan that is readily adaptable in a moment's notice. It is imperative that organizations develop emergency trainings and drills to prepare staff for possible disaster situations that may impact their communities and organization.

Although hospitals are required to have an emergency plan, many of the existing policies are fixed and inflexible. Implications from this study shows that healthcare leaders need to improve their current emergency preparedness policies by making them adaptable and easily executed within a short period of time. It is the healthcare organization's responsibility to continuously improve and develop policies and procedures that allow them to effectively care for patients and save lives during disaster situations.

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ORGANIZATIONAL IMPACT OF HOSPITAL READMISSIONS

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ABSTRACT

Hospital readmission rates are a main concern when highlighting and analyzing their quality care measures. Problems related to surgery is one of the most common reasons that patients get readmitted into an hospital. The most common type of surgical complication is the infection caused by surgical wounds. The chances of a surgical patient having more than one health problem is similar to that of a medical patient. However, the event of having surgery itself creates additional potential consequences. This may cause an extension to a patient's stay in a hospital and/or hospital readmissions. Surgeons that perform surgeries on patients attempt to minimize any risks that may cause problems to the patient.

Healthcare services are costly and reflect the quality of care that the health organization provides. Readmissions due to surgical complications create an extra cost for the patient and hospitals are penalized due to medical conditions that also include surgical mistakes. Preoperative, operative, and postoperative data should be collected to obtain results in the number of readmissions that were caused from surgical procedures. These readmits can be seen in the form of emergency room visits, ambulatory surgical unit admissions, or inpatient admissions. Interventions need to illustrate a clear, step-by-step method in moving surgical patients into an outpatient environment. This can potentially decrease the number of readmission rates due to surgical complications. This paper will examine organizational approaches to address this issue.

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TREATMENTS AND SERVICES PROVIDED BY MENTAL HOSPITALS: IMPACT OF INSURANCE AND TYPE OF ENTITY

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ABSTRACT

This paper focused on the number of services and treatments provided by mental health hospitals. An examination is made of the impact that the type of hospital has on the services and treatments provided. The types of hospitals are private for profit, private non-profit, and government. The various treatments and services provided are examined in relation to the type of insurances provider. Do certain types of insurance provide for different kinds of treatments and services? The types of insurance examined are Medicare, Medicaid, private insurance, VA benefits, and client fees. The data was obtained using the National Mental Health Services Survey (N-MHSS).

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STAFF INJURY FROM INPATIENT VIOLENCE IN PSYCHIATRIC SETTINGS: THE IMPACT ON STAFF, PATIENTS AND TURNOVER

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ABSTRACT

Violence in psychiatric inpatient facilities is not a strange occurrence and much has been published around the causes, prevention strategies, and education about how to decelerate the violence. This study was triggered by an increase in violence by patients in a for profit psychiatric hospital in the southeastern United States. When nurses were interviewed for their views, at this time, they identified that patients were primarily triggered by the mental health assistant's aggressive/confrontational approach when interacting. To investigate a way to correct this behavior the Quality Improvement Department explored the cause of the behavior and possible solutions.

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TRACK
INTERNATIONAL HEALTHCARE

CHILDBEARING AND MATERNITY CARE OF ROMA WOMEN AT AGE OF NEARLY 18 IN SLOVAKIA

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CHILDBEARING AND MATERNITY CARE OF ROMA WOMEN AT AGE OF NEARLY 18 IN SLOVAKIA

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ABSTRACT

About 300 000 Romas live in Slovakia. They often live in excluded communities and In generation poverty. They suffer from poor health and substandard living conditions. In our qualitative research aimed to young Roma women we gained the opportunity to understand their situation. We learned about their preferences in maternity care Through interviews conducted with women we investigated the following topics: family planning and sex education, access to maternity care and information, dating and partnership, reasons for early pregnancy before the age of 18, attitudes of parents about early pregnancy of their children, and behaviour and relationships during pregnancy.

INTRODUCTION

Slovakia, a small country nestled between Poland and Hungary in the middle of Europe is comparably well developed. It is a member of European Union with the population of 5 428 000 people in 2017. Slovaks live at a comparatively high standard. Unemployment for all of Slovakia in September 2017 was in average 6.42%.

There is a minority group, the Romani, in Slovakia who's story is not the same as Slovaks. It is estimated that Roma account for between 350 000 and 400,000 of the population. That means that of every 15 inhabitant one is a Roma person. If the rate of employment among Roma were the same as the rate among Slovaks, then nearly 150,000 of Roma workers would be part of the labor market. If the Roma were thus employed, then instead of a 6.42% unemployment rate, the rate would be only about half.

While some of the Roma live integrated with Slovaks, the majority are living in slums, mostly in the Eastern Slovakia. These slums are not much different from the slums in Africa or Latin America. Among the Roma settlements that are in western Slovakia, one the most well-known is in the town of Plavecky Štvrtok. This is where we conducted our research.

In the Roma settlements, that are situated outside of the villages, the standard of life is distinctly different than in the towns. The people usually live in the poorly built houses often with illegally wired electricity, no infrastructure of a sanitary system or flowing water. Public transportation to the slums is poor, and access to public services is thus even more difficult. Parents and children in these settlements often have unusually long distances to walk to schools, to the health facilities and for day to day shopping. The poverty of the Roma people in these slums is visible to anyone who would come by these settlements. (Radkova,. Ludvigh-Cintulova, 2017)
But it is not a kind of situation poverty that can be overcome with simple and short-term solutions. It is a deeply rooted generational poverty. (Braubach., Fairburn, 2010)

According the authors Ruby Payne, Philip DeVol and Terie Dreussi Smith, (2006) in order to better understand generational poverty, the definition of poverty will be: „the extent to which an individual does without resources.“ The resources are the following:

Financial: having the money to purchase goods and services

Emotional: Being able to choose and control emotional responses, particularly to negative situations, without engaging in self-destructive behavior. This is an internal resource and shows itself stamina, perseverance, and choices

Mental: Having the mental abilities and acquired skills (reading, writing, computing) to deal with daily life

Spiritual: Believing in divine purpose and guidance

Physical: Having physical health and mobility

Support systems: Having friends, family, and backup resources available to access in times of need. These are external resources.

Relationship/ Role models: Having frequent access to adult(s) who are appropriate, who are *nutrining* the child , and who do not engage in self-destructive behavior

Knowledge of hidden rules: Knowing the unspoken cues and habits of a group

Coping strategies: Being able to engage in procedural self-talk and the mindsets that allow issues to be moved from the concrete to the abstract. I tis the ability to translate from the personal to the issue.(Payne, et al., 2006).

We see that most of these resources are missing in generational poverty of Roma settlements in Slovakia. On the other hand, Romani in excluded communities have strong and deep relationships with one another. Their families and friends help one another even with their own limited resources. They are strongly spiritually oriented and so the religion group and services can provide kind of support. While there is a growing number of local churches that successfully work with these excludes communities, the progress is visible only after many years.

Young people in Roma communities do not have good examples among their parents or relatives how to live regular life. They do not have role models to observe positive problem-solving skills. (Matlovičova, et al., 2012).. They know how to survive, but do not know how to get ahead. They do not have hope in the future and so they are not able to defer their current pleasure in favor of the future (Payne, et al., 2006). That is also why the education is not valuable in the minds of these people, because it requires to invest now a lot of effort for the ,benefit in the future. (Radkova, Ludvigh-Cintulova, 2017)
Needless to say, life is difficult in these communities. The children in the Roma culture of poverty have much different orientation in the life. They are missing real childhood and they begin their sexual life very early (Bartošovič, Hehyi, 2010).

Typical for these poor communities are unmarried couples or consensual marriages (Radková, Ludvigh-Cintulová, 2017) After some years these couples are losing men and women live alone with children or find another man (not sure I understand this sentence. (Šuvada, 2015).. Typical is a passive fatalistic approach to life because they think they cannot change the reality. That is also why they do not want to invest in the future and live totally in the present. That is also why it is so difficult for teachers in these communities. Neither the children nor their parents have the interest to be educated. On the contrary, parents consider that formal education and compulsory school is a tool of the state to control their children (Moricová, Raučínová, 2006. The vast majority of the Roma in these environments are dependent on every services that the state provides without being able to pay for them.

There are no possibilities for reasonable spending of spare time for children. Parents are almost 100% unemployed and many of them do not write or to read . (Radkova, Ludvigh-Cintulova, 2017)

The Roma health situation is also worse than in major population. There is a low level of personal and communal hygiene, low standard of living facilities, polluted environment, unhealthy eating habits and poor nutrition, the increasing rate of alcohol and smoking even during pregnancy and the increasing drug addiction with the associated increased risk of infections (Rimárová,. 2010). Most of the infections among Roma population are so called fecal oral transmitted infections as hepatitis A or dysentery. For example, in 2000 56% of all the infected population with hepatitis A in Slovakia were Romas (Popper , et al., 2009). There are meningococcus infections and tuberculosis . Respiratory infections are more prevalent that in major population, because there is much higher density of people per household room. Sexually transmitted diseases are more prevalent (Rimárová, 2010). Because of drug addiction there are also high prevalence of the blood transmitted infections. (Poliaková, 1999) There are more parasitic diseases also. The problematic is that most of these diseases are often among very young children (Bartošovič, Hegyi, 2010).

The Slovak government has been trying to change the situation in Roma settlements. But the problems seem to multiply at a faster rate than the government's capacities. Without understanding the deep roots of generational poverty and without the theoretical background, then investing more money into various projects does not achieve lasting results. Individual work of professionals such as health and social workers along with pastors and priests, teachers and volunteers can help to change this situation. But it will take many years, over more generations.

There are a few NGOs and churches that try to help. Yet many times people burn out when they do not see any results after many years of a hard work. Our research shows that to change thinking of Roma people is very difficult. It does happen. For example, we can see some signs of a different future for those young people, who attend community centers and participate in well purposed programs for children. . (Radkova, Ludvigh-Cintulova,. 2017)

METHODS

The collection of research data was done by qualitative methods of individual interviews with a specific sample and by observation. The research was done from March to May 2017. We conducted in-depth interviews with 21 Roma women living in settlement in village called Plavecký Štvrtok. During the interviews we were mainly curious about what women themselves feel is most important about having children. All of them were pregnant in the beginning of the research. We wanted to know from them about their perceptions about sex and child birth, family situation, personal feelings. We wanted to learn how they perceived their futures, and how their lives today will impact what they will do tomorrow.

At that stage, we analysed the codes to find the similarities and grouped them into categories based on their common properties. We also considered dimensions of the codes that represent the research problem We inquired about the views toward childbearing and maternity care among young Roma women who are approaching the age of 18.

Research Questions and Aims

Our research is based on problems of the early sexual life of young Roma women linked with other various factors that influence childbearing and maternity care.

The question is not simply why Roma woman in Plavecky Stvrtok get pregnant so early. We also must focus on the other factors such as lack of proper education and their separation from the rest of society at their segregated schools. Roma in this community usually drop out of educational system at fifteen. They thus think that their adult life begins then. They may work as an unskilled manual worker at best. If they are applying for social benefits and support at 15, why not have a baby at sixteen? The research questions are:

Q1 How do teenage Roma girls view their sex lives?
Q2 What are reasons why Roma women are getting pregnant while they are still teenagers?
Q3 What are some risky behaviours during their pregnancies?

Research Sample

The sample was consisted of 21 Roma women at age of nearly 18. All have been in maternity care and have given birth in 2017. They were age between 15-18 years old. Nine of them had given birth by the time of the interviews. The other 12 were pregnant at time of the interviews.

Gaining trust and honesty were important matters in our conversations with the young women. There were several levels to gaining trust of Roma women including in the research sample. We relied on contact with the local NGOs which served as a gateway to the community. We relied also on our own skills and personal experiences to reach out to the Roma women in maternity care. Thus, when we made the interviews there was already a relationship established. They were more open and willing to speak about their lives and private topics. In fact, this approach helped us to open the door to women and created the basis of confidential atmosphere between Roma and non-Roma people.

RESULTS

To focus on such a Roma topic, we need to consider Roma culture and tradition verses the western world's attempts to assimilate them. If we accept poverty in a Roma community as a normal fact due to their history and tradition, then the Roma people are the ones who live according to the stereotypes about them. In that case, then poverty is a way of life that comes with their habits in their settlement. It would not be the obstacles and racism that society puts up against them that keeps them poor. They are poor because it is all that they know about life. If we consider these ideas about Roma lifestyles and therefore allow oversimplified understandings of culture, then teen marriage isn't only about poverty and discrimination. It is just Roma culture. We tried to figure out some facts about giving a birth of Roma women before 18.

Family Planning and Sexual Education

The research found out different healthcare problems connected with abortion, early pregnancy and preterm birth. These are related to the lack of access to appropriate family planning and sexual education. A different culture regarding sex and the lack of knowledge about the methods of contraception have led to early first births, higher proportion of abortions-on-demand and the high rate of the increase of the population among gypsies. This may be explained by the life-style traditions of this ethnic group and their intention to the multi-child model of the family. However, the mind of young Roma women has been changing. They are not thinking any more about having such large families. Instead they are wanting to be in maternity care only for couple of years.

The research showed that lower education correlates with having more children than average, but it also depends on which ethnic group and which region is investigated. Based on the findings of the research, young Roma women begin their sexual activities. As a result, it is not unusual for them to give a birth as early as 16 years old. On the other hand, there is a changing understanding of the role of women in Roma community. It is becoming more significant for Roma women to have a vocation that compliments their motherhood. They are also desiring opportunities for conscious family planning and contraception. Mothers of their teenage daughters are expressing a desire for their children to live differently than their own experience. We learned that lack of family planning among families living in extreme poverty in disadvantaged settlements is partly due to an absence of financial resources.

"I don't want my pregnant daughter to live this same kind of life of parenting as I had. Then there is the man, or boy who will be the father. I don't know whether he will take his role seriously. Or will he subdue her in a way that will not allow her to achieve any of her dreams?"

Dating and Partnership

The research findings said: They do not believe in the notion of partnership of men with women. They are persuaded that dating without sex is not dating at all. To be in love is fun and young women are proud of it.
Gypsy girls are supposed to get married or matched up between the ages of 16 and 18, Indeed, many Gypsy men look for a wife who hasn't been even kissed by another man beforehand, according to women participating in the research. If a boy asks a girl out, she should refuse at least twice before finally saying yes. It is typical for them. It was confirmed by participants of research.

Table 1 What does Dating mean for you?

Categories	Expression of participants in research sample
Being cool	Each of us wants to have a boyfriend, because it is cool. If you do not have a boy, you are not respected by others, you are still small girl.
Curse	we believe if you are in love and give a birth you are blessed. If not, you are cursed.
Have a fun	To have a boyfriend is a great fun. It is exacting at the begging of dating and you are much in love with boy, even you do not hear a good things about him
Exacting thing	You know, it is exacting, if you are in love, you are like in a heaven ... you do not think about anything, future, school, family problems...
Worth	If you do not have a boyfriend, it means you are not pretty or clever.
Natural thing	It is normal to start sexual life as soon as possible, no one want to be along, and you can see sexual things everywhere.
Timing	If you wait for dating with "right" man, you can miss him, and you stay alone.
Happiness	Meeting a boy, having fun, dating and kissing is a great game, it is exacting, and it makes you happy.
Better life	If you are in love, you believe in miracle... I am persuading my boyfriend makes me happy and makes my life better
Respect	Having a date you show others you are more worth than other girls in gipsy community.

Table 2 When do you start Dating and begin your Sexual Life?

Years	Interval Girl	Age of boyfriend
15	irregular (without partnership)	15-16
16	more regular (having boyfriend)	17, 16
17	regular sex (2 a week)	17, 18-19
17	get pregnant	18-20
18	have a birth	19-21

Sexual Life

Individual interviews showed up that couples are extremely uninformed about contraception. They lack the basic anatomical knowledge of how the reproductive process works. In addition, the responsibility to know this valuable information lies disproportionately on women. Meanwhile, there is little opportunity that adequately prepares either young women or men for their sexual lives. It is not reaching them through public education or other programs). It is still common and accepted to begin their sexual lives at an early age in the closed, traditional, mainly Roma communities. Young Roma people marry' already at the age of 16. They keep the early-conceived baby and raise them up with the help of the extended family. Childbearing, parenting and the motherhood of young women are broader family affairs.

One of the reasons why Roma women get pregnant so early is that there is no money for the birth control pills. So, you must deliver the child because abortion is not an accepted solution or custom. You can buy a condom but that's also expensive (packet costs 6 euros, there are 10 pieces in it). A young couple wants to have intercourse more than 10 times per months. Everyone seems to know about their activities because there is no privacy in the family life. Everyone knows when the parents are having sex.

Table 3 Reasons of being Pregnant before 18 According Participants

EMOTIONAL REASONS	Oestrogens	Being in love	Fear / Curse	Values and rules
Expressions of participants:	It is natural thing to have a sex no matter what age you are	It is exciting and funny, cool, free	You are afraid of losing boyfriend if you refuse	It is about being natural, you believe in love,

FINANCIAL REASONS	High costs	Poverty	Early age at school time	No awareness
Expressions of participants:	One packet of condoms including 10 pieces costs 6 euro, you can buy two boxes of cigarettes for that prices or 5 packets of chewing gums.	I cannot afford to buy condoms regularly; one packet is not enough to cover my sexual life	They start to have a sex at early age when they go to primary school and do not have own money	First time you are safe. You want to be careful
FAMILY REASONS	Family culture	Thinking	No taboos	Tradition
Expressions of participants:		Your sexual life is only an affair connected to give a birth…	Parents have a sex regularly without privacy	Gypsies have many children Gypsy women grow up early
SOCIAL REASONS	No family planning	Low sexual education	No medical services	Modern technologies
Expressions of participants:	We do not speak about it in the family. Talking about sex is a taboo.	School is boring, we talk about it, but we prefer personal experience	We are not used to go to the gynaecologist unless it is for medical care. But not for pills	We often look for information on the internet, it is easy

Women are often mistreated because they are Gypsies. You go to the hospital to give birth as a Gypsy woman. You may be well-groomed. But if your pocket is not full of money, you remain a Gypsy woman. I had a privately paid doctor at the birth of both children, they saw that I'm approaching their norms, but I felt I couldn't meet them completely. Especially at the postnatal ward. The staff are nice to the not-Roma even if they are brought in from beside the trash can. But they think that the only reason why Gypsy women have children (and a lot of them) is to collect social benefits. That is what I felt when I was at the hospital by the non-Roma who were there."

Table 4 Behaviour during Pregnancy

Categories	Expression of research participants
Smoking	I cannot give up smoking even when I am pregnant I started smoking as a teenager. I tried to smoke at primary school. I steal cigarettes from my parents. I smoke regularly
Drinking alcoholic drinks	It is normal to drink alcohol, alcohol is every day in my family I drink energy drinks we used to buy it at school break I like to drink beer, it is said to be healthy to digestion.
Health care	I do not go for prevention medical care I go to doctor only if I must go, not as prevention. Health care is not very good quality here I do not ask for special medical care.
Bad habits	I do not eat healthy food because it is expensive. I eat fast food without matter. I do not have money to change food habits at pregnancy I did not care about myself even while I was pregnant.
Sexual life	I have a sex during pregnancy.

	To have a sex with partner is normal even I am pregnant Sexual life is alive even I am pregnant Sexual life is necessary to my partner.

Based on the findings of our research, we identified these bad manners influencing pregnancy showed at table above.

Lifestyle questions included tobacco use and alcohol consumption is normal for Roma women. It doesn't matter whether they are pregnant or not. Smoking habits during pregnancy were based on the fact it they used to smoke before. Only two of them quit smoking when they learned that they were pregnant. All of them are passive smokers. None of them ask partner to give up smoking while they were pregnant. They believe it is OK for baby.

DISSCUSSION

To understand the growing incidence of teenage pregnancy among Romas, it is important to recognize some of the underlying causes.

We have to understand the way of thinking of the people in generation poverty. Because their life is very difficult they concentrate on a present moment. They live in the present moment. The present moment has enough problems to overcome and they do not have power to think about the future. They have no notions about the future Their life is full of boredom They do not know what pleasures are available in the future so they concentrate on the pleasures that are available at the moment. Families do not have enough money for the basic things as housing, food and clothes. Even if they have some money to cover their basic needs in the future, they often spend them for the pleasures in the present. But sex is free and available (if they do not want to spend money on protection). Because they do not think of future they do not feel the responsibility for the consequences of their sex. (Payne , et al., 2006). That is why the growing number of Roma girls engage in sexual activities at an early age.

Research had shown the most often causes for pregnancy of Roma teenagers are due to low sexual awareness, worsening family situations, lack of sexual education, uninvolved parental guidance, financial problems and a Roma culture that allows for early sexual activities. According to the words of Roma girls, an active sexual life is exciting. Since they believe that protection is expensive, they prefer to take the risks. They feel that being in love is cool and they do not consider the responsibilities for risky outcomes. Their lifestyles are uninhibited. For example, they prefer to spend the money on energy drinks and candy verses contraceptives. On the other hand, they are convinced that their lives will be better in the future with the boyfriends that they are sleeping with. Their boyfriends do not use condoms, and would expect that if the girls wanted them to use condoms that the girls should also pay for them. Roma girls and boys live sexually impulsive lifestyles. They are emotional and spontaneous. They enjoy the excitement when they follow their instincts. These traits, of course, make it highly likely to get pregnant.

Because of these realities in the teenage world of Roma, it is more important to educate teenagers about safe sex rather than imposing moral lessons on them. In their world, it would be unrealistic to tell them to avoid having sex completely. For the Roma teenager being in love, means having sex. In the very crowded homes of Roma, there is no privacy. The parents engage in sex and the children are fully aware of what they are doing. Yet it is a taboo subject for healthy discussion. Roma teenagers are not prepared to understand their own sexuality.

Young Roma girls do not intend or desire to have a lot of children in their future. But they are not ready to take the responsibility that comes with having children. And the number of children that they will ultimately have is not something that they plan for in advance. All of them explore their sexuality without the right sex education and family planning, without awareness of impacts of unsafe sex. A teenager who becomes pregnant unintentionally has a lot to consider and reconsider. None of Roma girls put in the mind that an abortion as the way of solving their life situation. It is against their culture. They may be frightened, but their lives with the birth of a baby is common and expected by family surrounding. Thus, they do not need to plan the future. The birth of a child happens when it happens. On the other hand, with most Roma mothers of these teenagers, they know the negative impact when they become a pregnant at early age. And while they feel helpless to influence any different outcomes, they do wish for a better future for their daughters.

The research results had shown risky behaviors of teenage Roma girls while they are pregnant. In fact, the Roma girls acknowledged some of their dangerous habits at pregnancy. We identified the most common ones as the following: unhealthy eating habits, smoking, junk food. They said that they made no notable changes to their habits once they learned that they were pregnant.

Most of the Roma girls do not know how to recognize that they are pregnant. When they do realize it, then they hide it from their parents until they cannot conceal it. They do not consider abortion as a solution to their problem. But they say that the pregnancy exacerbates their already stressful life. They say that they have little idea what to do. Once the pregnancy is known, the Roma girl usually get supported from the family. She usually moves into her boyfriend's home. And she will listen to lectures about how she should be more self-controlled.

Young Roma have to face a hard life. They have such low educational qualifications that they have little prospect for decent employment. Thus, life is about existential struggles. Roma women after they get pregnant slowly stop planning anything for the future and they learn to adapt to the life of the family. They no longer dream about better life. They would like to have a better life for their children. But they slowly cease thinking about what they could do to make their children's lives better. The generation of poverty, hence continues on. . They have a low chance to make their lives different and to give better opportunities to their children in the future. The circle of life in poverty just repeats itself to the next generation.

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CONCLUSION

It should be the main question around the round-table discussions how it is possible and necessary to establish maternity care sensitive to Roma culture. Can we speak in general about Roma culture and identity at all? While there are at least three large Roma groups different in language and traditions in Slovakia (Olasky, Rumungri and Hungarian speaking Romas) In addition, the unwritten rules of each Roma community may often differ even within one village. Research findings showed that traditions that were common in one earlier generation have been disappearing in most places in recent years. Traditions have been replaced by a multitude of local rules that are typical to segregated communities in different Slovak regions. Teenage childbearing ties the new mothers into systems of rules that bind them to the earlier traditions. They have features deriving from poverty and segregation, as well as features coming from local conditions. Therefore it is essential to know the conditions of the community and to take it into account during the healthcare of Roma women in maternity care. Considering this, it would be not only impossible but even dangerous to develop a protocol regulating the care of Roma women in general, because they need specific and individualized approach.

Even Roma children in excluded communities who live in extremely disadvantaged environment of a generational poverty can be influenced by positive way. Good personal role models of volunteers, who organized long term leisure activities for these children influenced personal development of the Roma children by very positive way (P&yne,.DeVol,.2006). Children developed many skills and positive attitudes and started to think about their better future. They developed better attitude to work and school and understand the role of education in their lives. They do not want to be depended on social support as their parents and want to continue their education on secondary schools. . (Radkova, Ludvigh-Cintulova. 2017)

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COMPARISON AND CONTRAST OF PATIENT EXPERIENCES BETWEEN INDIA AND THE UNITED STATES OF AMERICA

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ABSTRACT

Health care has no boarders. Health care practices among countries are sensitive to cultural differences and disparities in technological advancements. Both of these have an impact on the patient experience. Health care in India is a vast system full of complexity and paradoxes where high quality treatment is provided at relatively low costs. The challenges currently facing the American health care system are certainly not unique; stakeholders around the country are addressing the pressures of an aging population, exploding medical costs and reliance on expensive high-tech solutions and procedures. Both India and the United States are battling three mutual concerns in modern health care: cost, quality and access. In this paper, cross- national comparisons and analyses among patient experiences in India and the United States are made using the comparative data and other information resources. Variance in healthcare provider structures along with various health risk patterns are discussed in this paper. A focus is placed on consistency and continuity in providing health services, care based on medical evidence along with patient involvement. The traditional role in the family for elders in the Indian culture as compared to end of life care in the United States are analyzed and contrasted.

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HEALTH INFORMATICS IN DEVELOPING COUNTRIES: THE REVOLUTIONARY IMPACT ON HEALTHCARE IN NIGERIA

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ABSTRACT

This paper examines the history, current state and factors associated with the use of information and communication technology (ICT) in Africa with a focus on Nigeria. The review of literature provides a basis of understanding of the past and present state of applying information technology to healthcare delivery and management in Nigeria, with comparison to developed nations. An analysis of issues related to the successful implementation of health informatics in Nigeria, its long-term viability as well as possible solutions to improve collaborations among patients and various healthcare providers are described. The opportunity for growth with developing countries are aligned with the need to impact population health in a pro-active manner. This paper utilizes inputs from previous researchers and innovative ideas for the future state of healthcare across the nation.

BACKGROUND

Definition and Introduction

As defined by the National Information Center on Health Services Research and Health Care Technology (NICHSR, 2016), health informatics is the interdisciplinary study of the design, development, adoption, and application of IT based innovations in healthcare services delivery, management, and planning. Similarly, Robert E. et al., (2012) explains that "Health informatics is also known as clinical, medical, biomedical informatics and is the scientific field that deals with resources, device and formalized method for optimizing the storage, retrieval and management of biomedical information for problem solving and decision making". It is an umbrella body for all medical resource information, thus information, communication and technology come in under health informatics.

Innovation and development of technical systems gave birth to the introduction of health informatics to positively impact the delivery of health care. It however, remains far-fetched in some developing countries of the world. Luna et al. (2014) state that "United States Institute of Medicine, declared information technology (IT) as essential healthcare tool needed to improve costs, patient safety and quality of life. Improving information technology standards in developing countries will improve the common difficulties facing the slow developing heath care system". It is apparent that most developing countries barely have the system and infrastructure to support the use of health informatics. Nonetheless in recent years there has been an increase in awareness and utilization of various aspects of Health Informatics in the continuum of care. This paper focuses on circumstances surrounding the use of Health Informatics components to improve service delivery in developing countries with emphasizes on Nigeria. It provides an understanding of the past and present state of application information technology to the delivery and management

of healthcare in Nigeria.

t is not reasonable to neglect the impact of IT in developing countries, particularly in relation to health expenditures and epidemics affecting world populations. According to the World Health Organization (2008), " 11% of the world population in Africa, communicable disease is the cause of 72% of death in the region compared to 27% in all other WHO regions combined". This shows a huge epidemic yet to be resolved in Africa. However, the value generating capacity of health informatics merged into the current mechanics of care will be important and interesting to see its transformational impact on the treatment of patients particularly in providing, storing, transferring and easily accessing medical records in Nigeria. The successful implementation and sustainability can be a possible model for other developing countries in Africa. The future of Health Informatics is promising in developing countries with a focus on West Africa (Nigeria), this can be evident in the ability to close gaps in understanding system implementation within resource-constrained settings to improve deployments for such situations. The role of Health Informatics cannot be underestimated in any country whose focus is on population health, it is a technology which will both enhance and improve the health system as well as impact the service delivery to patients.

History and Current State

Technology and patient care originates from two distinct fields interacting to improve the delivery of healthcare around the world. According to University of Illinois at Chicago, health informatics started in the 1960's with experimentation in the field of dentistry but in the 1970s it was utilized in biological data studies especially with DNA information analysis. Overtime, it became established as soon as professional associations and governments concentrate on its use in the health care industry. The initiation of health informatics in Nigeria is often linked to international organizations funding programs to improve population health globally. Idowu et al. (2003) states that " In 1948, the first computer emerged in Nigeria through the Nigeria Port Authority with the first Nigeria health informatics experimentation in 1988-89 from collaborative research between University of Kuopio, Finland and Obafemi Awolowo University teaching Hospital (OAUTHC). In April 1993, the first International Conference on Health Informatics in Nigeria. Idowu P, et al. (2008) explains that ICT in Nigeria date back to the 90's establishment of the National Broadcasting Commission (NBC) and Nigerian Communication Commission (NCC) with consolidated improvement by the Obasanjo administration through provision of National Information Technology Development Agency (NITDA) to implement the ICT policy. Idowu et al. (2003), emphasises that "this awakened the urge for computerization of the health sector especially with patient records, booking and bill payment. There was improvement through donor funded programmes with equipment support in the late 1990s and use of electronic based ICT system in non-health sectors in the country. Francis (2012) states that. The year 2000 showed an increase in the use of health informatics within organizations in Nigeria, some of which include the NTDA, SfTeHIN, NTeHWG and AHIN.

The situation of health informatics remains the same in Nigeria even with the increase in developmental organization and continuous urge to improve. However, there is improvement with health information technology as regards management of patients living with HIV/AIDS. Some privately-owned hospitals use some form of health informatics in the area of bill payment and patient records. Use of telemedicine in tertiary hospitals is slowly improving in the aspect of inter-hospital review of pathologic slides and special cases. Most hospitals still use paper based patient data storage with advertent loss of patient record and inability to protect patient's personal health records. It is still impossible for patients to schedule clinic visit online while a lot of patient queue for hours to pay hospital bills or buy medications. The United Nations Foundation (2014) states that "the ICT sector has evolved faster than the policies that guide the use of ICTs for health, presenting significant challenges to projects moving towards institutionalization". Notably by the United Nations Foundation (2014) is "the WHO-ITU stages of development of the national ICT for health enabling environment which includes; Experimentation, Early adoption, Developing and building, Scale up and Mainstreaming. This helps in grading health related ICT development in different countries and define the level of intervention needed as most developed countries are at the level of scale up or mainstreaming. Nigeria is considered to be transitioning from 'experimentation and early adoption' to 'developing and building up".

ANALYSIS OF HELATH INFORMATICS IN NIGERIA

Information and Communications Technology plays a significant role in the way information is acquired, used, shared and stored. There is no doubt that Information and Communication Technology has been the driving

force for innovation and wealth generation within most industries in recent years, its ability to network as a result of advancements with technology has proffered an increased use of ICT. Misuraca (2007) defines ICT "as the combination of all those areas traditionally known as telecommunication, information technologies, radio and television broadcasting, online publishing and postal services, including the ultimate multimedia". More specifically within the health sector ICT is often assessed on the basis of increasing efficiency and effectiveness of healthcare services. Kuo A, et al. (2013) states that ".With increasing need to provide efficient and effective heath care, the use of ICT is fast developing as it serves as a means to the desired end. This portrays ICT as an impactful tool in the sustenance of achieving accessibility, system changes and empowerment of patients which in-turn improves health outcomes.

There has been a boost in the use of information and communications technology particularly in developing countries around the world with significant relations to behavioural changes. Chikotie (2013) states that "In Africa the advent of e-health has offered an exciting opportunity to reduce or control the growing healthcare inequity, a lot still needs to be done in drawing up the appropriate strategies to narrow the disparities in the access to healthcare delivery information". However, the public health sector is a major determinant of technological and infrastructural aspects of growth in developing countries, in which poor funding to create a sustainable health information system remains a predicament. Nonetheless, Chikotie (2013) explains further that Advancement of ICTs and the increasing demands for health information policies, research, monitoring and evaluation as provided a huge advantage within the health sector in most developing country. Improving ICT as provided a powerful potential to improve the operational activities of most healthcare organisation. Some notable facts in the deployment of ICT with particular reference to developing countries in the Africa region is health disparity and inequality resulting from the inconsistent economics gaps between beneficiaries in most countries. For example, Nigeria is a country where the rich can easily gain access to the best available care both within and outside the country, whilst the poor are most often left to suffer the consequences of the inability to provide funds for good health services with a high proportion without hope bearing pains up until death.

The concern remains the ability for ICT systems to be deployed within the public and private sectors for benefits of the general population. Merra (2012) explains that "countries in Africa spend significant amounts of their GDP on delivering health services through systems that are often inefficient, costly and lacking in transparency. ICTs have the potential to transform the delivery of health services across the continent in ways that not only increase efficiency but also improve accountability". This is expected to create uniformity in the delivery system with a focus on low and middle-income health systems. Merra (2012) further emphasizes that "Many low and middle-income health systems lack sufficient technology to enable communication between households, care providers and eventually policy makers".

ANALYSIS OF HEALTHCARE DELIVERY: AFRICA (NIGERIA) VS DEVELOPED COUNTRIES

Most developed countries aim at improving healthcare delivery outcomes generally, whilst developing countries to a large extent struggle with varying inconsistencies associated with the delivery of healthcare. The focus arears for developed countries are often interchanged with providing better access, reduced cost and higher quality, whilst developing countries still suffer the lack of structure, funds, education, loss of knowledge base, health trade-offs and consequential compromise. The United States of America as a developed nation transitioned from a fee for service to a value based model of care which typically controlled by governmental policies. Poplin (2012) states that "U.S. is characterized by public health systems such as Medicare, Medicaid, Veterans Administration and the active duty military health care system (Tricare) with no regulation of the cost of health insurance or the cost of healthcare" Furthermore Poplin (2012) describes "the health system in other OECD countries as a situation where all citizens have comprehensive health insurance. This covers virtually all necessary healthcare expenses, although in some cases, for an additional voluntary payment, one can access additional doctors, facilities and perhaps some elective services and if there are co-pays, they are not onerous. Generally, payments are from tax revenue, except in few countries like Switzerland and the Netherlands, where citizens are required to pay regulated premiums while those who cannot afford these premiums are subsidized". The health system in OECD countries consist of comprehensive health insurance which includes all necessary expenses with an option to access voluntary services at an additional cost. Most countries get payment funding from tax revenues except Switzerland and the Netherlands where regulated premiums are used.

In terms of actual service delivery and technological mechanics promoting desired health outcomes, developed countries are well advanced with the use of health informatics in the coordination of care. Reiner (2011) explains that "The digitization of medical data has led to a number of dramatic changes in healthcare deliverables and expectation. For example, in radiology, the ability to instantaneously access medical imaging data from essentially any location led to heightened expectations in operational efficiency. These changes in service expectations fostered a new wave of technology innovation in radiology aimed at improving quality, efficiency, and accuracy. Computerized scheduling and digital dashboards became integrated into administrative workflow, providing more timely service and the ability to monitor departmental workflow in real-time". Most developed countries due to education, awareness and resources made available encourage patient participation in the delivery of care and focus preventative measures to improve population health. Reiner (2011) further states that "These technological advancements have led to improved data access and increased efficiency amongst service providers. The focus is however on the standardization of data collection referenced across various databases to promote best practices and the adoption of evidence based medicine."

In contrast to developed countries, African countries and Nigeria in particular, are far from achieving a basic healthcare structure proffered at providing accessible, cost effective and qualitative healthcare. The discuss on standardization and professional policies for quality of care is an appalling situation in the country. Welcome (2011) states that Despite Nigeria's position in Africa, the country healthcare is greatly underserved in terms of health facilities, availability, personnel and equipment. Even with several reforms by the government, implementation at the local and state levels are still limited. The healthcare paradigm in Nigeria is characterised by both the public and private sectors which are primarily the responsibility of the government. It operates under three main umbrellas namely: Federal, State and Local governments regulated by the federal government. There is a minimized proportion of the healthcare sector associated with the private and informal sectors utilized primarily by the middle and high earning socio-economic class. Welcome (2011) explains that Lack of coordination, fragmentation of services, dearth of resources, decay infrastructure, inequity in resource distribution and access to care are evidence of a weak healthcare system complicated by lack of clarity of roles and responsibilities among different level of the government. These inefficiencies have contributed to the migration of healthcare personnel to other countries.

It is disheartening accessing the actual service delivery process in Nigeria particularly amongst the low-income earners and families without any income. There is a cultural atmosphere where the level money available to individuals largely predicts the level of care received. There is no doubt that extreme poverty levels highly influence the circumstances within the healthcare environment. The country still primarily operates on paper based files for all health associated records due to the limited resources available and largely the lack of infrastructural competence. Equipment is often substandard or out of service creating a strain the delivery of health services. Furthermore, it will be negligent to ignore the vast effects of corruption within the health system. The Nigerian Leadership Newspaper Editors (2015) emphasises this point with the following scenario "Most equipment's classified as unserviceable were, indeed, discarded as scrap in foreign countries. Unfortunately, some corrupt Nigerian officials will travel there at state expense, to pay for them to be refurbished and then bring them into the country as new to be used and put human lives at stake". This clearly results in outputs such as wrong diagnoses and inefficient treatment outcomes which cannot be effectively monitored by ICT technologies through data capture.

IMPLEMENTATION AND LONG-TERM VIABILITY

According to Ajiboye et al., (2014) ". It is worth taking into account the impact economic health has on medical health and the need for its accessibility to all members of the population. The effect of a healthy community cannot be underestimated in its ability to promote national developmental programmes as well as the ability to pursue individual aspirations. To implement the use of Health Informatics to an independent state in African will require vast research into the processes currently in play within the health sector, definitive and implementable healthcare policies for hospitals, healthcare professionals and all payers. Implementation concerns border greatly on the lines of some form of regulation at the very least and appointing a transparent body to administer and develop health informatics standards.

Implementation of health informatics will need the governments support with infrastructure and adequate payment of healthcare professionals. The primary healthcare is so poor that people use the tertiary hospitals, causing over-crowding and limited healthcare access in rural areas. The proposed National Health Bill with a focus on primary

health care as the driving force if passed into law will facilitate health informatics and decentralize patient laden tertiary centers. The telecommunications industry and access to the internet has undergone a significant growth in Nigeria in recent years, however, the internet speed is low and undependable. Notably is the hitch associated with limited funding which is necessary for the acquisition of health informatics software. Similarly, electric power supply is constantly irregular resulting in institutions purchasing external sources of power which is not viable in the long run for the implementation of appropriate information and communications technology. This makes the cost of running health centers and hospital extraordinarily expensive as well as fluctuations in electricity currents destroying the already inadequate gadgets. The implementation process will success with recruiting well trained ICT professionals in the health sector for both public and private hospitals.

The biggest challenge is of starting a process of change is seen in the sustainability of the program. There must be a revolving fund to run the affairs of health informatics programme established for hospitals in any city or state with policy and laws institutionalised and enforced. For long term viability concerns, the primary healthcare must be restructured and tailored towards reducing the burden on tertiary hospitals. Non-governmental and private firms should be encouraged and provided a sustainable platform for investment in government hospitals. There should be continuous training of staff and upgrade of software's for qualitative and accountable service delivery. Korpela et al, (1998) stated that "". The protection of patient information from all forms of cyber-attack and misuse is a key issue for IT experts. The process of involving the community participation with health and IT professionals further proffers solutions in improving the quality of care. Finally, an evaluation of the impact and cost efficiency of ICT solutions should be analysed before final implementation using comprehensive assessment to impact the overall sustainability of the program for the long run.

CONCLUSIONS

Future Outlook and Recommendation

It can be concluded that the opportunities within healthcare industry in developing countries remain not fully utilized and viable. The enormous impact of Health informatics in improving population health is worth the time and effort. Merra (2012) explained that . In Africa ICT remains the unutilized tool to better govern and promote transparency within the health sector which will depict better care for money spent and overall efficiency in health care spending. Furthermore, Chikotie (2013) states that "proper planning for ICT deployment with fundamental inclusion of healthcare stakeholders can bear tremendous results in narrowing the health divide. There is need to engage a diverse group of health professionals, policy makers and, the public in the drafting of road maps for narrowing the health divide" There is an inevitable need to include all stakeholders in the planning and implementation phases of achieving a narrowed health divide in communities. A fundamental contribution to the successful implementation and use of ICT systems will be evident in the ability to provide substantial analytic and relative data for stakeholders. The inability to provide qualitative data hinders researchers from a statistical perspective.

Nonetheless, the United Nations Foundation (2014) reviewed the use of ICT health tools for frontline health workers indicated that "governments in Sub-Saharan Africa, including Nigeria, are interested in developing an enabling environment for such tools and their implementation. In particular, they are invested in equipping their workforce with the right ICT for health tools, skills and knowledge and having mechanisms in place for standards and interoperability through setting up national health information systems. A major recommendation will be for the private sector to invest in ICT tools in improving the delivery of healthcare. Similarly, the government needs to commit to developing mechanisms to meet needs and opportunities present in the country. Overall the successful implementation of health informatics will lead to health system interoperability with a future plan for a comprehensive and effective health system.

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KNOWLEDGE AND ATTITUDES OF SAUDI NURSES TOWARD PAIN MANAGEMENT

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ABSTRACT

Pain control is a vitally important goal because untreated pain has detrimental impacts on the patients as hopelessness, impede their response to treatment and negatively affect their quality of life. Limited knowledge and negative attitudes towards pain management were reported as one of the major obstacle to implement an effective pain management among nurses. The main purpose for this study was to explore Saudi nurses' knowledge and attitudes toward pain management. Crosse sectional survey was used. Three hundred Knowledge and Attitudes Survey regarding pain (KAS) were submitted to nurses who participated in this study. Data were analyzed with the Statistical Package for the Social Sciences software (SPSS; version 17.(Two hundred forty seven questionnaires were returned response rate 82%.half of nurses reported no previous pain education in the last five years. The mean of the total correct answers was 18.5 (SD 4.7) out of 40 (total score if all items answered correctly) with range of 3 to 37. Significant difference in the mean was observed in regard to gender (t = 2.55, p= .011) females had higher mean score (18.7 SD 5.4) than males (15.8 SD 4.4), but, no significant differences were identified for the exposure to previous pain education (P > .05). Saudi nurses showed a lower level of pain knowledge compared with nurses from other regional and worldwide nurses. It is recommended to considered pain management in continuous education and nursing undergraduate curricula.

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MENTAL HEALTH IN THE UNITED STATES AND UNITED KINGDOM: PAST, PRESENT, AND FUTURE

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ABSTRACT

Historical perspectives, stigmatization, and delivery systems have interfered in numerous ways with the proper care and treatment of the public's mental health. Despite this, the United States and United Kingdom. are endeavoring to improve the system that has historically underserved and often ill-treated those with mental/behavioral problems. This paper reviews the history in both countries and discusses current challenges.

HISTORY

History of Mental Health in the United Kingdom (Pre-19th Century)

In the very early days of the U.K., most mental disorders and conditions were seen as demonic possessions, spiritual experiences, or curses. It was not until the 16th century when mental illnesses were proposed to be natural problems rather than demonic. During this century as well, the government started to have more of a hand in the public's health by petitioning the king to hand over hospitals for the City of London to house the poor. However, one of these hospitals was Bethlehem Hospital, known as "Bedlam" today, which was a hospital notorious for torturing and mistreating the mentally ill (Roberts, 1981). This is just one example of the many institutions that were set up to treat the mentally ill, only to have an adverse effect on those labelled as "lunatics." Bedlam became a place where the general public paid to visit after visiting the zoo at the Tower of London for entertainment, but instead of viewing animals this time, they would view humans. This practice continued until 1770 (Roberts, 1981). Inferring from this glimpse into the past, it is easy to see how people and crops are not the only items to have migrated to the American colonies—the stigmas and treatment of the mentally ill did as well.

History of Mental Health in the United States (Pre-19th Century)

Generally, in the early days of the United States most families took care of their mentally ill members unless they were severe then they were locked in jails. It was not until populations and communities grew and mental illness became a social issue that institutions were opened to handle the needs of the mentally ill. In 1756, the Quakers in Pennsylvania became one of the first to treat their mentally ill in the United States. Their care though was shackling them in rooms in the basement of a hospital until a ward was added to house them. Eventually, other specific institutions across the country, including hospitals in Pennsylvania, opened to focus on treatment of the mentally ill (U.S. National Library of Medicine, 2006).

History of Mental Health in the United Kingdom (19th - 20th Century)

In the United Kingdom, the 1800s was the time when the number of asylums grew with the purpose to cure and remove the mentally unstable (Roberts, 1981). This coincided with the creation of the Lunacy Act, which ultimately changed the mentally ill to patients, and while the intention of this act was to satisfy the public's concern

over wrongful confinement, it marked the beginning of a well-controlled and humane system of psychiatric admission. However, this act was not enough to control how doctors, or psychiatrists, reigned over their mentally ill patients. Many psychiatrists and institutions adapted to the new laws, but still managed to abuse and mistreat their patients Along with this, stigmas and harsh attitudes facing those with mental disabilities continued to persist into the early 1900s (Takabayashi, 2017). Legislation in that period reflected this, but due to the failures of institutions, like asylums, to cure mental illness, treatment of these patients advanced away from asylums and other forms of treatment were investigated. Outpatient care, psychological clinics, recognition of physical illness having a psychological component—these are just some of the innovations that changed the United Kingdom's mental health system. However, due to the old lunacy legislation still held in place, when the new National Health Service came to be in 1948, the mentally ill were treated as a class apart and the number of mental patients in institutions rose and hit a peak of over 150,000 by the mid-1950s (Thomson, 2016). It was not until the Mental Health Act of 1959 that entry to mental hospitals were made to be a medical issue rather than legal judgment, and mental health was made a community priority with the rise of social care (Turner et al, 2015). Still, progress was slow to deinstitutionalize patients and the U.K. failed to see dramatic falls in mental hospital beds until the 1980s and onward (Thomson, 2016). Significant improvement in the delivery of their system did not really occur until then.

History of Mental Health in the United States (20th Century)

In the early 1900s for the United States, institutionalization was viewed as the best, effective treatment for the mentally unstable, and was welcomed by families and communities. But while institutionalization meant more patient access, most of the institutions doing the institutionalization were underfunded and understaffed resulting in many human-right violations and poor living conditions (Unite for Sight, 2012). By the 1940s and 1950s, the public was pushing for deinstitutionalization to reform asylum-based care and move toward community-oriented care, much like the U.K. was doing similarly in time (Dual Diagnosis, 2017). With the advancement of pharmaceuticals, patients were becoming more able to treat their illness while living everyday life, and with the public peering into the conditions of mental institutions through media, the outcry from the public forced many corrupt facilities to shut down and release their patients. Laws were passed to make entry into mental hospitals stricter, and a new range of treatment facilities were introduced such as community mental health centers, small supervised residential homes, and community-based psychiatric teams (Unite for Sight, 2012).

THE CURRENT STANDING OF THE MENTAL HEALTH SYSTEM INCORPORATED INTO THE NHS

The National Health Service (NHS) has been praised and critiqued by many within and outside the UK for their publicly funded healthcare services. This socialized healthcare system excels in many areas all while providing free healthcare for a percentage of the people's income. However, in the area of mental health services the NHS still has a long way to go before it is deemed perfect because even though it points out that mental health is tied into physical health, the mental healthcare system still has not received the same attention as physical health and has a lot of deficits that require work to improve.

In the UK, statistics have shown that one in four adults experience at least one diagnosable mental health problem in any given year. One in ten children have a diagnosable mental health condition, and children with behavioral disorders are four times more likely to be dependent on drugs, six times more likely to die before the age of 30, and 20 times more likely to end up in prison. Mental health problems are the largest single cause for disability and the cost to the economy is even more than the NHS at 105 billion pounds per year (Mental Health Taskforce, 2016). These are just some of the many reasons why mental health services have become a looming topic for many politicians across the UK and has made the public call for a mental healthcare reform.

Over the last 50 years mental health has had quite a transformation with advancements in care, the introduction of anti-psychotics and other similar drugs, and a new emphasis on human rights. These transformations have led to the community-based mental health programs, and in the 1990s, the Care Programme Approach was developed to help those with more severe and enduring mental conditions and more public mental health and services were promoted for children and the homeless. In 1999, the national service framework for mental health was set up to essentially focus on providing care close to home, offering 24/7 service, offering access to modern medicines, providing tailored treatment programs, providing early interventions, talking therapies, and multi-disciplinary care for those with mental health conditions (Elements Behavioral Health, 2016). And in 2000, the NHS plan was outlined to

make this framework a reality by setting up targets and funding, and unlike countries like the US, mental health is covered under their health coverage definition, which means that under the NHS, consumers are provided free mental health services, which essentially allows everyone to access them (Mental Health Network, 2016). However, there are still barriers placed that prevent misuse of services and individuals from access.

Individuals in need of mental health services usually have to receive a referral from a GP to access these services. Mental health services included under the mental health category are depression, anxiety disorders, psychosis conditions, obsessive compulsive disorders, eating disorders, ADHD, dementia, and more, which are then tapered into different service categories such as adult services, child and adolescent services, forensic services, learning disability services, older adult services, and substance misuse services. Still, not all these services or categories are provided in every area of the UK, which can be difficult for some individuals (NHS, 2016). People may have to travel far distances to gain access to their appropriate mental health care, and this access varies for every person for other reasons as well. Individual circumstances such as age, specified health problem, and the urgency of the care will determine how people will access mental health services as well and determine whether or not the patient will have a choice in their mental health service provider. Patients may be unable to choose their providers when urgent/emergency treatment is needed, previous treatment has been received for the condition the person is being referred for presently, the organization/team wanted does not provide for the person's specific condition, the patient is a prisoner or detained in other prescribed accommodations, the person is a serving member of the armed forces, and/or the patient is detained under the Mental Health Act of 1983. Otherwise, the NHS has resources to help the patient choose an appropriate provider. After the patient chooses a provider then they will book an appointment where the maximum time they will spend waiting is 18 weeks (NHS, 2016). However, standards have been implemented to make sure that patients are seen in a reasonable manner and treated. Implemented in April 2016, at least 75% of people referred to an IAPT (psychological) services should be seen within six weeks but the majority should be seen by 18 weeks, more than 50% of people experiencing a first episode of psychosis will be treated with a NICE-approved care package within two weeks of referral, at least 15% of adults with depression or anxiety disorders should have access to IAPT services each year that should rise to 25% of people by 2020-2021, and at least 50% of people completing treatment in IAPT services should reach recovery. Still, even with these implemented standards, the amount of people who need immediate mental health services outnumber the amount of available services.

Mental health crisis services cite that there are times where there are no routine acute mental health assessment beds available across the country, only half of the community services provided have 24/7 crisis care, people with mental health problems are more likely to go to A&E and more often, committed government funding does not seem to be reaching the frontline care, and suicide by patients under community crisis teams are slowly increasing. Also, the people within these A&E departments tend to lack the necessary training to deal with those with mental health conditions. Funding and staffing are probably the biggest concerns though. Mental health has not had the same priority shown as physical health has had even though the two have been closely linked, and has been short of qualified staff and has been deprived of funds in general. To be able to improve the current mental health care system and reform it, those in the UK must provide equal status to mental and physical health, equal status to mental health staff and equal funding for mental health services (NHS, 2016).

Today, the UK government is slowly expanding mental health services and enacting plans. Every day 1,400 more people gain access to mental health services with plans for an additional one million people with mental health conditions to gain access to those same services by 2020. Part of the UK's government plans to improve mental health provision as of 2016-2017 include expanding the mental health spending by one billion pounds a year, enabling every secondary school to train someone in mental health first aid, initiating a new partnership with employers to support mental health in the workplace, and providing a more updated and comprehensive suicide prevention strategy. All of this will help to deliver a working mental healthcare system if these goals are met, and at the end of the year when a green paper that was promised by the government to be published gauges and discusses mental health statuses of children and young people, the UK will be better on their way to improving their services (Hunt, 2017).

THE CURRENT STANDING OF THE MENTAL HEALTH SYSTEM IN THE UNITED STATES

In the United States, one in five adults have a mental health condition. Mental health in the young is worsening as rates of youth with depression increased from 2012 to 2015 by over 3% with 76% of them receiving poor or no treatment, and with tragedies such as mass shootings occurring like with Virginia Tech, there is heightened

public interest surrounding the adequacy of the U.S. mental health system (Sundararaman, 2009). However, even though there is concern about the adequacy, more Americans have access to services with the occurrence of healthcare reforms. This is not much to brag upon though when still as many as 56% of adults do not receive treatment for their mental illness, and the labor supply of the mental health workforce is still quite small (Mental Health America, 2017).

The U.S. mental health system still needs improvement. The deinstitutionalization of patients that previously occurred may have helped to resolve issues of patient abuse, but many of these individuals are currently entering the criminal justice system due to drug use and other issues, or have made life on the streets becoming homeless. These individuals' lost earnings are costing the United States $193.2 billion per year. (NAMI, 2017). The outcomes of the mental health system have spurred funded efforts to change these results. The National Mental Health Act, signed in 1946 by President Truman, created the National Institute of Mental Health, that allocated government funds towards research into the causes and treatments for mental illness. Other acts that have since followed have also spurred community-based mental health services, education, advocacy, support and research for people with psychiatric illnesses, interventions, and more (Unite for Sight, 2012). Today, mental health services are provided in a variety of different settings by various providers in loosely coordinated facilities, both private and public. Providers may be formally trained mental health specialists, general health care providers, human service providers, or volunteer support group leaders. Settings may be hospitals, outpatient clinics, and informal venues. Financial resources may determine which providers and settings patients receive, along with the quality, for patients. Severe mental illness may restrict the choice of setting if the illness prevents the individual from being a functional member of the community (Sundararaman, 2009).

Public mental health services have historically been largely funded by state and local governments, but today, federal funding plays the larger part. The federal government funds services that fall under Medicare and the Department of Veteran Affairs while also matching Medicaid and CHIP spending from between 50-70%. This is important since Medicaid is the single largest funder of mental health services. The federal government also creates laws and provide oversight across states with legislations and regulations, provide federal protections to support the rights of individuals with mental disorders, and create opportunities to improve mental health disorders through research. The state does all of these as well and can further establish and expand all of what the federal government does. However, since this is dependent on the single state, there are variations in legislations, regulations, funding, research, and even protections making each state's mental health system distinct from the rest (Mental Health America, April 2016).

The private sector also has an important role in the funding of mental health services. Private insurance is the largest share of expenditures for mental health services, but private funding may also include out-of-pocket payments, employer-based or individual health insurance, or private philanthropic foundations. Health insurance coverage is generally less for mental health services than physical health, meaning that patients may receive no-coverage for services or higher co-payments and treatment limits (Sundararaman, 2009). Due to this, there is limited affordability for mental health services for many as expenses for treatment and outpatient prescription drugs may be way beyond the patient's price limit (Rowan et al, 2013). The costs, quality, and limitations of services presented by the current capabilities of public and private funding are key issues cited as to why the U.S. mental health system has a lot more progress to go through to be able to properly treat the mental health of its people.

The multiple providers, settings, and payment options are what makes the mental health care delivery system in the United States so complex and full of gaps. However, many policies today as a result of the current focus on reform of the general health care system have attempted to create opportunities and transform the mental health care system. Some of the many issues that these policies point out that the U.S. needs to address are quickening the application of evidence-based treatments founded in research, increasing access to quality mental health providers in rural areas, increasing comprehensive insurance coverage, increasing coordination of mental health care with other care that individuals may need, and improving the way the U.S. measures the quality of mental health care (Sundararaman, 2009).

As of now, U.S. congress has become more aware of the concern surrounding mental health. As a result, a monumental bipartisan reform of the nation's mental health system is currently in action. On December 13, 2016, President Obama signed the 21st Century Cures act which dedicates 100 of its 300-page agenda solely to mental health care. These changes that are being enacted consist of reforming Substance Abuse and Mental Health Service

Administration, funding and strengthening evidence-based treatment programs, decriminalizing mental illness, mandating data collection on serious mental illnesses in public issues, clarifying HIPAA to resolve conflicts in patient confidentiality and information sharing, ensuring accountability for protection and advocacy organizations, mental health parity and Medicaid, and establishing a federal adult suicide prevention program (Treatment Advocacy Center, 2016). Many of the issues previously cited that the U.S. needs to improve on are on the way to being fixed through this legislation along with several other acts that have occurred over the years (Mental Health America, June 2016). Overall, it is clear to see that while the U.S. is slowly making progress to reform their current mental health system, it is not ignoring the issue.

CONCLUSIONS

The United States and the United Kingdom are both countries that are trying to address the many issues currently intertwined within their mental health systems. Historically both countries have faced similar problems throughout the development of their societies, and they are facing similar problems today. However, if they continue to be aware of the fact that mental health is inextricably linked to physical health as is the mind with the body, the United States and the United Kingdom should continue to improve their mental health delivery systems and ultimately, their people's health.

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THE PERCEIVED COMPETENCY OF HOME HEALTH CARE PROFESSIONALS IN SELECT HOSPITALS IN SAUDI ARABIA

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ABSTRACT

Home health care has been a growing industry in the previous years considering the massive change in health care needs and the shift in population age. In Saudi Arabia, the demographic predictions of the United Nations show that population aging is entering a new phase towards its highest ever rate. Thus, the increasing need for home health care personnel is expected to cater the needs of the health care services. This study aims to determine the perceived competency of health care professionals working in the home health care department in select hospitals in Saudi Arabia.

This is a descriptive study that will be conducted among 50 health care professionals assigned to the home health care department in select hospitals in Saudi Arabia. The participants will answer a survey form about their perceived competency in delivering care to various types of patients in their field. The descriptive statistics will be used to analyze the data.

The study will provide significant information about the competency of the health care professionals assigned to the home health care in Saudi Arabia. This is necessary to improve the institutional policies, and to address the identified areas of weaknesses by the health care workers.

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RISK FACTORS OF SICKNESS ABSENCE IN A SELECTED HOSPITAL IN SAUDI ARABIA

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ABSTRACT

The sickness absence in Saudi Arabia represents a vital research topic from the perspective of both the public health and economy. A variety of factors causes it which varies significantly for each working sector. It is remarkable that there are limited published articles investigating the risk factors of sickness absence among the hospital employees in Saudi Arabia. Hence, this study aims to explore the incidence and the significant risk factors of cumulative sickness absence of employees in the hospital.

This is a descriptive-correlational study wherein a survey will be conducted among the employees in a chosen government hospital in Saudi Arabia. The questionnaire will focus on the cumulative sickness absence and the identified demographic characteristics, socio-economic position, and work-related factors that would significantly affect the status of the employees at work to experience sickness absence. The data will be gathered from more than 100 hospital employees who will satisfy the inclusion criteria and will be analyzed using descriptive statistics and multiple regression.

The contribution of this study is that it provides data about the incidence of cumulative sickness absence particularly among the hospital employees, and the possible risk factors which are much influential. Furthermore, the results of the study are necessary for the improvement of institutional policies to reduce the level of sickness absence of the employees.

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THE SAFETY PRACTICES OF HEALTHCARE WORKERS IN A SELECTED HOSPITAL IN SAUDI ARABIA

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ABSTRACT

The significance of human factors is increasingly emphasized in safety practices in the hospitals. However, there have been a few published reports on the safety practices of healthcare professionals working in Saudi Arabia. Thus, this study aims to explore the incidence of sharps injuries and the safety practices of health care workers.

This is a descriptive-comparative study wherein the incidence of sharps injuries and the safety practices of healthcare workers in a selected government hospital in Saudi Arabia will be explored. The study will adopt a safety survey which was published by the Center for Disease Control and Prevention (CDC). The data will be compared based on the general characteristics of more than 100 respondents using description and analytical statistics.

The results will provide us vital information about the incidence of sharps injuries and the safety practices for each type of healthcare workers in the hospital. Also, the study will establish if there are significant differences in these variables based on the general characteristics of the respondents. The data will function as a baseline for the development of training programs to improve safety in the hospital as well as to improve the management system by the hospital administrators.

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TRACK
LEGAL AND ETHICAL ISSUES IN HEALTHCARE

ETHICAL & LEGAL ASPECTS OF DEATH TOURISM

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ABSTRACT

Death tourism – travel from a country where suicide is illegal to another country where such an act is legal (or possibly so) in order to die – is a very controversial practice, but is becoming more widespread. After examining some ethical and legal aspects of this practice, we conclude that, while questionable from an ethical standpoint, its growth in both the U.S. and internationally is unlikely to decrease in the immediate future.

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HIPAA COMPLIANCE AND THE USE OF SOCIAL MEDIA

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ABSTRACT

The use of social media for connecting, marketing and communicating is commonplace in most industries. Following the patterns of society as in the past, forecasts that the use of social media in healthcare will bloom as GenerationY nears an age of entrance into the market as an adult consumer. With all the benefits that social media brings, it also bears a heavy burden on organizations and healthcare administrators as it relates to the Health Insurance Portability and Accountability Act (HIPAA). Where many organizations find great benefit to having a presence on social media, healthcare organizations will have to place great efforts to protect against civil and even criminal violations of HIPAA. Through exploration of common pitfalls, an organization can effectively decrease its risk of encountering a breach of HIPAA regulations through a number of suggestions centering on education and prevention. Electronic communication, including social media use, may allow for improved and easier communication among organizations, providers, and patients.

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UNHEALTHY COMPETITION: CAN THE ACA INCREASE HEALTH INSURANCE COMPETITION WITHOUT MCCARRAN FERGUSON ANTITRUST REFORM?

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UNHEALTHY COMPETITION: CAN THE ACA INCREASE HEALTH INSURANCE COMPETITION WITHOUT MCCARRAN FERGUSON ANTITRUST REFORM?

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ABSTRACT

Without increased competition in the health insurance market, the Patient Protection and Affordable Care Act (ACA) cannot deliver on its promise of more affordable health insurance for all. Data from both public and private sources indicates that the U.S. needs more competition in the group health insurance market to reduce rates. A number of scholars and policymakers argue that the ACA's marketplace exchanges (Exchanges) can be viewed as a model for increasing competition. A review of recent ACA literature and government studies, however, concludes that the Exchanges should not be viewed as a meaningful remedy for market concentration concerns. Because the Exchanges are designed to expand the choices available to patients with limited incomes and help 25 to 30 million Americans gain insurance coverage, many believe that they represent a step toward a more competitive individual health insurance market. To date, however, ACA Exchange reforms have done little to drive meaningful competition and abate rising insurance premiums for a significant number of Americans.

Many government and private sector policy analysts contend that as long as the McCarran-Ferguson Act's (MFA's) "business of insurance" exemption remains in effect, health insurers will not face the full application of antitrust laws and the health insurance market at large will remain overly consolidated. The MFA provides that the Sherman Act, the Clayton Act, and the Federal Trade Commission Act apply to the business of insurance only to the extent that such business is not regulated by state law. Although this limited exemption does not extend to any agreement to boycott, coerce or intimidate, many argue that the MFA grants health an exception from the core of federal antitrust law enforcement. While all can agree that the purpose of antitrust law is to protect consumers from anticompetitive practices, whether the MFA's business of insurance exception encourages or hinders competitive behavior between health insurers remains strongly contested. While the nation's course of action of healthcare reform is largely split along party lines, there is underlying bipartisan agreement on the need to lower costs and deliver higher quality healthcare to the public. It follows, therefore, that competition and antitrust law must remain key components of the national conversation on health reform.

"The twentieth century has been characterized by three developments of great political importance: the growth of democracy, the growth of corporate power, and the growth of corporate propaganda as a means of protection of corporate power against democracy."

-Alex Carey[1]

Antitrust Law within the Healthcare Insurance Reform Debate.

America's health insurance industry today is dominated by a cartel of big, for-profit corporations. By law and by necessity, the main concern of the officers of these corporations is to "enhance shareholder value."[2] Though private health insurance profits are booming, the government's funding mechanisms for health insurance are becoming increasingly overburdened. For the first time in 2013, the Congressional Budget Office (CBO) plainly identified healthcare spending growth as one of the "central fiscal challenges" facing our federal government.[3] As healthcare spending consumes a rising share of the nation's economic production, Congress is faced with a difficult choice: pay for health government-sponsored health insurance or address other budget priorities. For the past several years, government spending on healthcare has outpaced the economy, "representing a challenge not only for the government's two major health insurance programs—Medicare and Medicaid—but also for the private health insurance market."[4] At present, collective spending on Medicare, Medicaid and the Children's Health Insurance Program (CHIP) spending make up 21 percent of all federal spending.[5] The cost of these programs overshadows every other major domestic program except Social Security, which accounts for roughly 22 percent of the federal budget.[6] As an example, the federal government's healthcare spending on Veterans Affairs alone is so enormous, it can be difficult to fathom—the Department of Veterans Affairs runs the largest hospital system in America.[7] The U.S. Department of Defense's spending on healthcare is roughly 10 percent of its budget—more than the total military budget of all but four other nations.[8] If current trends hold, by 2050 government healthcare spending will claim one-third of the GDP.[9] In light of the increasing demands on America's governmental health insurance systems, some lawmakers are questioning 1) why premiums continue to rise in the private sector, and 2) how the marketplace for private insurance became so consolidated.

While the nation's course of action of healthcare reform is largely split along party lines, there is underlying bipartisan agreement on the need to lower costs and deliver higher-quality healthcare to the public. It follows, therefore, that antitrust law must remain a key part of the national health reform conversation. As the national debate over healthcare reform continues, calls to "repeal and replace" the ACA have overshadowed other potential avenues for reforming U.S. policy, including repealing the "business of insurance" exemption from the McCarran-Ferguson Act (MFA).[10] The MFA provides that the Sherman Act, the Clayton Act, and the Federal Trade Commission Act apply to the "business of insurance" only to the "extent that such business is not regulated by state law."[11] Although this limited exemption does not extend to "any agreement to boycott, coerce or intimidate," many scholars and policymakers argue that the MFA business of insurance exception effectively grants health insurance companies immunity from the core of federal antitrust law enforcement.[12]

Those advocating in favor of repeal argue that the MFA exception "permits insurers to collusively set prices above competitive levels, and contend that the antitrust laws already permit sharing information for competitive rate setting."[13] Opponents of repeal argue that the exemptions created under the Act are necessary to "allow insurers to share information to better project future losses—[p]ooling such information, they argue, creates procompetitive benefit, such as lower, actuarially based prices for health insurance products."[14] In the past decade, there have been multiple failed attempts by Congress to remove the business of insurance exception from the MFA. After proposed amendments failed to pass as part of the finalized ACA, many health policy analysts stated that the private health insurance sector remains exempt from the full weight and responsibilities of antitrust law compliance.

The ACA seeks to reinvigorate competition for the purchase of private health insurance services by creating insurance exchange marketplaces (Exchanges). Recent data suggests the ACA is driving innovation across the health industry by the creation of new care models, new payment incentives, and greater efficiency by healthcare providers—improvements that will benefit all healthcare consumers.[15] While some herald the ACA's Exchanges as catalysts for increased marketplace competition, others question whether Exchange reforms will help to produce lower, more competitive insurance premiums for consumers.

Affordable Care Act Reforms amid Rising Healthcare Costs.

The rapid growth of healthcare costs continues to pose challenges for local, state, and federal health programs as well as the private payers, such as insurance companies and non-government programs. Demands on America's already stretched government means-tested benefit programs continue to increase. These demands have led many policymakers to ask: How can we slow the private sector's rising premium costs? Across the country, health expenditures are growing at an exponential rate and the healthcare market is becoming an increasingly bigger slice of the GDP pie.[16]

The ACA extended health insurance to millions of Americans through two major mechanisms: an expansion of the Medicaid program and the Exchanges.[17] To date, most individuals who have joined an Exchange are newly insured, no longer receiving health insurance coverage through an employer, or people who would have purchased insurance out-of-pocket in the individual market.[18] Initial government estimates projected that Exchange enrollment would reach 29 million by 2021.[19] In light of recent ACA repeal and replace initiatives, shortened Exchange enrollment periods, and deceased Exchange advertising/outreach budgets, it seems unlikely that the ambitious 29 million person milestone will be satisfied anytime in the near future, if ever.

The Exchanges were designed to allow individual consumers to make buying decisions for themselves. Private health insurers are used to provide health insurance products in each Exchange.[20] When Exchanges were first introduced, some scholars predicted that they would create "downward pressure on price, because many will buy on the Exchanges the same way they buy on Travelocity and Amazon, and at Walmart largely based on price...[insurers will] need to have a laser focus on being the low-cost leader."[21] In their conception, there was a hope that the Exchanges would significantly bring down prices and engender new payment methodologies such as bundled payment, shared savings, and capitation arrangements.[22] All in all, while the Exchanges have the potential to encourage payers and providers to work closely to lower healthcare costs, that potential has been largely unrealized to date.[23]

At present, there is substantial uncertainty surrounding the longevity of key ACA provisions, including the future use of the Exchanges within the health insurance marketplace. According to the Kaiser Family Foundation, the Trump administration has "sent mixed signals over whether it [will]…continue to enforce the individual mandate or make payments to insurers to reimburse them for the cost of providing legally required cost-sharing assistance to low-income enrollees."[24] During President Trump's first year in office, a majority of health insurers factored an additional 1.2 to 20 percent into their rate increases in light of concerns that the individual mandate would unenforced and/or repealed.[25] Starting in 2016, some insurers also began to assume that the ACA's cost-sharing subsidy payments would not continue and added rate increases ranging from 2 to 23 percent.[26] Because cost-sharing reductions are only available in the ACA's silver plans, the Kaiser Family Foundation estimates that 2018 silver premiums will have to increase by 19 percent on average to compensate for the loss of cost-sharing subsidy payments (with amounts varying substantially by state).[27]

The Unique Market of Health Insurance for Healthcare Services.

Health insurance is *the* fundamental payment mechanism for healthcare.[28] Health insurance is a method of pooling risks so that the financial burden of medical care is distributed among many people.[29] The Agency for Healthcare Research and Quality (AHRQ) has pointed out that health insurance industry profits largely rely on the fact that "some insured people will become sick or injured [and incur medical bills, but] most people will remain relatively healthy, incurring little or no expenses."[30] This concept is called insurance risk pooling. In traditional forms of insurance such as automobile or home insurance, we pay a small premium and a little extra expense to avoid the possibility of a major loss.[31] What makes health insurance different is the fact everyone needs healthcare, to some degree, throughout their lifetime.[32] Upon closer inspection, there are stark differences between automotive, home, and health insurance risk pooling concerns. As economist William Baumol explains, the cost of automobile insurance has risen significantly faster than the economy's overall rate of inflation, yet, the cost of automobile repairs has not.[33] According to Mr. Baumol, this occurred because automobile insurance entails "not only the cost of automobile repair, but also the medical costs of accident victims, which are neither standardized or homogeneous."[34] It can be argued that health insurance cannot pool risk efficiently because using the healthcare system is not a risk— it is an *inevitability* for all of us.[35]

In commenting on the unique dynamics of health insurance, businessman David Goldhill poses the following challenge: try to imagine what the market for homeowners' insurance would look like if it is certain that all of the people in the risk pool will eventually have their homes burn down.[36] Mr. Goldhill explains, "In our current health insurance model, we all pay a large premium and bear a lot of extra expense to fund the *certainty* of some loss."[37] All in all, the most we can say about the risk-sharing aspect of health insurance is that it shifts resources based on timing.[38] Those of us not having major health problems this year fund care for those who do.[39] Mr. Goldhill astutely points out that in traditional forms of insurance we pay a small premium that provides insurance against the possibility of an adverse event—a house fire or automobile accident, for instance— the difference with health insurance is the certainty that we will all need healthcare at some point in our lives.[40] In sum, health insurers are essentially giant intermediaries between consumers and the healthcare system itself, negotiating charges, checking bills, and assuring payment—basically shifting money around from consumers and taxpayers to providers.[41]

The health insurance market has many features that push it away from the "economic benchmark of perfect competition."[42] As finance and economic experts D. Andrew Austin and Thomas Hungerford explain, "perfectly competitive markets, according to economic theory, allocate goods and services efficiently if certain conditions are met."[43] Generally speaking, the necessary "conditions required to ensure the efficiency of competitive markets" include:

> [1] Many buyers and sellers— each participant is small in relation to the market and cannot affect the price through its own actions; [2] Neither consumption nor production generates spillover benefits or costs; [3] Free entry and exit from the market — new firms can open up shop and existing firms can costlessly leave the market; [4] Symmetric information— all market participants know the same things so that no one has an informational advantage over others;[and]…[5] Firms maximize profits and consumers maximize well-being.[44]

Unfortunately, several of the above conditions have always been absent from the health insurance market because of its unique complexity.[45]

Health Insurance Market Concentrations.

In the American insurance market, group health plans are king. According to the U.S. Census Bureau, more than half of all Americans (55 percent) have employment-based health insurance coverage, and among the employed population aged 18 to 64, 68 percent have health insurance through an employer's group plan.[46] Research indicates that group health plans operate in a consolidated, largely uncompetitive market. Every year for the past decade, the AMA has conducted "the most in-depth study of commercial health insurance markets in the country to help researchers, policy makers, and federal and state regulators identify areas of the country where consolidation among health insurers may have harmful effects on consumers, on providers of care and on the economy."[47] According to the AMA, there is a consensus among health economists that most health insurance markets are not perfectly competitive, and as a result, large insurers can exercise market power.[48] A large wave of "health insurance mergers has led to such high levels of concentration in insurance markets that there are now only one or two dominant insurers in many states."[49] Localized insurance company monopolies go unchallenged because there are substantial barriers to market entry and expansion for other, smaller insurers.[50]

The AMA has pointed out that a "lack of competition has led to growing insurer profits, increased costs, and reduced coverage for enrollees."[51] The AMA market share statistics underlying the concentration measures are based on "commercial health insurance data on enrollments in managed care organizations."[52] Those enrolled in public insurance plans like Medicare and state CHIP are excluded. Applying DOJ standards for market concentration, sixty-nine percent of the 389 metropolitan statistical areas (MSAs) studied were highly concentrated in the HMO, PPO, and POS markets.[53] In 89 percent (347) of surveyed MSAs, at least one insurer held a commercial market share of 30 percent or greater.[54] In 43 percent (169) of MSAs, one insurer's share was at least 50 percent.[55] Market dominance by a single insurer is a longstanding concern that has remained largely unchanged by the introduction of the Exchanges. By comparison, in 2012, 38 percent of the reviewed MSAs had at least one insurer had a market share of 50 percent or greater.[56]

Healthcare Antitrust, Generally.

More aggressive antitrust enforcement "is one potential response to the perceived problem of high levels of market concentration among health insurers."[57] Some economists argue that a "more fully competitive market would better protect consumers; strong antitrust action is preferable to allowing both health insurers and providers to build up countervailing power."[58] Unlike most other leading, industrialized nations, the U.S. relies heavily on the private insurance sector to provide healthcare for its residents.[59] The overall assumption "underlying this system is that fierce competition among private insurers yields more efficient outcomes."[60] While federal antitrust enforcers "have forced alterations of some health insurance mergers, federal antitrust policies do not appear to have had a determining influence on the structure of health insurance markets."[61] During the George W. Bush Administration, the DOJ "required minor adjustments to only three health insurance mergers out of a total of nearly 400 such mergers during that period."[62] During that same time, "ten of the largest publicly-traded health insurance companies saw their profits balloon from $2.4 billion in 2000 to $13 billion in 2007."[63] In just seven years, these annual profits jumped 428 percent.[64]

Some policy analysts see a need to amend antitrust laws to facilitate stronger pro-competition policies among health insurers. In 2009, former FTC official David Balto testified before a House judiciary subcommittee analyzing competition policies, stating:

> I know from my experience as a government antitrust enforcer that there are three elements for a market to effectively function: transparency, choice and a lack of conflicts of interest. *All* of these elements are lacking in health insurance markets. Few markets are as concentrated, opaque and complex, and subject to rampant anticompetitive and deceptive conduct.[65]

A recent report by the Congressional Research Service sums up these antitrust concerns stating: "The health insurance market has many features that can hinder markets, lead to concentrated markets, and produce inefficient

outcomes."[66] In 2010, Mr. Balto stood before a different House judiciary subcommittee that was tasked with analyzing the effects of antitrust law on insurers. Mr. Balto testified, "Health insurance markets are broken – almost all markets are highly concentrated with resulting supracompetitive profits, escalating numbers of uninsured, an epidemic of deceptive and fraudulent conduct, and rapidly escalating costs."[67] Mr. Balto added that "[c]ountless Congressional hearings uncovered a disturbing pattern of egregious, deceptive, fraudulent and anticompetitive conduct in health insurance markets."[68]

In exploring the details of antitrust enforcement and its exception for health insurers, we must first discuss the role of antitrust in the body of healthcare law and policy. Because federal and state antitrust laws (and coverage exemptions) impact much of the healthcare sector, a basic understanding of these principles is crucial to any health law insurance analysis.[69] Generally, the purpose of antitrust laws is to "protect and promote competition" in the economic marketplace.[70] Antitrust is an integral part of health law today. The types of antitrust issues arising are almost endless, including, but by no means limited to, hospital and physician-practice mergers, hospital acquisitions of individual physicians, certificate-of-need disputes, pharmacy boycotts of networks, and the use of bundled discounts in contracts between hospitals and payers.[71] America's major antitrust statutes include the Sherman Act, Clayton Act, Federal Trade Commission Act, and MFA.[72] The Sherman Act attempts to restrain corporate attempts to monopolize.[73] The Clayton Act prohibits price discrimination and exclusive dealings that either "substantially lessen competition or create a monopoly."[74] The Clayton Act also prohibits mergers or other combinations that could reasonably be expected to reduce competition or create a monopoly.[75] The Federal Trade Commission Act created the Federal Trade Commission (FTC) body and prohibits unfair methods of competition which affect interstate commerce.[76] Lastly, the MFA exempts the business of insurance from most federal antitrust laws if regulated by the state.[77]

In essence, antitrust law focuses on the problem of market power.[78] Market power has been defined as "when sellers or buyers have the ability to profitably maintain prices above or below competitive levels for a lengthy period of time."[79] When sellers exercise market power, it is called "monopoly."[80] When buyers exercise market power, it is termed "monopsony."[81] Both monopoly and monopsony decrease consumer welfare.[82] Health insurers are both buyers of medical services (from providers) and sellers of health insurance (to consumers and employers); therefore, they can raise *both* monopsony and monopoly concerns.[83]

The "Business of Health Insurance" Exemption from Antitrust Law.

Since the MFA was passed at the end of World War II, health insurance companies are exempt from the federal antitrust legislation that applies to most businesses.[84] For the MFA's exemption to apply, a defendant must prove three elements: 1) the challenged conduct constitutes the "business of insurance;" 2) the state regulates the business of insurance; and 3) the challenged conduct does not constitute "boycott, coercion, or intimidation."[85] In determining whether certain conduct constitutes the "business of insurance," courts have traditionally examined whether the conduct: 1) transfers or spreads policyholder risk, 2) is an integral part of the relationship between the insurer and its insured, and 3) is limited to those within the insurance industry.[86] Based on these standards, provider agreements between health insurers and their participating providers do not constitute the business of insurance, but contracts between insurers and their insureds do.[87] The law provides that a state must regulate the business of insurance for the MFA exception's protection to apply.[88] Courts have interpreted this provision liberally to mean that only the most general type of state insurance regulation is required.[89] The MFA also provides that the exemption does not apply "to any agreement to boycott, coerce, or intimidate or [to any] act of boycott, coercion or intimidation.[90] For purposes of the MFA, "boycott" refers to refusals to deal in collateral transactions as a means to coerce terms in a primary transaction.[91] The "business of insurance" exception does not refer to all business aspects of an insurance company, only those that involve spreading the risk that the insured will suffer a financial loss arising from the need for healthcare products or services.[92] The Supreme Court has clarified that the "statutory language in question here does not exempt the business of insurance companies from the scope of the antitrust laws…[t]he exemption is for the 'business of insurance,' not the 'business of insurers.'"[93] As a result, contracts between an insurer (such as a third-party payor) and a service provider are merely agreements the insurer uses to reduce its costs in fulfilling its underwriting obligations.[94]

Though not all states statutorily define the "business of insurance" for the MFA, state court decisions have produced a fairly consistent common law definition as the "shifting of risk, for the payment of a fee, from an insured

to an insurer who is able to assume that risk by pooling together the payments received from all individuals, thereby spreading the risk among a defined population."[95] Historically, state courts have recognized the distinction between general "business risks" and specific "insurance risks."[96] Specifically, state courts distinguish between situations in which the key objective is the provision of a service and situations in which the key objective is the provision of financial reimbursement for the cost of a particular loss.[97] This distinction is illustrated in the California case of Transportation Guaranty Co., Ltd. v. Jellins.[98] The Jellins Court stated that in construing insurance contracts, "it must be borne in mind that nearly *every* business venture entails some assumption of risk, some element of gambling…[to] indemnify another against loss."[99] It added that a "sound jurisprudence does not suggest the extension, by judicial construction, of the insurance laws to govern every contract involving an assumption of risk or indemnification of loss; that when the question arises each contract must be tested by its own terms as they are written, as they are understood by the parties, and as they are applied under the particular circumstances involved."[100] In summary, the assumption of the risk is not controlling, rather, one must look at the arrangement as a whole to determine whether the principle objective is service or indemnity.[101]

To understand the legislative intent behind the MFA business of insurance exception, we must understand the state of the American health insurance system when the MFA was enacted in 1945. The Second World War brought the advent of employer-sponsored health insurance as a benefit to attract and retain new workers.[102] At that time, the pace of medical innovation was increasing at an unprecedented rate, Americans were beginning to place a higher value on medical services, and "there were relatively large increases in employment, income, and economic growth."[103] These factors, along with employers' desires to compete for workers, combined to increase the demand for health insurance, particularly group plans.[104] Paul Starr, Professor of Sociology and Public Affairs at Princeton University, notes, "Real wages in manufacturing, not including fringe benefits, jumped 31 percent in the decade after 1945."[105] In essence, those with "higher incomes to protect were willing to pay for medical care that they expected would allow them to live longer and more productive lives."[106] Focused on strengthening the post-war economy, Congress encouraged the popularity of health insurance as a form of employee compensation.[107]

The MFA was passed in response to U.S. v. South-Eastern Underwriters Association which held that "insurance transactions were subject to federal regulation under the Commerce clause, and that the antitrust laws, in particular, were applicable to such transactions."[108] In order to assure that insurance companies "would not interfere with the traditional role of the states in regulating and taxing insurance," the MFA provided that the "business of insurance" would fall under its exception.[109] As legal scholar J. Stuart Showalter explains, "Before World War II, it was generally assumed that insurance companies did not do business in interstate commerce and need not concern themselves with statutes relating to restraints of trade."[110] This assumption changed in 1944 when the Supreme Court ruled that the sale of insurance is indeed part of interstate commerce and is therefore subject to antitrust laws.[111] The Supreme Court recognized the "primarily federalistic purpose" of the MFA when it upheld the Act against constitutional challenge in Prudential Ins. Co. v. Benjamin.[112] It held, "Congress' purpose [in passing the Act] was broadly to give support to the existing and future state systems for regulating and taxing the business of insurance."[113]

According to some, cooperation in fixing actual rates for insurance is consistent with desirable public policy. It has been suggested that a freely competitive environment is not appropriate for the insurance industry and that reasons for exempting the "business of insurance" include the following concerns:

> A completely free market characterized by open competition would cause some insurance companies to issue policies at rates that do not cover the actual risk. The consequences might well be the insurance companies' failure and inability to pay legitimate claims. Sound public policy, therefore, requires that the government be concerned for the financial integrity of insurance carriers.[114]

Supporters of the "business of insurance" exception argue the "only way insurers can collect huge amounts of information [to assess risk] is to work together, as no single insurer generally has enough information do it on its own."[115] This entails "sharing claims information as well as analyzing that information and predicting what that information will mean for the likelihood of future losses and claims."[116] Under the exception, it is argued, insurance companies are encouraged to work together to develop common insurance policy forms, create pools of risk, and implement consistent underwriting factors for their businesses.[117] Simply put, supporters of the "business of insurance" exception argue that America cannot sustain its free market economy if people are unwilling to take risks

and buy insurance; moreover, individuals will only take risks if they can *properly* spread those risks via the "selling of insurance in multiple areas to multiple policyholders to minimize the danger that all policyholders will have losses at the same time."[118] Washington Legal Foundation analyst Craig Berrington describes the underlying premise of the "business of insurance" exception in the following terms: "[T]he only way insurers can safely spread risk is to collect huge amounts of information so they can make predictions about how costly claims will be in the future…[w]ith these predictions, they can then price the insurance policy."[119] In all, some proponents of the exception believe that because insurance is a product whose true cost is never known at the time it is sold, the accuracy of these predictions "can be the difference between the solvency and insolvency of an insurer."[120]

Opponents of the "business of insurance" exception argue that because health insurers and medical malpractice insurers are not subject to the antitrust laws, they are colluding to "determine the prices that they charge for insurance" and, as a result, insurance premiums continue to rise without meaningful competition.[121] One such opponent, U.S. Congresswoman Diana DeGette, has declared: "As health insurance premiums continue to go through the roof, now is the time to ensure that health insurance companies are not engaging in anti-competitive behaviors that make it more difficult for Americans to afford health coverage…[s]imply put, the bottom lines of the big insurance companies should not be put above the American public's ability to gain access to healthcare."[122] All in all, those who believe the business of insurance exception needs to be overturned assert firmer antitrust practices must be in place to create more insurance provider options for consumers and competitive consumer prices.[123]

Where state law does not actively regulate antitrust activity, insurance companies are largely regulating themselves.[124] There are several dangers lurking in this self–regulated industry because insurance companies, by nature, engage in profit maximizing at the expense of insurance consumers.[125] One law review commentator asserts that allowing health industry to regulate itself is "a situation analogous to having foxes guard the henhouse."[126] Leaving the powerful industry of insurance to regulate itself can ultimately result in consumer fleecing.[127] After all, "federal antitrust laws are meant…to protect consumers from this kind of anticompetitive conduct."[128] Those opposed to the MFA business of insurance exemption believe it has improperly shielded health insurance companies from legal accountability for decades. In October 2009, Christine Varney, then the Assistant Attorney General for the Antitrust Division of the U.S. Department of Justice (DOJ), made a formal statement before the Senate Committee on the Judiciary regarding the MFA's business of insurance exemption.[129] Ms. Varney stated that the DOJ "generally supports the idea of repealing antitrust exemptions" and concluded that repealing the MFA would "allow competition to have a greater role in reforming health and medical malpractice insurance markets than would otherwise be the case."[130] Ms. Varney explained that prior to the South-Eastern Underwriters Association ruling of 1944, regulation of the business of insurance was seen as the "exclusive province of the states."[131] Because South-Eastern Underwriters Association "was perceived to threaten state authority to regulate and tax the business of insurance…[the MFA] was designed to return the legal climate to that which existed prior to South-Eastern Underwriters by specifically delegating to the states the authority to continue to regulate and tax the business of insurance."[132] This created the "broad antitrust exemption based on state regulation."[133] She further stated that there are "strong indications" that possible justifications for the broad insurance antitrust exemption in the MFA when it was enacted in 1945 are no longer valid today; she said:

> To the extent that the exemption was designed to enable the states to continue to regulate the business of insurance, it is no longer necessary. The state action defense, which had been announced by the Supreme Court in Parker v. Brown in 1943, but was undeveloped in 1945 when the McCarran-Ferguson Act was enacted, has now been the subject of many Supreme Court opinions. This defense allows a state effectively to immunize what the antitrust laws otherwise may proscribe by clearly articulating and affirmatively expressing a policy to displace competition, and by actively supervising any private conduct that might be involved.[134]

Ms. Varney also pointed out that the "presence of even minimal state regulation, even on an issue unrelated to the antitrust suit, is generally sufficient to preserve the immunity."[135] After all, the MFA's exemption "is very expansive with regard to anything that can be said to fall within 'the business of insurance,' including premium pricing and market allocations….[a]s a result, the most egregiously anticompetitive claims, such as naked agreements fixing price or reducing coverage, are virtually *always* found immune."[136] In this 2009 testimony to the Senate, the DOJ stated that it found the MFA exemption is "not clearly and convincingly justified" and added that, generally speaking, "the flexibility of the antitrust laws and their crucial importance to the economy argue strongly against antitrust

exemptions."[137] The DOJ statement concluded that "[t]here is a general consensus that health insurance reform should be built on a strong commitment to competition in *all* healthcare markets."[138]

Apart from the 2009 DOJ testimony detailed above, other federal government analyses have concluded that the repeal of the MFA exemption will not disrupt the insurance marketplace in a way that would harm consumers. In 2007, a twelve-member committee of presidential and congressional appointees called the Antitrust Modernization Commission (AMC) was created under the Antitrust Modernization Commission Act.[139] This group specifically examined whether the MFA "is necessary to allow insurers to collect, aggregate, and review data on losses so that they can better set their rates to cover their likely costs."[140] The AMC determined the MFA business of insurance exception can be removed from antitrust law because insurance companies "bear no greater risk than companies in other industries engaged in data sharing and other collaborative undertakings."[141] According to the AMC, to the "extent that insurance companies engage in anticompetitive collusion, however, then they appropriately would be subject to antitrust liability."[142] The AMC's final report on the MFA business of insurance exception states: "Like all potentially beneficial competitor collaboration, generally such data sharing would be assessed by antitrust enforcers and the courts under a rule of reason analysis that would fully consider the potential procompetitive effects of such conduct and condemn it *only if*…it was anticompetitive."[143]

Conclusion

While the ACA Exchanges may have the potential to increase competition in the individual insurance markets, it can be argued that MFA business of insurance exception shields insurers from the full weight of antitrust law. Some health policy analysts believe that eliminating the MFA's exemption for the business of insurance will increase health insurance competition. Others believe the exception is an essential tool for health insurance companies to aggregate data without an increased risk of government antitrust challenges. According to case precedent and multiple government analyses on the subject, the business of health insurance cannot reasonably be impeded by antitrust law as long as insurance company practices are not, on balance, anti-competitive. Nevertheless, even if administrative and legislative entities in our federal government could agree that they will not continue to allow the majority of statewide HMO, PPO, and POS group health insurance markets to remain highly concentrated, there is no clear roadmap in place to create highly competitive health insurance markets.

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THE ETHICS SURROUNDING THE USE OF NARCAN TO PREVENT OPIATE – RELATED DEATHS

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ABSTRACT

As a lifesaving drug for opiate overdose victims, naloxone (often sold under the brand name Narcan) was approved by the Federal Drug Administration in the early 1970's. Due to its efficacy, Narcan and its brethren have become major tools for first responders and emergency room staff when dealing with opiate-compromised citizens. With a delivery system that allows even non-professional individuals to successfully administer lifesaving doses with minimal side effects, Narcan has been characterized as a "wonder drug" by some observers.

While not disputing the short-term efficaciousness of the drug, others have expressed concerns that dependence on Narcan-centered protocols may have also generated several unintended consequences that may mitigate the positive aspects of those treatments. Some of those concerns are centered around the possibility that by using Narcan-based protocols to rescue opiate abusers, it could create an environment where individuals may be encouraged to start using or to continue abusing these drugs because of a perceived safety net that will protect them in the event they overdose. Given the procurement and personnel costs associated with Narcan-centered rescues, it may be prudent to raise questions about whether its continued use should be viewed as socially responsible from a long-term perspective. Put another way: Does Narcan save lives or does it merely postpone opiate-driven deaths to a later date? The purpose of this paper is to investigate the ethical issues surrounding the use of Narcan to treat opiate abuse.

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WORKPLACE BULLYING

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ABSTRACT

In today's society, bullying has come to have new connotations since the traditional definition of "school yard bullying." Today, bullying has extended into many aspects of life such as cyber bullying, and into the workplace between adults. Workplace bullying is defined as a situation in which an individual, over a long period of time, is exposed to negative actions in which he or she cannot defend themselves from. . In the United States, there are not laws set in place that address criminal punishment for workplace bullying, yet this harassment persists throughout offices and work environments. The following literature shows what modern workplace bullying looks like, some recent cases and legislation pertaining to workplace bullying, and the effects workplace bullying has on those involved. By the end of the session the participant will be able to understand how bullying has been a problem for many years that oftentimes has gone unreported and how it impacts workplace morale. Participants will also understand that bullying is an ethical issue that is commonplace in healthcare organizations that has psychological and physical implications. Primary data for this study will be gathered from nurses who reside in Mississippi and are members of the Mississippi Nurses Association or the Mississippi Nurses Foundation. A survey will be sent to them to analyze whether they have been a victim of bullying or have witnessed bullying. Findings from this study will be used to shape policy formation regarding healthcare organizations and the psychological impact of bullying on healthcare workers.

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TRACK
NURSING

AN EMPIRICAL INVESTIGATION OF WORKPLACE RELATED PERCEPTIONS OF NURSES

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ABSTRACT

The purpose of this empirical study is to examine workplace related perceptions of 1706 registered nurses in 2015 who obtained their first license to practice between September 1, 2004 and August 31, 2005. Data for this study came from the sixth wave of the Newly Licensed Registered Nurse Survey, which was part of the RN Work Project, a national study of new nurses funded by the Robert Wood Johnson Foundation. The survey includes a number of workplace related variables including satisfaction, turnover, perceptions and attitudes, organizational commitment, and preferences about work. The aim of this study is to increases the understanding of social science researchers and medical providers on how different factors impact job satisfaction of nurses.

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BURNOUT SYNDROME AND NURSE-TO-PATIENT RATIO IN THE WORKPLACE

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BURNOUT SYNDROME AND NURSE-to-PATIENT RATIO IN THE WORKPLACE

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ABSTRACT

Burnout among Registered Nurses has been a great concern within the U.S. healthcare system and has been reported in many hospitals. Nurse Burnout has been defined as a chronic response to work-related stress comprising three components or dimensions: emotional exhaustion, depersonalization, and personal accomplishment. The purpose of this research was to analyze the nurse-to-patient ratio to determine how it affects the psychological, mental, emotional health and the nurse overall productivity in the workplace. The methodology was a review of literatures and a semi-structured interview. There were four primary databases and one website used in this research, and 31 articles were consulted for this literature review. Study on Psychological, Mental, and Emotional Health and Nurse Productivity in Burnout Syndrome Regarding Nurse-to-Patient Ratio. The expert's observed causes for nurse dissatisfaction in their position and general fatigue were attributed to mismanagement of personnel and resources, lack of follow through, extended shifts and stretched personal requirements all of which lead to feelings of burnout. The nurse-patient ratio is a direct determinate of the effects of psychological, mental, emotional health and nurse productivity in the workplace which also determines the patients' overall health.

INTRODUCTION

Burnout Syndrome has been a significant issue in the work environment and its occurrence has grown substantially by 60%-70% over the past decades (Cañadas-De la Fuente, et al., 2015). One of the most common definitions of Nurse Burnout has been a chronic response to work-related stress comprising three components or dimensions: emotional exhaustion, depersonalization, and personal accomplishment (Cañadas-De la Fuente, et al., 2015). Nurses represented the largest clinical staff population, about 55% in hospitals or general medical facilities; it has been this area most reformers have chosen to focus efforts to reduce costs. These efforts have considered nurses and the cost of their labor as an expense that can easily be cut back by increased hours and a decreased labor force (Li, Pittman, Han, & Lowe, 2017). In addition, 2,976 hospitals in 2013 under the Affordable Care Act's Hospital Readmissions Reduction Program were penalized because of the high nurse-to-patient ratio; 28% received average penalty, while 9% received the maximum penalty (McHugh, Berez, & Small, 2013).

The minimum nurse-to-patient ratio in both hospitals and ambulatory units has been recommended as 1:6 in medical-surgical units and behavioral units, 1:4 in step-down, telemetry, or intermediate care units and for non-critical emergency rooms, 1: 2 for Intensive Care Unit or trauma patients and post-anesthesia units, and 1:1 for every patient under anesthesia (Tevington, 2011). A high nurse-patient ratio has had risky consequences, including high stress levels and mental exhaustion among nurses and has led to an increase in mistakes and accidents, and resulted in a surge in malpractice suits (Rassin & Silner, 2007). The United States (US) population qualified for Medicare totaled 35.1 million. By 2030, the same population has been estimated to increase to 69.7 million and by 2050 to 81.9 million (Holdren, Paul, & Coustasse, 2015). The US Bureau projected between 2012 and 2060, the U.S. population will expand from 314 million in 2012 to 420 million in 2060, an increase of 34% (U.S. Census Bureau, 2014). A large contributing factor to the rise of nurse burnout has been inadequate nurse-patient ratios a condition that has amplified due to high demands in a progressively aging population and because of changes to the health care model (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011).

Broken down by type of nurse, and turnover rates for RNs, LPNs, and CNAs are estimated to be as high as 56%, 51%, and 75%, respectively (Donoghue, 2009). Higher turnover rates in the nursing fields and higher demands

of a growing patient field has perpetuated this cycle and has led to burnout, negative patient outcomes, practitioner and patient dissatisfaction and nurse shortage (McMullan, 2014). In 2015, the turnover rate for bedside RNs increased to 17.2%, up from 16.4% in 2014, and the average cost of turnover for a bedside RN expanded from $37,700 to $58,400 resulting in an average hospital losing $5.2 million to $8 (Donoghue, 2009). As financially debilitating as the costs of empty nursing positions have been for healthcare organizations, those nurses experiencing burnout who do not leave their positions had an even larger financial liability as the loss of motivation has led to a lack of patient care and mistakes resulting in the hospital or other healthcare facility facing a possible liability situation (Henderson, 2015). Up to 63% of preventable errors fell in the nursing sector, many attributed to lack of attention or performance from Burnout Symptoms (Henderson, 2015).

When Burnout Syndrome occurred across the workforce, it has been more commonly observed in nurses because of the emotional aspect of their occupation, especially in hospitals and psychiatric wards where common exposure to stress, inflexible policies, improper work assignments, poor training, inadequate remuneration, employee conflict and complex or unknown patient needs occurred (Ahanchian, Meshkinyazd, & Soudmand, 2015). The nature of this occupation places nurses into situations where they are often unprepared to handle due to lack of training, ability, support, resources or knowledge; leading to a high level of internalized anguish (Ahanchian, et al, 2015). Burnout Syndrome has been shown to increase about 23% for each additional patient added to the nurse's shift workload and most of the nurses have been obligated to work overtime (Holdren, et al, 2015).

The purpose of this research seeks to analyze the nurse-to-patient ratio to determine how it affects the psychological, mental, emotional health, and the nurse productivity within the workplace.

METHODOLOGY

The working hypotheses were as follows: Hypothesis I, when insufficient nurse-to-patient ratio exists, physiological, mental and emotional burnout will increase. Hypothesis II insufficient nurse-to-patient ratio causes physical exhaustion and overwork, which effectively decreases nurse productivity in the workplace.

The methodology for this study was a qualitative literature review based on the research framework adapted from Lin (2012), which was to examine the factors, causes and consequences of burnout among RNs. The components of Burnout Syndrome and high nurse-to-patient ratio have consequences, such as the increase in turnover and retention among RNs in hospitals, which threatens patient's safety and quality of care. One the most commonly used instruments for the measurement of burnout was the Maslach Burnout Theory, which explained emotional exhaustion, and inefficacy in Burnout. The internal validity of the selected framework has been successfully tested in previous studies (see Figure 1). Additionally, the methodology for this study was performed following the steps of a systematic review supported with a semi-structured interview, which was tape-recorded with an experienced RN (see Appendix 1).

Search Strategy

The search for facts, statistics, and relative information in peer reviewed publications was performed utilizing the following professional electronic databases: PubMed, Academic Search Premier, ProQuest and EBSCO. In addition, reputable websites of professional organizations, foundations, and government agencies were also used. Key publications were identified using the subsequent terms: 'nurse burnout' OR 'burnout syndrome' AND 'nurse-patient ratio' OR 'workplace' OR 'physical and mental stress' AND 'burnout outcomes'. Literature was selected for review based on relevance to the study of Burnout Syndrome and Nurse-Patient Ratio in the Workplace.

Inclusion, Exclusion, and Assessment

The current literature review was restricted to publications from 2008 to 2017. All results were extracted from studies conducted in the US and published in English. The search was also limited to research studies and reports from government and professional organizations with primary and secondary data. The relevance of 41 publications was assessed through titles; key words, abstracts, and citations, 31 publications were selected for the analysis, 18 of which were used in the results section.

RESULTS

Nurse-to-Patient Ratio in Burnout Syndrome

In 2015, 14 million Americans were employed in the health care field, representing 10 % of the U.S. work force (Jonas & Kovner, 2015). High nurse-to-patient ratios within this nursing workforce have been a concern for some time. As of 2015, 14 states addressed nurse staffing in hospitals in law/regulation, among other limiting efforts (ANA, 2015). In addition, California has been the only state to passing legislation regulating nurse-to-patient ratios. This law established specific Registered Nurse (RN) to patient ratios for specific hospital divisions. San Francisco, California hospitals mandated a ratio of one RN to four patients compared to the practice created in Great Brittan, which only requires one RN to every eight patients. This has led to better overall demeanor in nurses of California, lower levels of staff sickness, and the economic aspect of lower staff turnover (Strachan-Hall, 2017). A 2010 study at the University of Pennsylvania, showed 29% of nurses in California experienced high burnout, compared to 34% of nurses in New Jersey and 36% of nurses in Pennsylvania, states without minimum staffing ratios during the period of research. The study further demonstrated 20% of nurses in California reported dissatisfaction with their jobs, compared with 26% and 29% in New Jersey and Pennsylvania (Doring, 2013). Furthermore, each additional patient over four per nurse carried a 23% risk of increased burnout. It also led to a decrease of 15% with job satisfaction. In August 2012, approximately one-third of nurses reported an emotional exhaustion score of 27 or greater, considered by medical standards to be "high burnout" (Doring, 2013).

Another study concluded that support for mandatory nurse-to-patient ratios stems from the belief that a regulated RN staff would increase positive patient outcomes and decrease nursing shortage numbers, which was has been present but difficult to calculate due to average working age of nurses, and the supply of nurses working (Adams, 2017). High nurse-to-patient ratio, greater than 1:4, psychological/mental, emotional health difficulties, and nurse productivity have brought many questions and issues to the medical field (Kath, Stichler, Ehrhart, & Sievers, 2013).

Psychological and Mental Health in Burnout Syndrome

Moustaka and Constantinidis (2010) stated the average person was looking for quality health care within a healthful atmosphere when choosing a hospital or any alternative medical organization. The results of their study concluded that burnout resulting from work stress overload, such as an imbalance in nurse-to-patient ratio, has led to psychological dissonance and an imbalance in health care. The study further observed nurse stress was very unpredictable and stressful, and had multiple phases, which included emotional stress, working environment, interpersonal relationships, individuality, and mental issues.

A psychological contract, characterized by tough multiple bonds between employee and employer, psychological obligations, which are crucial and intangible factors that can be impossible to measure conventionally, and specific responsibilities, such as patient overload has been considered (Jamil, Raja, & Darr, 2013). This contract has been of high importance due to the so-called "mental documentation" that any staff member of an organization needed to feel connected to their workplace. When this mental contract was distressed by an event, as patient overload, it led to aggression, betrayal, job dissatisfaction, stress, and burnout. As reported by research, this contract had an unpredictable impact on nurses' work attitude, especially if already in a displeased state with their current position (Jamil, Raja, & Darr, 2013).

The psychological contract was also an interpretation based on any single person. Regarding employers and the possible negative effects, this relationship was especially poignant. By breaking this contract, fairness and individual differences, such as increased patients on one nurse versus another, and outcomes had influenced and were important to nurse retention (Rodwell, & Gulyas, 2013). A stressful work place, job dissatisfaction, and lack of general positivity could also occur, which all tied into burnout (Jamil, Raja, & Darr, 2013). It was found that psychological capital had effects on the psychological nurse burnout and coping style was a mediator in the relationship (Ding, et al., 2015).

Emotional Health in Burnout Syndrome

Emotional labor, by Gray (2010), correlates with nursing discipline research. In a cross-sectional survey study of 183 nurses conducted by Bartram, Casimir, Djurkovic, Leggat, & Stanton (2012) the relationship between high performance work systems, such as high nurse-to-patient ratio, emotional labor, burnout and intention to leave were evaluated. Previous studies showed that emotional labor and burnout were associated with an increase in intention to leave within the nursing discipline and evidenced that high-performance work systems directly resulted in decreased turnover. Perceived high-performance work systems were moderately negative within the relationship between emotional labor and burnout (Bartram, et al., 2012). A study by Soo-Ok and Mee-Suk (2015) examined the relationship of emotional labor and job burnout. With 217 clinical nurse participants, job burnout showed positive correlation with emotional labor, and negative correlation with positive resources (Soo-Ok & Mee-Suk, 2015).

Emotional intelligence correlates with emotional burnout. In a study conducted by Hong, Lee, & Sook (2016) turnover intention was tested through emotional labor, job stress nurse-to-patient ratio, emotional intelligence, and burnout in efforts to identify the effect of emotional intelligence between the variables. The findings indicated that emotional intelligence had a mediation effect between emotional labor and burnout. If emotional intelligence increased, a resulting decrease in negative effects of emotional labor and burnout occurred (Hong, Lee, & Sook, 2016).

Female nurses make up more majority of the nursing field, with only 11% percent of licensed nurses from 2010 to 2013 being male (Nursing World, 2014). A study of the differences in emotional response demonstrated men and women have gender differences in emotional experience and emotional expressivity. The findings suggested when watching videos that induce emotional response, men had more intense emotional experiences, whereas women had higher emotional expressivity, particularly for negative emotions. In addition, gender differences depended on the specific emotion type but not the valence (Deng, Chang, Yang, Huo, & Zhou, 2016). According to the research, and as stated previously, the field of nursing is mostly comprised of women and women display a higher expressivity towards emotion. These results show the need for a balance between nurse-to-patient ratio, to account for the fact that emotions could not be taken over by patient overload.

Nurse Productivity in Burnout Syndrome

Research shows a direct correlation between staffing levels and patient outcomes for specific nurse-sensitive signals, with lower patient to nurse ratios, 1:4 or less, associated with better outcomes (Shuldham, Parkin, Firouzi, Roughton, & Lau-Walker, 2009). Higher quantity of work and patient load per nurse directly affected facility productivity and patient outcomes. In an article by the Department for Professional Employees (DPE) (2016) it was stated that, aside from the occupational hazards caused by understaffing created by high patient to nurse ratios, numerous previous studies researched from this study have shown a correlation between inadequate nurse staffing and poor patient outcomes. High nurse-to-patient ratios, greater than 1:4, with each additional patient added, is associated with a 7% increase in hospital mortality that could be caused by patient infections, bedsores, pneumonia, cardiac arrest, and accidental death. Larger than four patients per nurse work-loads and hospitals with staffing levels in the bottom 30% are more likely to be in the worst 10% of facilities for heart failure, electrolyte imbalance, sepsis, respiratory infection, and urinary tract infections. It was also noted that every additional patient added to a hospital staff nurse's workload was associated with a 7% increase in hospital mortality (DPE, 2016).

Work shift length for a nurse and the responsibility to cover unscheduled shifts has directly influenced feelings of exhaustion and a tendency towards a nurse vacating their position in search for something more fulfilling or concerned with their stress levels. A standard nursing shift of 12 hours was often stretched to 18 as a cost cutting measure to take advantage of previously employed nurses, rather than a more expensive strategy to hire more. Further, to maintain patient safety, when a nurse is ill and cannot work or otherwise disposed, the burden falls to other nursing professionals and a 12-hour shift can easily lead to a 24-hour shift and increased exhaustion (see Table 1).

DISCUSSION

The purpose of the study was to analyze the nurse-to-patient ratio to determine how it affected the psychological, mental, emotional health and the nurse overall productivity in the workplace. Burnout Syndrome has

led to the expansion of psychological, mental as well as physical difficulties for RNs, which has compromised job performance and patient safety, and increased nurse turnover.

Expert's observed causes for nurse dissatisfaction in their position and general fatigue attributed to mismanagement of personnel and resources, lack of follow through, extended shifts and stretched personal requirements, all of which contribute to burnout. Some states, such as California, legally mandate nurse-to-patient ratios requiring a consistent level of nurse staffing and support for each patient admitted (Strachan-Hall, 2017). The state in which the expert worked was not a state that had a pre-determined and consistently monitored ratio (DPE, 2016). While there was a suggested norm of two patients for every one nurse, this ratio was often skewed as some patients required more attention than others or the floor was overpopulated by patients and understaffed which is viewed as a common expense-cutting practice. Management changes in a healthcare facility, like one observed in the expert's career, resulted in a replacement of staff with the new staff being trained inadequately at their hire date or receiving ongoing and time consuming on-the-job training. This change of trained staff with ill-trained replacements led to remaining staff members overseeing more than a standard two patients to maintain patient safety. Additionally, a lack of follow through on promises made by administration or replacement of administration and their agendas increased nurse dissatisfaction and contributed to burn out.

Many hospitals have attracted and recruited talented nurses into open positions with promises of future positions in cutting edge fields. These promises often to fail or an agreed upon timeline was extended indefinitely. The resulting effect was motivated nurses being unable to pursue their ambitions and being required to fulfill duties that they did not desire, or thought would be a temporary means to an end and ultimately led to unmotivated nursing professionals.

Limitations and Practical Implications

This literature review was limited due to the restrictions in the search strategy used, such as the number of databases searched, and publication bias may have affected the availability and quality of the research identified during the search. Further, researcher's biases and publication's biases could also affect the results of the study. Understanding the Nurse Burnout Syndrome can improve the quality of healthcare and decrease its cost when applied for clinical decisions, patient care and limiting nurse turnover. The findings of the study could be utilized by health system providers for growth and expansion of patient-centered health care while increasing the effectiveness and efficiency of its services.

CONCLUSION

In conclusion, nurse-to-patient ratio has shown to significantly change the way the nursing profession conducts services and produces outcomes. The literature review concluded this was especially true in the regards to psychological, mental, emotional health. Nurse-to-patient ratio is a direct determinate of nurse performance and patient health status, thus supporting both hypotheses.

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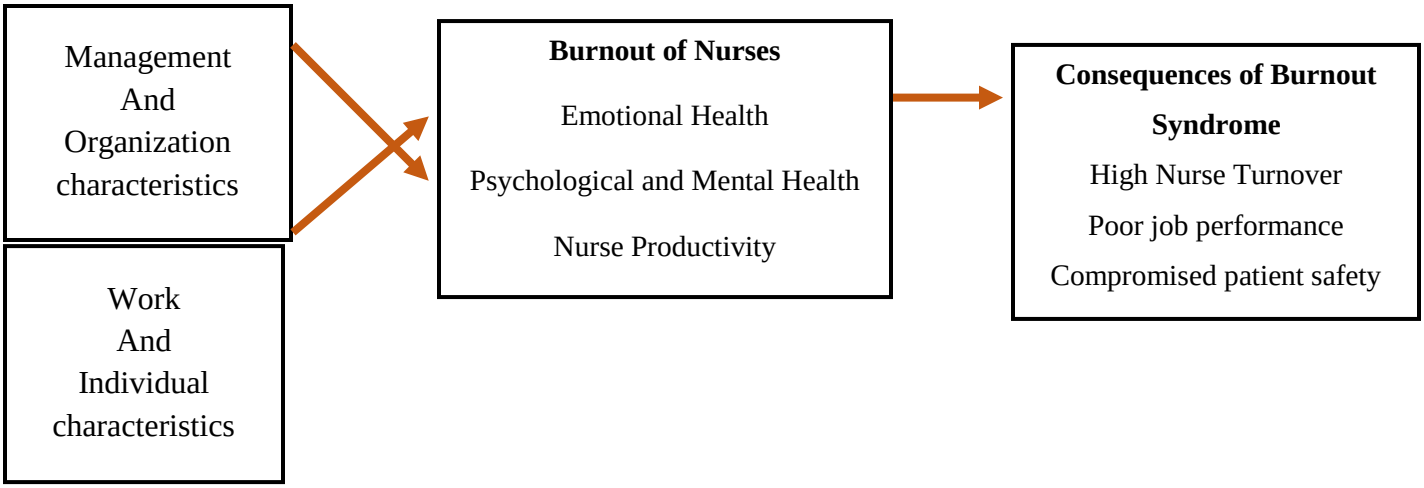

Figure 1: Conceptual Framework adapted from Lin, 2012

Appendix1:

Questions for Semi-Structured Interview of Burnout Syndrome and Nurse-Patient Ratio in the Workplace

1. How long have you been a nurse?
2. How many hospitals have you worked in?
3. What is the longest hourly shift you have worked?
4. What is the average nurse –to-patient ratio for you is the best-case scenario?
5. Have you ever experience any signs of Burnout Syndrome?
6. Did you experience these symptoms when you had many patients assigned to you? If so, what was the number?
7. What do you think about nurse shortage in general?
8. Have you ever thought to change your career?
9. What do you think, which benefits will help in a long run to prevent or reduce the Burnout Symptoms?
10. Describe how high nurse -patient ratio affects your work?
11. Rate from **1** to **5** which of the following are important qualities for the nurse?
    - Physical health
    - Psychological health
    - Productivity
    - Stress Resistance
    - Problem solving
12. How do you get informed about new projects and shift hours that you must cover?

Table 1: Nurse Satisfaction with Scheduling And Nurse Outcomes, By Shift Length

	Shift length, hours			
	8–9	**10–11**	**12–13**	**>13**
SATISFACTION WITH SCHEDULING				
Satisfied with schedule				
Strongly agree	85%	82%	88%	84%
Strongly disagree	15	18	12	16
Actively participate in scheduling				
Strongly agree	66	66	79	73
Strongly disagree	34	34	21	27
Flexible work schedules are available				
Strongly agree	67	65	73	66
Strongly disagree	32	35	27	34
OUTCOMES				
Burnout score				
≥27	20	31	44	56
<27	80	69	56	44
Job dissatisfaction				
Little/very dissatisfied	24	35	25	43
Very/moderately satisfied	76	65	75	57
Intention to leave employer within a year				
No	11	15	15	25
Yes	89	85	85	75

(Stimpfel, Sloane, & Aiken, 2012)

Table 2: Summary of Study on Psychological, Mental, and Emotional Health and Nurse Productivity in Burnout Syndrome Regarding Nurse-Patient Ratio

Effects of Nurse-to-Patient Ratio on Nursing	Author/Year	Key Findings/Outcomes
Nurse-to-Patient ratio in Nursing Burnout	Jonas & Kovner, 2015 ANA, 2015 Strachan-Hall, 2017 Doring, 2013 Adams, 2017	-10 % of workforce in America employed in health field. -California only state to pass law on nurse-patient ratio. -Nurse patient-patient ratios have led to better nurse demeanor, less sickness, and lower nurse turnover. -Nurses with ratio standards had less burnout. 20% California, 34% New Jersey, 36% Pennsylvania, and job dissatisfaction 20% California, 26% New Jersey, 29% Pennsylvania. - Support for ratios concluded from supply of working nurses and nursing shortages.
Psychological and Mental Health	Moustaka & Constantindis, 2010 Jamil & Darr, 2013 Rodwell, 2013 Ding, et al, 2015	-Work overload, such as nurse-patient ratio, can lead to psychological dissonance. -Psychological contract can be broken by nurse-patient ratio, causing burnout, aggression, betrayal, and job dissatisfaction. - Breaking psychological contract through uneven ratios among staff can influence retention. -Psychological capital has effects on psychological burnout and coping style is a mediator.
Emotional Health	Bartram, et al, 2012 Soo-Ok & Mee-Suk, 2015 Hong, & Young, 2016 Nursing World, 2014	-Emotional labor, such as high ratio, was positively associated with intention to leave the workplace. -Perceived high performance work systems negatively moderate the relationship between emotional labor and burnout. -Positive correlation with emotional labor and burnout and negative correlation with positive resources. -Emotional intelligence had a mediation effect between emotional labor and burnout. -Females were the majority of nursing. -Women have a higher expressivity towards emotion.

	Deng, Chang, Yang, Huo, & Zhou, 2016	
Nurse Productivity	Shuldham, Parkin, Firouzi, Roughton, & Lau-Walker, 2009 DPE, 2016	-Lower patient rations were associated with better patient outcomes. -Higher patient load per nurse was associated with poor patient outcomes.

EFFECTS OF USING COOLING BLANKET TO REDUCE FEVER WITHOUT ELEVATING LIVER ENZYMES

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EFFECTS OF USING COOLING BLANKET TO REDUCE FEVER WITHOUT ELEVATING LIVER ENZYMES

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ABSTRACT

The administration of acetaminophen (Tylenol) for reduction of fever led to many incidences of acute liver failure that results in increased length of hospital stays and costs of care. Consequently, it is an issue that requires appropriate interventions to address. Research studies indicate that cooling blankets can efficiently reduce fever without any risk of hepatotoxicity. The present article seeks to determine the effectiveness of cooling blankets in fever reduction as compared to Tylenol which is associated with elevated liver enzymes by presenting a review of the literature currently available on the subject through a search from the CINAHL database. The results of the literature search provide evidence that appropriate use of cooling blankets effectively reduces fever. Nurses ought to understand and adopt the efficient methods of fever reduction. Subsequently, they need educational intervention to help with the adoption of cooling blankets use in hospitals instead of Tylenol for patients with fever.

INTRODUCTION

Elevated liver enzymes indicate a problem with the liver which is inflamed and is releasing more chemicals than it usually does. The causes range from reaction to some medications, alcohol abuse, viral hepatitis, and liver cancer, among others (Giannini, 2005). The condition may be detected during routine blood testing and most of the time does not signal a chronic or severe liver problem. Although research studies do not link elevated liver enzymes and fever, headaches may be linked to the health of an individual's liver. Fever is a common complication of both infectious and non-infectious diseases. The care and treatment of patients with fever take a considerable amount of time for many nurses. Fever can be reduced by using antipyretics drugs or through physical cooling techniques that encourage heat loss. Antipyretics are much easier to use compared to the physical methods that are more complex and time-consuming to initiate and monitor.

Some approaches that may help reduce the pain of some liver-related headaches include the administration of acetaminophen (Tylenol). However, emerging evidence proposes that cooling blankets can be used to reduce fever without elevating liver enzymes. Tylenol, although used to relieve fever for people with liver disease, carries some side effects including liver injury, damage, and elevation of liver enzymes. The drug, even at recommended doses of no more than four grams a day, could still affect the liver. Hepatic failure brought about by both intentional and non-intentional overdose of acetaminophen has affected patients for several years and accounts for over half of overdose-related acute liver failure in America.

This particular research topic has some significance to nursing practice. Since the use of Tylenol for fever reduction in patients with liver problems has shown the possibility of increased liver enzymes, it is imperative to come up with other fever-relieving methods that do not raise liver enzymes. Therefore, the study on the effect of using cooling blankets for reducing fever in patients with elevated liver enzymes would provide an evidence-based solution to the current problem. Nurses and other healthcare professionals would obtain updated evidence on more effective pain-relieving methods with few side effects. Advanced practice nurses (APNs) have the role to stay informed, educate others, and offer proper pain-relieving interventions that do not increase risks for patients, hence improving outcomes. This article aims to review the available literature to find evidence on the effects of using cooling blankets as opposed to the administration of Tylenol to reduce fever without elevating liver enzymes.

PICOT QUESTION (THE CLINICAL QUESTION)

The research question is: In patients with elevated liver enzymes and fever, what are the effects of using cooling blankets in comparison to administering Tylenol to reduce fever without elevating liver enzymes?

SEARCH STRATEGY AND RESULT

Review of the literature was carried by searching articles from CINAHL database. CINAHL was a database of choice due to its well-known history of biomedical references. The database had useful features including; journal a-z, multi-media, and evidence-based tools. Segmenting the PICO question into keywords provided an expanded word choice for looking up additional articles. CINAHL allowed for guided word choice search that ensured the best search experience. The database offered a variety of tools and references related to the use of cooling blankets for fever reduction, the use of Tylenol, and reduction of elevated liver enzymes. CINAHL had basic and advanced searches and allowed for articles to be sorted by date and relevance. First, keywords such as cooling blankets, cooling methods, fever reduction, elevated liver enzymes, acetaminophen effects on the liver were used. The search was then advanced to select English language and cover publication date within the last twenty years. This act narrowed down to the precise topic the articles found. The Boolean logic strategy was used to combine keywords and obtain the most valuable articles needed for the literature review. For instance, keywords cooling blankets AND fever reduction were combined. Continuing this method with different keywords and truncations led to picking of the seven final articles.

Glossary of Terms

Below are definitions of some keywords:

Elevated liver enzymes: Refers to a condition, in which the liver cells leak higher than normal amounts of certain chemicals into the bloodstream.

Acetaminophen: Is an antipyretic usually known as Tylenol that is used to reduce fever. It has been used for decades.

Fever: This is a condition, in which the body temperature rises temporarily due to an illness.

Cooling blanket: A physical cooling measure that helps with fever reduction, through heat loss. These blankets promote heat loss by conduction in the case of immersion in cold water and application of ice packs.

LITERATURE SUPPORT

Elevated liver enzymes refer to a condition in which the liver cells leak higher than normal amounts of certain chemicals into the bloodstream. Acetaminophen, usually known as Tylenol, is an antipyretic that is used to reduce fever for a very long time. Fever is a condition in which the body temperature rises temporarily due to an illness. A cooling blanket is a physical cooling measure that helps with fever reduction through heat loss. These blankets promote heat loss by conduction, as is the case with immersion in cold water and application of ice packs.

O'Donnell, Axelrod, Fisher, & Lorber (1997) conducted an observational study of the use of hypothermia blanket in adults in the intensive care unit with body temperatures of above 102.57 degrees Fahrenheit. They observed that cooling blankets were frequently used in the ICU to treat adult patients who had a fever. The researchers discovered that the use of cooling blankets did cool patients, but not as rapidly as other methods. In a literature review conducted by the authors, acetaminophen alone and sponging alone were comparably effective. However, a combination of the two produced more rapid cooling. The study was subject to several limitations due to its observational nature, and the efficacy of other cooling methods could not be determined. Further, the researchers expressed their fear that the superiority of cooling blankets over cooling techniques remained questionable and further research was necessary. O'Donnell and colleagues concluded that cooling blankets were no more effective than other cooling measures and were associated with more temperature fluctuations.

In yet another study by Axelrod (2000), the value offered by physical methods of cooling is uncertain despite being used over centuries. For hyperthermia, external cooling is the method of choice, as it is characterized by a core temperature that exceeds the thermoregulatory set-point, unlike fever. In feverish patients, the use of physical cooling may be limited because it induces shivering which not only impedes cooling during fever but also imposes an additional metabolic burden (Axelrod, 2000). In febrile children, the use of tepid-water sponge baths worked faster than antipyretic drugs during the first half hour of administration of therapy. Just like in the study by O'Donnell et al. (1997), a combination treatment of antipyretic drugs and sponge bath turned out more superior to the use of antipyretic drugs alone for the reduction of temperature in febrile patients (Axelrod, 2000). The researcher concludes by asserting that the benefits of physical cooling methods for the treatment of fever will require randomized trials.

Temperature reduction is difficult, comes with some risks, and researchers still know few optimal means of temperature control (Hoedemaekers, Ezzahti, Gerritsen & van der Hoeven, 2007). Unlike most studies that have compared a single cooling technique with a medical treatment, Hoedemaekers et al. (2007) aimed to compare different external cooling techniques regarding their efficiency and performance. Although cooling using water circulating blankets was efficient in inducing hypo and normothermia, intravascular cooling was superior to all other cooling methods. The authors reported the absence of adverse events but advised that the interpretation ought to be done with caution due to the low numbers. The results of the study by Hoedemaekers et al. (2007) demonstrated that the use of cooling blankets efficiently induced hypothermia and normothermia.

Acetaminophen, which is the most widely used analgesic in America, causes severe hepatic necrosis leading to acute liver failure after suicidal overdoses (Larson et al., 2005; Napoli, 2006). Individuals that were at a higher risk of acute liver failure as a result of Tylenol overdose included those with chronic pain, alcohol or narcotic use, and depression. The findings of Larson and colleagues were that acetaminophen hepatotoxicity far exceeded other causes of acute liver failure in America. The study highlighted the adverse effects of acetaminophen, such as an induced acute liver failure.

Lee (2004) is yet another study that focusses on lowering the risks of hepatic failure by determining the risk of acetaminophen among the American Population. Hepatotoxicity leading to liver failure as a result of acetaminophen overdose was not discovered until the later years of its use. Hepatotoxicity arises from both unintentional and suicidal acetaminophen ingestions. Unintentional overdose accounted for nearly half the cases of acute liver failure (Napoli, 2006). Since acetaminophen allows for self-diagnosis and treatment of minor aches and pains, the Food and Drug Administration states that its benefits outweigh the risks Lee (2004). However, with every passing year, concerns are raised about the rising incidences of hepatotoxicity associated with acetaminophen (Larson et al., 2005; Napoli, 2006). The article concluded by asserting that although acetaminophen is an over-the-counter pain reliever that can be accessed easily, the amount of injury and death that arises from its use are at an unacceptable level.

Bedside nurses are the primary decision makers for instituting antipyretic interventions (O'Donnell et al., 1997; Thompson, Kirkness, Mitchell & Webb, 2007). Temperature management in patients is a prevalent and problematic challenge facing nurses (Hoedemaeker et al., 2007; Thompson et al., 2007). From the study by Thompson et al.(2007), the interventions for fever included acetaminophen administration, ice packs, water cooling blankets, and tepid bathing. They indicated that cooling blankets induced shivering, thereby increasing cerebral oxygen metabolism; these findings were in agreement with those from (Axelrod, 2000). The researchers concluded that clear and consistent patterns in the use of interventions for fever such as cooling blankets existed, but proposed further research to be conducted.

From the review of the literature, it is evident that the use of acetaminophen, known mainly as Tylenol, for treatment of fever among patients poses a significant risk of acute liver failure. Temperature reduction is not easy, as there are potential risks. However, many fever reduction methods have proven effective and with minimal risks. Evidence suggests that physical cooling methods like cooling blankets can be used instead of Tylenol for patients with elevated liver enzymes and liver problems.

RECOMMENDATION FOR PRACTICE

The practice recommendations provided were pegged on the evidence that the use of acetaminophen (Tylenol) for relieving fever poses risks of acute liver failure and that the use cooling blanket have proven to aid in reducing fever, without elevating liver enzymes (O'Donnell et al., 1997; Axelrod, 2000). The quality improvement program, involved recommendations for hospitals using cooling blankets, instead of Tylenol for patients with elevated liver enzymes and liver problems. First, fever in patients with elevated liver enzymes should be treated using cooling blankets. This is a strong recommendation with a moderate quality of evidence. Cooling blankets, cool patients with high temperatures, however, not as rapidly as other methods. (O'Donnell et al., 1997).

Furthermore, the use of cooling blankets efficiently induces hypothermia and normothermia (Hoedemaekers et al., 2007). Secondly, fever patients who experience discomfort or shivering from the use of cooling blankets should be treated with antipyretics, as opposed to acetaminophen. Also, the use of acetaminophen can present adverse effects to the patient and should be used with caution. Physicians ought to monitor for signs and symptoms of severe illness,

and educate patients about the correct use of antipyretics. Lastly, the goal of using a cooling blanket should be to improve the overall comfort of the patient and not only to lower body temperature (Hoedemaekers et al., 2007).

IMPLEMENTATION

There is an opportunity to educate nurses to improve patient care, as there is a lack of understanding of temperature regulation and fever. These nurses are the targeted population for the recommended guidelines, since they work directly with the patients to reduce their fever and avoid the possibility of any hepatotoxicity. The recommendations provided are targeted at improving the overall care experience, for both patients and nurses. However, these implementations are bound to run into some obstacles. The action to resolve such issues is to identify all the possible barriers before implementation. During implementation, the factors such as advantages, compatibility, and complexity that might prevent adoption, must be considered. The management would have to allocate enough resources to see the implementation through. Also, patient factors, such as compliance patterns or patient perspectives would be taken into account. Sufficient time would have to be set aside to train the nurses on the importance of the new practice guidelines, to enhance acceptance and adherence and eliminate a lack of personal knowledge. For successful implementation, the guidelines would include the strategies to facilitate its adoption. Also, another action to take to resolve any challenges, is to review progress, consider the options available, and ensure support on several levels.

EVALUATION

The outcome of the study was a reduction of fever without elevating liver enzymes. The research was intended to improve nurses' knowledge, with regards the use of cooling blankets for reduction without the risk of hepatotoxicity, hence, cost savings and reduction in the length of hospital stays. Overall, the outcomes of using cooling blankets are: reducing patients' temperature without increasing the complication of their disease level, as well as, to avoid impacting the liver enzyme. Reducing a patient's temperature to a level below the fever protocol showed efficiency. A clinician-reported outcome assessment, would provide results on the skills of nurses, as they use cooling blankets. Also, patient-reported outcome assessments would allow for the determination of whether the use of cooling blankets was successful. The potential barriers to the study would also be evaluated. Information about the outcomes of the evaluation would be obtained through observation. The outcomes would be displayed through tables, to allow for more straightforward interpretation. The data collected from the evaluation of the outcomes would help in management decisions, like determining whether the protocol is working or not, to warrant its continuation. Furthermore, the information would assist in making possible improvements to the practice recommendations. The outcomes would be measured over a period of one month to determine the effectiveness of the recommendations.

IMPLICATION FOR PRACTICE AND FUTURE RESEARCH

Further research in other countries is required, because nursing practices are often subject to regional trends. This study sought to review the literature on the effect of cooling blankets to reduce fever in patients with elevated liver enzymes and develop practice recommendations. Extending this particular work to other vulnerable populations would be beneficial. All nurses need to understand temperature regulation, fever, and hepatic failure to provide the best practice. Because of the adverse effects of fever in persons with illnesses, the healthcare workers need to be vigilant in monitoring temperature, as well as, assessing for other signs and symptoms. This documentation could be handy in providing nurses with evidence on how to efficiently improve the treatment of fever, without subjecting patients to risks, such as hepatotoxicity. Since fever management in patients is a collaborative effort, development of the protocols would involve staff from different departments of the care facility to foster local adaptation of best practices. As such, the nurses would be able to adopt the recommended protocols, as a guide to the care of patients. This particular study provides healthcare workers and facilities with further evidence for planning for the care of their patients. When the recommendations are implemented as proposed by findings of the review of literature review, improved patient outcomes, reduced healthcare costs, and increased safety would be established.

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HORIZONTAL BULLYING

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ABSTRACT

Horizontal bullying among nurses is a serious and critical problem that negatively affects the nursing job. Horizontal bullying is defined as frequent, persistent, negative, and abusive behaviors where bullies annoy or threaten victims at the same level in the workplace. There are several causes of horizontal bullying, such as feeling uncertainty, superiority power, workload, and difference in educational levels between the offender and victims. Also, lack of an anti-bullying policy has a link of bullying behavior. Workplace bullying has an undesirable effect on nurses, healthcare organizations, and patients' safety. Nurses who are victims suffer from physical and psychological problems, which is lead to a decrease in productivity and job satisfaction. In addition, workplace bullying affects healthcare organizations financially. Nurses who experience bullying in their workplace have a high rate of turnover. Leaving the healthcare organizations will impact the budget of the organization. Horizontal bullying is threatening patient safety. Negative and disruptive behaviors in the workplace lead to increased medication errors and patient mortality. Nurses who are victims are at risk to making errors which may threaten patients' lives and decrease the quality of care.

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WHEN FAST IS NOT GOOD ENOUGH: STROKE CASES ILLUSTRATING THE DIFFERENTIAL IMPACT OF QUALITY OF CARE ON PATIENT OUTCOMES

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WHEN FAST IS NOT GOOD ENOUGH: STROKE CASES ILLUSTRATING THE DIFFERENTIAL IMPACT OF QUALITY OF CARE ON PATIENT OUTCOMES

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ABSTRACT

Strokes are the fifth leading cause of death and a leading cause of disability in America. Premature deaths associated with preventable harm in hospitals is now estimated to be the third leading cause of death with an estimate of more than 400,000 deaths per year. Two Georgia stroke related case studies are compared and contrasted focusing on early recognition (including the FAST quick stroke assessment tool), risk factors, medical history with co-morbidities, clinical findings, diagnostic testing, patient's diagnosis and prognosis. Observed, however, is that competency, caring, and compassion play the critical roles in the outcomes of the patients.

INTRODUCTION

About every forty seconds in the United States, someone has a stroke, affecting almost 800,000 people each year, killing over 140,000 as well as causing serious, long-term disability (Benjamin et al., 2017). Although death rates from stroke had declined over time, leading stroke to fall to the fifth leading cause of death in the United States in 2013, these decreasing trends have stabilized and have actually increased in the South Census Region (Yang et al., 2017). Declining rates had been driven by progress in addressing modifiable risk factors and in treatment (Mensah et al., 2017). Over the period 2006-2010, analysis of the Behavioral Risk Factor Surveillance System (BRFSS) data found the highest prevalence of stroke among older adults, blacks, people with lower levels of education, and people living in the southeastern United States (Centers for Disease Control, 2012). Stroke was also the fifth leading cause of death in Georgia in 2013 (CDC, 2015). In 2012-13, stroke contributed an estimated $33.9 billion in average annual health care costs, taking into account both direct and indirect costs (Benjamin et al., 2017). The cases presented below are in Georgia.

Although stroke remains a leading cause of death and disability, awareness of the symptoms of stroke, crucial in order to seek well-timed medical attention, remains quite poor as less than 25% of stroke patients have a timely arrival at the emergency department (Rosamund, Gorton, Hinn, Hohenhaus, & Morris, 1998). The FAST mnemonic, based on the Cincinnati Pre-hospital Stroke Scale, helps identify symptoms of stroke. The acronym contains three common warning signs and a plan of action ("Face," "Arm," "Speech," "Time to call 911") that the nonmedical public may recognize and implement (Kleindorfer et al., 2007). For prehospital providers, "F" focuses on examining the patient's ability to smile and observe for facial droop, "A" assesses the patient's ability to lift his or her arms with the examiner observing for arm drift, the "S" assesses for slurred speech, and the "T" also includes identifying the time of onset or the last known well time (Gordon, Issenberg, LaCombe, & Saks, 1999).

Current estimates are that between 210,000 and 440,000 "premature deaths associated with preventable harm" to hospital patients occur each year in the U.S., representing between 575 and 1205 preventable premature deaths each day (James, 2013). Although there is a vocal recognition of the necessity of creating a culture of quality in hospitals, there appears to be negligible success in achieving this culture as healthcare industry quality grades improved only slightly from a C+ in 2004 to a B- in 2009 (Wachter, 2010). As a result, the lack of quality of care in hospitals is currently the third leading cause of death in the United States.

As noted above, less than 25% of patients arrive to the emergency department in a timely manner. Therefore, for most stroke patients, the quality of the outcome is highly dependent upon the quality of the inpatient and, later,

outpatient care. Stroke patients find themselves dependent upon the quality of the systematic caring of the caregiving team.

The two case studies that follow compare to identify positive and negative outcomes with two different Georgia stroke patients. Each case study will consist of a medical history, clinical findings, and diagnostic testing that led to the patient's diagnosis and treatment plan. In the Discussion section, both cases are viewed from both a family and clinical perspective and the differential impact of the hospitals' organizational cultures on the outcomes is noted.

THE CASE STUDIES

"Medicine used to be simple, ineffective, and relatively safe. Now it is complex, effective, and dangerous."
—Sir Cyril Chantler

First Case Study: 70-Year-Old Female Admitted to Non-Primary Stroke Center

The patient is a 70-year-old female with a history of hypertension, type two diabetes, and high cholesterol. She is a non-smoker with no previous history of strokes. At the time of her stroke she was taking Verapamil for hypertension and Glucophage for diabetes (see Table 1 below). The patient's daughter, who was not a healthcare professional, noticed that the patient was experiencing difficulty with her speech. She had fallen in the bathroom. The daughter did not recognize the stroke symptoms and no action was taken. The patient's husband witnessed her difficulty ambulating the next morning and immediately called another daughter who is a nurse. Upon arrival, the daughter used the FAST assessment tool to quickly assess the patient. She observed right-sided facial droop, right sided-arm drift, right-sided weakness, inability to stand, and slurred speech. The onset of symptoms was determined to be 24 hours previous. 911 was called. The paramedic assessed her vital signs, heart rate 88, respirations 20, and blood pressure 158/92. Her blood sugar was 58. The paramedic thought her symptoms may be from hypoglycemia.

The patient was immediately transported via ambulance to the emergency department of a non-primary stroke center hospital. The emergency department physician assessed the patient and then a computerized tomography (CT) scan of the brain, without contrast, was performed within an hour and a half after the patient's arrival. The CT indicated an ischemic stroke. A magnetic resonance imaging (MRI) was also performed which confirmed a left ischemic stroke. A transesophageal echocardiography (TEE) was performed to rule out possible blood clots in the heart that may have caused the stroke. The patient's TEE was negative. She passed a swallow screen test which determines the ability to swallow fluids without being high risk for aspiration.

She was admitted to a neurology / medical surgical unit for two weeks where she received inpatient physical, occupational, and speech therapy. The patient to nursing ratio was 5:1. After two weeks, she was transferred to another hospital (patient to nursing ratio of 7:1) that had an inpatient rehabilitation unit. Her husband of 52 years stayed at her bedside 24/7, only going home long enough to shower and change clothes. Physical, occupational, and speech therapy continued for five more weeks. She was discharged home where she continued outpatient therapy twice a week. The physical therapy helped her regain motor strength in her lower extremities using a hemi walker. The occupational therapy assisted her in using her upper extremities and helped her with learning how to manage activities of daily living: dressing herself, using a washer and dryer, etc. The speech therapy helped her with the pronunciation of words. She continued outpatient therapy for one year and for the past six years has been able to live alone with the assistance of her two daughters.

Table 1. Pre-Stroke Medications of 70-Year-Old Female

DRUG	DOSE	FREQUENCY
Plavix	75mg Tablet	One Tablet daily
Hydrochlorothiazide	12.5 mg Capsule	One Capsule daily
Verapamil	240mg Tablet	One tablet daily
Simvastatin	10mg Tablet	One tablet daily

Second Case Study: 74-Year-Old Male Admitted to Primary Stroke Center

The patient is a 74-year-old male with a history of atrial fibrillation and non-Hodgkins lymphoma. At the time of his stroke, his only prescribed medication is Coumadin (see Table 2 below). His risk factors for stroke are obesity, gender, and atrial fibrillation. The patient fell out of bed one night and his wife immediately called his daughter, who is a nurse. When she arrived, the patient was wrapped in a blanket like a cocoon on the floor. The daughter used the FAST assessment tool to quickly make a determination about stroke symptoms. The assessment revealed the patient was unable to ambulate, had left-sided facial droop, left arm drift, and slurred speech. The last known well time was prior to going to sleep: five hours prior recognition of symptoms. After the quick assessment using the FAST tool, 911 was called and he was transported to the emergency department. A CT scan of the brain was performed within 30 minutes of arrival. The CT scan revealed an ischemic stroke. An MRI was performed which indicated the clot was on the right side of the brain. A TEE was performed which indicated that the stroke was caused by atrial fibrillation.

The patient was admitted to the neurology / medical surgical unit of a certified primary stroke center hospital (Jauch, et al., 2013) on January 30, 2011. The patient-nurse ratio was 7:1. His wife of 52 years, the subject of case study one, was five months past her stroke and could not be at his bedside. The patient failed a stroke swallow screen. He had a percutaneous endoscopic gastrostomy (PEG) tube inserted which later became infected with pseudomonas. The Foley catheter was inserted and the balloon was inflated in the urethra instead of the bladder. He complained of pain. Blood clots and urine were noted all over the patient's gown and bedsheets. The nursing staff deflated the balloon, advanced the catheter into the bladder and irrigated the Foley. Several days later, the patient was diagnosed with a urinary tract infection. The urinalysis and culture showed four plus bacteria and an elevated white blood count.

He was transferred to the inpatient rehabilitation unit where he received occupational, physical, and speech therapy. The patient constantly complained of abdominal pain around the PEG tube. He became constipated. After administration of Colace and morphine, the patient called the nurse to assist him to the bedside commode, but nursing did not respond to his call. The nurses were short-staffed and were responding to an emergency at the other end of the hall. The patient decided to use the bedside commode without assistance, but fell on the floor. He lay on the floor for two hours. The nurses assisted him back in bed and did not order an X-ray performed. His Foley catheter, which had remained in place for two weeks, was yanked out during the fall. The patient complained of hip pain. The day shift nurse assessed the patient and found that one leg was shorter than the other leg. An X-ray revealed a fractured right femur and right hip. Surgery was performed to insert rods and pins into the right leg.

The patient was transferred back to the neurology / medical surgical unit. He developed feelings of depression, and had periods of crying. The physician prescribed Zoloft. The patient complained of pain in his right hip, leg, and from the PEG tube. He developed a fever of 101º Fahrenheit which was treated with Tylenol. He developed decubitus ulcers on his buttocks and skin tears on his heels. His IV catheter infiltrated which left his arm edematous, painful, and reddened.

He was transferred to the intensive care unit where his health continued to deteriorate. A nasal trumpet was inserted to support his airway. A fecal tube was also inserted. The patient's kidneys started to fail. Lab work indicated the serum creatinine was 2.0 and the glomerular filtration rate (GFR) was 50. The blood urea nitrogen (BUN) was 30. Dialysis was recommended by the nephrologist. However, the patient had expressed his wishes in a living will advance directive to not have dialysis. The family granted his wish of not having dialysis performed. Less than three weeks after being admitted, the patient died due to complications from his stroke.

Table 2. Pre-Stroke Medications of 74-Year-Old Male

DRUG	DOSE	FREQUENCY
Hydrochlorothiazide	12.5 mg Capsule	One Capsule daily

DISCUSSION

Table 3 below summarizes the two cases using the ADPIE nursing model (assessment, diagnosis, plan, implementation, and evaluation). Also provided is a qualitative scoring of excellent, acceptable, and poor as perceived by a family member and by the clinical evaluation of the two nurse authors reviewing the cases. What follows are some of the perceptions and general observations of the family members and the clinicians related to the two cases.

It should be noted at this point that the two cases are related in that these are the parents of one of the clinical authors and the events took place in 2011 and 2012. The clinical evaluations are strengthened by a common observer, but may also be influenced by the observer's closeness to the cases.

Perceptions and General Observations: Case One of the 70-Year-Old Female Admitted to Non-Primary Stroke Center

The paramedic did not think the patient had a stroke because he thought she was exhibiting signs of hypoglycemia. Therefore, he did not notify the hospital of a possible stroke victim which resulted in a delay in her receiving a CT scan. The hospital to which she was admitted was not a primary stroke center and there was not a protocol in place for dysphagia screening. Fortunately, her swallowing was not affected and she did not aspirate or choke when she received fluids.

The non-primary stroke center hospital nurses provided excellent care. The nursing staff quickly answered the call lights and she and her family felt her needs were met. The staff was perceived to be working together as a team. The nursing assistants were always checking on her and gave great baths with a loving touch. They talked to her and made her feel special and would share things with the family that she told them as they would get a good laugh about it and were engaged in her care and well-being. The nurse manager even made rounds in her room to check on her. A white board for communication was used to keep both the patient and her family informed. The nurses also appeared to have a good working relationship with the physicians as they would make rounds together. To the family, there appeared be cohesiveness among the entire healthcare team.

The hospital was also noted for having a very strong education department that provided competency assessments, in-services, customer service training, and offered yellow daisy awards to staff that go above and beyond. There were public bulletin boards that identified the nurses that received a recognition card from patients and families. The department took pride in recognizing their staff for providing excellent customer service.

The hospital taught the communication model of AIDET (Studer Group, n.d.), which stands for acknowledge the patient and family, introduce yourself, provide the time duration for the task being performed, explain the task, and thank them for their time. Monetary incentives were also provided for having high customer service satisfaction ratings along with other quality measures.

Overall, the family felt good knowing that they had caring and compassionate nurses taking care of their family member. The major witness of this care was the patient's husband of 52 years who constantly stayed at her bedside.

Two weeks later she was transferred to the hospital that was a certified primary stroke center, the same as described in case two, where the family found the teamwork and quality of care to be poor and the husband's around-the-clock care was considered essential for the well-being of the patient.

Table 3. The Differential Impact of Quality of Care on Patient Outcomes Illustrated by Case Studies

Nursing Process Model (ADPIE)	Case 1	Clinical Outcome	Family Perceptions	Case 2	Clinical Outcome	Family Perceptions
		excellent acceptable poor	excellent/ acceptable/ poor		excellent acceptable poor	excellent acceptable poor
Assessment	70 y/o female, 24 hours post initial symptoms, Hx: high B/P, type 2 diabetes, high cholesterol. Presented in ED with ® side facial droop, ® arm drift, ® side weakness, and inability to stand. In hospital care	Acceptable Excellent	Poor Paramedic's initial assessment: hypoglycemia, blood glucose of 58. Failed to use FAST assessment. Excellent	74 y/o male, ~hours post initial symptoms, Hx of A-fib, (high risk for stroke), obesity, Non-Hodgkins lymphoma, fell from bed found in floor/fetal position. Presents with (L) side facial droop, slurred speech, (L) arm/leg weakness. Used FAST assessment. Transported to ED **In hospital care:** M/S Neurology in-pt unit: PEG tube infected with pseudomonas. Foley cath inflated in urethra; no response to pt. C/O pain and blood clots/blood in foley, urine leaks >> UTI **In-pt. Rehab unit:** Pt C/O abd. pain around the PEG tube, constipation; Rxed with Colace and was given Morphine for pain>> fall trying to use commode>>NO Follow up x-ray even with C/O of ® hip/leg pain, temp; decubitus ulcers & skin tears: **Back to M/S Neurology in-pt unit:** Surgical Repair of Femur and hip, IV infiltration, febrile, poor pain management, complaints of severe left hip pain, crying with signs of anxiety>Depression **Transferred to ICU:** Continued deterioration; renal failure; death Continue on next page…	Excellent Poor Poor Poor Poor	Acceptable Poor Poor Poor Poor
Diagnosis	Possible (L) side stroke>>			Possible (R) side stroke>>		

Nursing Process Model (ADPIE)	Case 1	Clinical Outcome	Family Perceptions	Case 2	Clinical Outcome	Family Perceptions
		excellent acceptable poor	excellent/ acceptable/ poor		excellent acceptable poor	excellent acceptable poor
Plan	R/O ischemic vs hemorrhagic stroke			R/O ischemic vs hemorrhagic stroke		
Implementation	CT scan, no contrast; MRI; TEE; 3-ounce water swallow test	CT done 1½ hours after admitted to ED		CT 30 minutes after admission to ED, MRI, TEE, 3-ounce water swallow test		
Evaluation	Left side ischemic stroke; possibly caused by high cholesterol	Confirmed		Right side ischemic stroke; possibly caused by A-fib>>clot formation		
Post ED Plan	PT, OT, speech therapy	Excellent		PT, OT, speech therapy		

Perceptions and General Observations: Case Two of the 74-Year-Old Male Admitted to Primary Stroke Center

The nursing assistants would argue with the patient on who put him on the bed pan and flipped electrodes in his face. The nursing staff were not compassionate and failed to perform important nursing interventions and assessments. For example, one nurse placed his sequential compression device on the wrong feet and failed to turn it on. The patient's IV site was found edematous, leaking around the occlusive dressing, with the IV catheter kinked and the tape was partially removed. On another occasion, the patient indicated that he was freezing, so the nurse turned up the temperature in the room and applied several blankets without assessing the temperature. The daughter arrived two hours later for visitation to find the patient sweating with his gown and sheets soaked in perspiration. Prior to him having a Foley, his urinal was found full on the bedside table next to his food tray. Neither hospice nor palliative care was discussed with the family at the end of life. The gastroenterologist did not take the necessary time to explain the options regarding the PEG tube. The physician called the daughter without medical knowledge for permission to insert the PEG tube without a face-to-face consultation. He did not discuss options and it was inserted under general anesthesia instead of laparoscopically. The staff did not respond in a timely manner when the patient needed assistance. The nurse failed to order an X-ray upon finding the patient on the floor. The family explained to the nurse that the patient was complaining of lower back pain and there was blood in the Foley bag. The family politely reques5ed the nursing staff to perform a U/A and culture, but the nurse refused. However, after two days, another nurse ordered the labs after risk management was consulted. The staff did not listen to the family. Prior to his death, the patient stated "I (might) just as well be dead lying under a tarp as the staff doesn't care!" and "Please get me the hell out of here. This place is sorry!"

CONCLUSIONS

A wish list stimulated by these cases would probably include many commonsense ideas such as the following idealized statements. First, the FAST assessment tool must be part of every first responder's tool kit and part of the general health education for community members in that it can help with early recognition of stroke symptoms. Hospitals should ensure adequate staffing at all times to provide high quality patient care. Hospitals should closely

screen nurses for being the right fit for their work unit including that they are compassionate and competent. Therefore, hospitals should ensure annual competency evaluations are performed on all staff and ongoing education is provided throughout the year. Nurses should have an understanding of hospice and palliative care and, when appropriate, the ability to discuss these options with family members. Hospitals should work to assure consents for non-emergency medical procedures are performed face-to-face with the physician instead of over the telephone. Staff, obviously, should refrain from arguing with the patients.

Nurses should take HEART which stands for Hear the patient out, Empathize, Apologize, Respond to the patient's need, and Thank the patient for bringing the matter to your attention. Nurses should always work to assess and reassess the patient; a simple restatement of what is referred to as double-loop learning from a general systems perspective (Senge, 2006). All clinicians should be attentive to the patient's needs and listen to the families. Physicians should work as a team members, embracing the input of other clinicians in the clinical microsystem immediately responsible for the care of the patient. The care system should not be dependent upon family members or others outside the formal care system to reliably produce quality outcomes. Administrators should work to create stable systems of resources and processes that produce high value quality outcomes on a day-to-day basis…the Donabedian model of healthcare quality (Sollecito & Johnson, 2013).

The above statements may in themselves be secondary to even more basic necessities for caregivers to be able to work together to provide high quality care. Love, stated Avedis Donabedian, is the "secret of quality:"

> Systems awareness and systems design are important for health professionals, but they are not enough. They are enabling mechanisms only. It is the ethical dimensions of individuals that are essential to a system's success. Ultimately, the secret of quality is love. You have to love your patient, you have to love your profession, you have to love your God. If you have love, you can then work backward to monitor and improve the system. (Donabedian as quoted by Best & Neuhauser, 2004, p. 472)

Donabedian was not alone in concluding that system smarts are necessary, but not sufficient, for quality healthcare. Covey (2013) brings focus to the concept of the synergy released when interdependent individuals join forces to accomplish a common objective. Deming (2000) notes that the human system must focus on the needs of the customer. Lee (2004) speaks to the need of healthcare providers having an external (patient-centered) focus if high quality care is to be produced. Senge (2006) notes that systems thinking is but one of the five disciplines necessary to create a "learning organization" with the creation of a common vision among the team members a simple necessity if high quality is to be produced from the organization.

Although each of these modern management/leadership theorists is known for their emphasis on seeing the whole organizational system and optimizing the whole system, in some fashion, the "heart" and caring for something greater than the team or profession is found by each to be a necessary condition to achieve the system aim.

In healthcare, we are provided with one of the noblest rallying flags available for any human endeavor to work toward and that is the quality provision of safe and effective care for friends, neighbors, family members, and the community at-large. We fail ourselves and others when we do not bring both systems intelligence AND a loving heart to the healthcare work setting.

In conclusion, although these are only two cases, these cases do support the idea that working together in an interdependent system with a caring environment may well produce better outcomes than a non-caring environment, even though the latter is "certified" and the former is not. Being FAST and certified is simply not good enough.

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TRACK
PHARMACY

A CURRENT APPRAISAL OF OFF-LABEL PRESCRIBING IN ONCOLOGY: ISSUES AND CONCERNS FROM ECONOMIC, MARKETING AND REGULATORY PERSPECTIVES

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ABSTRACT

The practice of prescribing any medication for an indication or therapy other than what it is approved for is termed 'off-label' prescribing. Off-label prescribing is not illegal but controversial. According to estimates more than half of all prescribing in oncology is done off-label due to wide ranging treatment choices and complex chemotherapy. The primary objective of the study was to understand the scope of oncology off-label prescribing (OOLP) problem from clinical, economic, regulatory and marketing perspectives.

A systematic review of published empirical and review studies selected from PubMed, Embase, ProQuest and SciDirect databases was performed to assess the current landscape of OOLP. A common Medical Subject Headings (MeSH) vocabulary was used across compatible literature databases to form a search strategy. Publicly available information from legal databases was also searched to review cases of OOLP, including its current status, relevant FDA regulations, agency guidance and disciplinary actions, criteria for insurance coverage, litigation, court settlements and judicial actions related to promotional violations. A total of 24 articles from 2003 to 2017 provided the framework for the final review and analysis. Approximately 40% (n=9) of selected studies focused on prevalence and cost aspects of OOLP, three covered compendial and prevalence aspects and half of the studies reviewed (n=12) promotional, regulatory and legal aspects of OOLP. Top three cancer drugs that were often cited for their off-label use were Avastin (bevacizumab), Gemzar (gemcitabine) and Rituxan (rituximab).

Off-label use is common in chemotherapy across all cancer types, particularly in cases of metastatic cancer and in terminal/palliative care. From clinical perspective, most OOLP seems limited to the expansion of drug use to unapproved indications for the disease and its related conditions (as opposed to a different disease entity) and to permissible variations in dosage schedules. With respect to economics, priority issues pertained to the economic burden of OOLP and payment rules & restrictions for unapproved uses. The Center for Medicare & Medicaid Services (CMS) provides coverage for off-label use for Medicare participants if the indications are present in approved official medical compendia, but these compendia have been criticized lately for inconsistencies and lack of uniform coverage criteria. On the promotional front, journal articles, newspapers, magazines, continuing medical education, compendia sales representatives etc. are the commonly used methods to promote off-label use. Analyzed cases of litigation shed light on a variety of unlawful marketing practices to promote off-label drug use in oncology, with varying degrees of regulatory scrutiny and prosecution.

OOLP is more common than the documented evidence would suggest and risk to benefit ratio of OOLP is solely gauged by the prescriber in absence of clear-cut guidelines and reliable information. Marketing tools reported in the literature range from harmless promotional tactics to methods that are downright risky. The practice itself has come under increased regulatory scrutiny and has faced criticism for compendial shortcomings and inconsistencies in coverage determinations. A comprehensive and formal risk-benefit assessment of the practice are needed before conclusive remarks can be drawn regarding its potential for danger or reward.

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PROBLEMS AND CONCERNS REGARDING PHARMACY BENEFIT MANAGEMENT ORGANIZATIONS

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ABSTRACT

Pharmacy benefit managers (PBMs) are organizations that play a major role as middleman in the pricing and administration of prescription drug plans in the United States. PBMS have been around since the late 1960 when they initially acted as claims administrators in the health insurance industry. PBMs grew rapidly during the 1970s after the introduction of the plastic insurance benefit card changed the way prescription drugs were purchased and paid for. The card speeds the payment of claims and allowed the pharmacist to be paid must faster. During the 1980s real-time electronic prescription claims processing became commonplace. With computerization of claims processing resulted in a massive database of prescription information. This information allowed PBMs to focus on patient health. In 1990, approximately 90 percent of the United States population was included in one PBM data base or another. PBM generate revenue through administration and service fees charged to plan sponsors for processing: (1) Pharmaceutical manufacturers negotiate rebates and other concessions with PBMs. They also supply pharmaceutical wholesalers with prescription drugs. (2) PBMs contract with commercial health plans or self-funded insured groups to administer the plan's pharmacy benefit, including development of a formulary and terms for payment, including agreements to pass-through manufacturer rebates. (3) PBMs contract with a network of retail and community pharmacies, and are responsible for setting patient cost-sharing amounts and establishing clinical policies, such as prior authorization requirements. Finally, many PBMs also own mail-order and specialty compounding pharmacies. (4) This rapid growth and domination of the information data base has created potential issues that are only comparatively recently coming to light and being discussed in the popular public press. Among the issues and concerns currently being discussed include apparent monopoly powers, lack of transparency, questionable business practices and several lesser issues. The following issues will be discussed and examined in this paper.

- *Qazi or near monopoly power of PBMs. Consolidation and lack of adequate regulation.*
- *Lack of transparency. Downstream clients including insurers, pharmacies, and consumers have little or no ability to find out the true cost of what they are buying.*
- *Lack of regulation at the federal or state level leads to many issues and concerns in the PBM business.*
- *Ethical questions regarding the practices and accounting for rebates and discounts.*
- *Recommendations for making PBM work as intended; not as they presently operate.*

Suggestions for future research will be offered as this is an exceedingly complex's problem that is likely to require federal legislation and litigation to resolve.

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TRACK
PHYSICAL THERAPY

AGE-RELATED PHYSICAL IMPAIRMENTS AND ROAD SAFETY ISSUES IN OLDER DRIVERS

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AGE-RELATED PHYSICAL IMPAIRMENTS AND ROAD SAFETY ISSUES IN OLDER DRIVERS

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ABSTRACT

An important issue facing the ageing population is the need to maintain an independent, active, and mobile quality of life despite declining physical abilities and skills. For the elderly driver, the increasingly dependency on automobile for mobility can place them at a greater risk of death from motor vehicle accidents than younger drivers. In the older adult, postural abnormalities and/or physical limitations can have influence on seated driving mechanics and influence driving ability. A change in body proportion or position can displace the body's center of mass (COM), thus altering postural alignment and add increased stress or strain on postural muscles of the neck and back that may considerably elevate risk for injury or death during an automobile accident. In addition, a poor driving postural position may advance existing mobility and response time deficits that could create driving challenges and translate to a rise in accidents among older adult drivers.

Keywords: Age, Fatalities, Body Mass Index, Posture, Drivers

BACKGROUND

Motor vehicle collisions (MVC) are a leading cause of thoracic and lumbar spine injuries among older adult drivers (Rao et al., 2016). A 2009 study conducted by Hanrahan et al. reported that older adult drivers had more significant post-crash outcomes for moderate, severe, and fatal injuries of the thorax, abdomen, and extremities (Hanrahan et al., 2009). Economically burdening, spine injuries account for an estimated $9.7 billion of annual healthcare costs in the United States (Cole, 2006; Mann & Arthur, 2011; Zigmung, 2000) and the National Highway Traffic Safety Administration (NHTSA) has reported higher rates of thoracic and lumbar extension injuries in adult drivers of aged 65.7 years from motor vehicle collisions (MVC) (Ribak, 2004). Data published from The U.S. Bureau of the Census has projected Americans aged 65 and older to increase from 35 to 70.3 million by year 2030 ("Census of Population and Housing, 2000 [United States], and in consideration of this increasing trend for older drivers, Hanrahan et al estimated that older drivers in the United States would contribute to 25% of all driver fatalities (Hanrahan et al., 2009) incurred from a MVC. Crash reports have shown poor outcomes as well as increased injury severity of older adult drivers compared to younger drivers involved in non-fatal motor vehicle collision incidents (Hanrahan et al., 2009; "Guide for Reducing Collisions Involving Older Drivers," 2004). Miltner and Salwender indicated that the probability of being fatally injured was 30%-45% higher for drivers and occupants over age 59 than those under age 20 in motor vehicle collisions of 50 km/h speeds (Miltner & Salwender, 1995). Braver and Trempel determined that two thirds of fatal MVC accidents involving 75 and older adult drivers were linked to driver error (Braver, 2004). Despite these realities, older adult drivers are holding licenses longer and driving more miles annually (Norden, 2007) which could associate with increased risk of severe injury and or fatality for elderly drivers or elderly occupants when involved in a MVC (Hanrahan et al., 2009; Li et al., 2001; Betz & Lowenstein, 2010).

INTRODUCTION

The presence of musculoskeletal impairments or disability can greatly impact physical capabilities in the elderly driver. It is estimated that approximately 58% of the growing population will acquire a form of disability associated with functional limitations and age (Shaheen & Niemeier, 2001). Postural abnormalities are known to limit function (Schafer, 1987). Postural abnormalities of the spine; such as a kyphotic, lordotic, or scoliotic posture can alter driving abilities for the physically aged older adult, particularly concerning maintenance of static and dynamic postural stability critical to meet specific task demands. In the older adult driver, a poor driving posture may considerably elevate risk for neck and low back injury or death during an automobile accident. Postural

malalignments can create mobility deficits that can lessen the body's ability to efficiently transfer loads and forces from abnormal bone to normal bone across musculature of the head/neck, shoulders, spine and pelvis, as well as hip regions. It is well documented that changes in body alignment are shown to restrict overall joint motion as well as progress existing mobility deficits (Blackburn & Morrissey, 1998), and since sitting posture essentially depends on alignment of the COM in relation to pelvic positioning (Figure 1.) whereby age-related changes of the spine can alter crucial joint angulations at the lumbo-pelvic-hip complex (Neumann, 2010). As a result, an aberrant driving posture can influence the mechanical equilibrium of the body which guides complex motor control activities of driver actions to successfully interact within his/her environment.

DISCUSSION

Safe driving is important for appropriate information processing. Efficient coordinated neuromuscular linkages are necessary for effective transfer of loads and forces up and down the kinetic chain. Postural malalignments can impair successful response time and cause the body to fail and/or diminish in its ability to react to or adapt to new demands experienced within the immediate environment. Deficits in neuromotor firing patterns (timing and sequencing) can result in compensatory strategies for the older adult to regulate occurrences in COM shifts. A failure to adjust to large COM shifts and subsequent gravitational pull can greatly increase risk to injury or fatality for the elderly driver if the body mass and/or COM is excessively displaced anteriorly, posteriorly, laterally, diagonally, or rotationally outside the body during a motor vehicle collisions (MVC) (Schafer, 1987; Neumann, 2010).

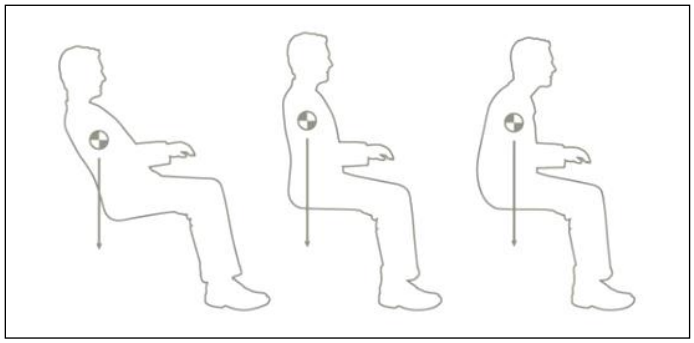

Figure 1: Illustrates displacement of the center of mass to various forms of sitting posture associated to angulation changes of lumbo-pelvic-hip complex positioning.

To report the impact age-related impairments may contribute to driving ability and road safety in the older adult, an extensive review of driving-related research was performed to identify associated contributions to driving challenges in this rapidly aging population. This research is about examining the physical attributes of age, gender, body mass index, and maladaptive sitting postures attribute to driving ability and safety in the older adult.

Age

Motor responses and skills are affected by the aging process (Shaheen & Niemeier, 2001). A diminished speed of muscle contraction or muscle coordination can result in unsafe driving and heighten safety threats for many older adult drivers. Additionally, variations in seated driving posture (Figure 2-3.) can have impact on visual fields, motor skills coordination and joint and soft tissue functioning, especially in compromised bone (i.e. osteoporosis) with efficient transfer of load and force along the kinetic chain; from the upper extremities to lower extremities and lower extremities to upper extremities (Webber, Porter, & Menec, 2010). Analysis of data from the National Highway Traffic Safety Administration (NHTSA) has shown that thoracic and lumbar extension injuries are more prevalent in older adults' average age 65.7 years (Rao et al, 2016).

Age-related changes such as a poor sitting posture can change pelvis alignment which adds excessive stress and strain on the antigravity muscles of the neck and back, thus making driving hazardous in certain circumstances where vision, physical strength and dexterity specific task demands may challenge existing physical impairments and/or disabilities (Webber, Porter, & Menec, 2010). For instance kinematics at the neck, when the head is anterior

to the COM, the neck muscles opposite to the gravitational pull must contract to balance the anteriorly displaced head weight, this action serves as a "check reign" to counter compressive and shear forces acting on the atlanto-occipital joint (Schafer, 1987). In the event these adaptive postural mechanisms fail, a resultant subluxation can occur at the atlantal articulations and result in death or serious injury for the elderly driver. Studies have reported that aged drivers neck muscle reflex response time is slower and will take longer to produce reaction movements in aged drivers subjected to sudden loads/forces applied to the head compared to the response time in younger drivers (Shaheen & Niemeier, 2001). Head/neck trauma injury have been commonly reported to accompany whiplash-associated disorders (WAD) in individuals aged 65 or older involved in an automobile accident (Cholewicki & VanVliet, 2002; Stiell, 2001). Moreover, occupant age influenced the injury severity at the thorax, abdomen, and extremities (Miltner & Salwender, 1995). With an energy equivalent speed of 50 km/h, the probability of being fatally injured was 30%-45% higher for occupants over 59 years than those under 20. (Miltner & Salwender,1995**).** Alonso et al. conducted a study where 102 older adults aged 64.6 to 76.2 years were compared to 62 middle-aged adults aged 32.2 to 46.4 years old. The researchers found that older adult drivers had a decreased braking time of 17% compared to braking time of middle-aged drivers (Alonso et al., 2016).

Figure 2. Example of forward leaning sitting posture and visual field projection area.

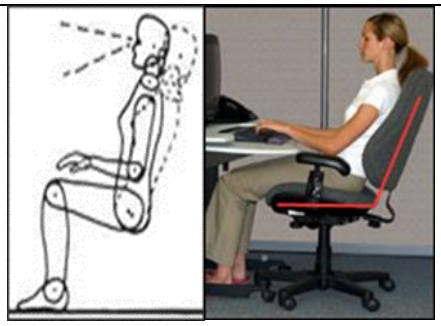

Figure 3. Example of reclined (slouched) sitting posture and visual field projection area.

Gender

The female gender was implicated as a risk factor for motor vehicle incidents in both young and older drivers (Classen, Awadzi, & Mkanta, 2008). Small females are considerably closer to the steering wheel than the rest of the population, and therefore prone to head strikes in frontal impacts. Large males are likely to interact with the cant rail and B-pillar in side impacts (Parkin, Mackay, & Cooper, 1995). Obese women are more likely to die than obese men in motor vehicle incidents (Jeong & Park, 2016). The importance of age and gender suggests that the specific safety needs of older drivers and female drivers may need to be addressed separately from those of men and younger drivers (Bédard, Guyatt, Stones, & Hirdes, 2002).

Physical Attributes

Seniors reported differences in physical capacity and characteristics that influenced seat belt use, such as reduced grip strength, decreased finger dexterity, decreased range of motion for reach, and decreased ability to exert force, all of which posed difficulties when fastening and unfastening seat belts (Shaw, Miller Polgar, Vrkljan, & Jacobson, 2010). It was investigated that 20% of 65-79 year olds and 33.3% of drivers over age 80 demonstrated statistically significant reductions in upper shoulder flexibility (Karali, Mansfield, & Gyi, 2017). Physical limitations relevant to a change in joint angles can impact normal muscle physiology by changing muscle length and leverage relationships, particularly of lower extremity musculature (Sembulingam & Sembulingam, 2016; (Cholewicki & VanVliet, 2002). Hand coordination and dexterity using a 9-hole peg test showed a decline in hand coordination and speed bilaterally with increasing age (Karali, Gyi, & Mansfield, 2016). Additionally, a decline in contrast sensitivity was observed with increasing age which was similar for both eyes tested simultaneously and separately (Karali, Gyi, & Mansfield, 2016). Decline in contrast sensitivity of drivers aged 75 and older was found to be associated with greater incidences of rapid deceleration events per distance traveled (Chevalier et al., 2017). The Hamilton Veale contrast sensitivity test showed that Drivers who rapidly change speed while driving may be more at risk for a crash

by narrowing time for reactivity and the need for reactivity of drivers behind them. Driving simulator experiments in right turn lanes indicate that individuals with greater incidences of rapid deceleration events had a more extensive rear-end crash history (Yan, Abdel-Aty, Radwan, Wang, & Chilakapati, 2008).

Body Mass Index (BMI)

In drivers with increasing Body Mass Index (BMI) values, researchers have indicated that the seat belt commonly moves above and forward on the pelvis and increases the amount of webbing pulled from the seat belt retractor (Reed, Ebert-Hamilton, & Rupp, 2012; Reed, Ebert & Hallman, 2013). It has been conjectured that these alterations contribute to increases in occupant excursions associated with delayed protective restraint forces provided by seat belt forces onto a driver during frontal motor vehicle incidents (Reed, Ebert & Hallman, 2013. The literature evidences that obese drivers are 79% more likely to sustain fatality from traffic collision-related injuries compared to non-obese occupants involved in the same collision (Jeong & Park, 2016). Higher BMI individuals are prone to higher incidence of major extension pattern injuries involving the thoracic and lumbar spine (Rao et al, 2017). Rao et al. assessed data from the Crash Injury Research and Engineering Network database between 1996 and 2011. A BMI from 30-34.9 was linked to a 21percent increase in fatality, and a 35-39.9 BMI value had a 51 percent increase in fatality rates from MVC. Drivers with a BMI value above 40 were 81 percent more likely susceptible for death in a crash than those of normal weight.

Seat Belt

Altered driving posture and sitting position can associate with improper seat belt usage and place the elderly driver to risk of injury or death from a MVC. Survey data by Fong et al. indicated that 21% of older drivers reposition their seat belt to improve driving comfort. Of the study participants, a poor sash belt fit was reported by 53% of the participants, and lap belt fit in 59% of study participants (Brown et al., 2016). While a poorly fitted sash belt and lap belt were equally reported by 23% of study participants (Brown et al., 2016; Fong et al., 2016), the dangers linked to having a poorly fitted belt sash or lap belt can double for obese drivers (Figure 4.) Odds of having a poor lap belt fit are 1.8 times higher for older obese drivers, and older female drivers have twice the risk to injury compared to older males (Fong et al., 2016, Brown et al., 2016).

A poorly fixed seat belt can have influence on driver response time and ability to efficiently coordinate high motor control activities during an automobile accident. Adult participants aged 65 and older reported experiencing increased discomfort in the hips/thighs/buttocks and knees compared to younger participants during seat belt use ((Karali, Gyi, & Mansfield, 2016). The lack of optimal seat belt fit in older drivers greatly increase the drivers risk of sustaining a more fatal extension pattern injury of the spine (Rao et al., 2017).

Figure 4: Displays a poorly fitted seat belt sash and lap belt in obese drivers that can associate with improper seat belt usage and driver posture repositioning.

Seat Back Angle

An increased seat back angle can alter driving posture, and a change in seated driving posture has been indicated to adversely affect compressive loading and bending moments at the spine (Jones et al., 2016). An upward

tilt of the seat may increase the likelihood of suffering lumbar injury in motor vehicle incidents (Jones et al., 2016). For example, when a person is seated too low, there is a tendency to lean forward and increase angulation at the lumbo-pelvic-hip complex. A forward leaning position (slumped sitting) distorts the spine and generate higher moment loads (forces/stress) on the lumbar disc related to the anteriorly rotated pelvis (Neumann, 2010; Ross et al., 2009). In older drivers who may present with abnormal postural attitudes that may involve a forward leaning (kyphotic) sitting position, the COM of the upper body is displaced in front of the ischial tuberosities and will change angulation at the lumbo-pelvic-hip complex. This will result in greater flexion angles which have been shown to exert larger stress/loads on spinal structures and increase lumbar intervertebral disk (IVD) pressure which considerably elevate risk to low back injury or disc lesions (Neumann, 2010). In contrast, a reclined (leaning back) sitting position would result in a posterior rotation of the pelvis from the neutral position, and extend the spine to cause a flattening of the lumbar curve (Neumann, 2010). The extent of the lumbar curve during sitting posture in the older adult driver is dependent upon sacral angulation which is controlled by pelvic posture. Both postural-related physical impairments can affect visual fields and impact the older driver's reliance on peripheral vision due to positional changes in sitting that may result in smaller useful fields of vision (UFOV) (Shaheen & Niemeier, 2001) over which information can be acquired and processed in a brief glance.

Head Restraint

Studies have shown that seats equipped with reactive head restraints can significantly reduce injury, yet effect for males between approximately 60%-70% but minimal or no reduction effect for females. One influencing factor could be the position of the head restraint relative to the head, because a number of studies have reported that adjustable head restraints often are incorrectly positioned by drivers (Carlsson, Pipkorn, Kullgren, & Svensson, 2016).

In addition, pretensioner and load limiter are integral components of seat belt design and safety standards. Osth et al. used EMG to study seat belt pretension restraints thru examination of muscle activation patterns associated with driver response time in autonomous braking activity by the driver. EMG muscle activity was shown to occur earlier with pretension seat belts in frontal vehicle collisions of drivers aged 64 and older (Östh, Brolin, & Bråse, 2014; Betz & Lowenstein, 2010). Among the study participants wearing a 3-point seat belt restraint, 35.3% were reported to have sustained thoracic and lumbar spine injuries, while only 11.6% of the unbelted occupants suffered injuries of the thoracic or lumbar spine (Östh, Brolin, & Bråse, 2014). Three-point belted individuals are more likely to sustain burst fractures and have higher severity of injuries or fatality (Rao et al., 2017), whereas 2-point belted occupants were reported to have incur more risks for flexion-distraction injuries of the cervical spine.

CONCLUSION

To help maintain driving independence and to address driving safety, physical issues facing the aging adult can be improved through simple adjustments in vehicle seat design. Promotion of an upright, erect sitting posture may help to reduce the number of injuries or fatalities sustained during a motor vehicle accident for the older driver. Our work showed that a number of age-related factors have influence on driving abilities in the older adult, and shown that structural impairments or disabilities of postural origin may have the greatest impact on function of driving ability for the older adult driver. To accommodate for certain age-related musculoskeletal changes in the older adult driver, physical issues can be improved through adjustments in sitting driving posture and vehicle seat design to provide for an upright-erect and good driving posture.

Postural alignment of neutral head, shoulders, and a lifted chest can facilitate improved hand-eye coordinated movements, fine motor dexterity skills, and foot function individual reaction times during higher motor control task demands associated with appropriate center of mass alignment in seated posture for the older adult driver. The biomechanics of good postural alignment may necessitate providing the older adult driver with a modifiable postural harness-restraint adaptation to improve body position and joint angulations of seated posture to increase trunk stabilization and limit excessive COM displacements and stress/strain on structures/tissues of the cervicothoracic and thoracolumbar regions from an MVA. A postural harness-restraint adaptation may reduce risk to injury for the older adult driver with physical impairments.

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VIOLENCE IN HEALTHCARE: IMPORTANT INFORMATION FOR DEALING WITH CONFLICT

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ABSTRACT

According to Phillips (2016), violence in the healthcare workplace continues to be a problem that often goes unreported or underreported. Several studies have been conducted that indicate violence is prevalent among a variety of healthcare providers. One study showed 61% of home care workers reported workplace violence (Hanson, Perrin, Moss, Laharnar, & Glass, 2015). Another study suggested nurses who work in emergency departments (EDs) are at greater risk of verbal or physical assault than their non-ED counterparts. The report also indicated 100% of ED nurses reported verbal assault and 82.1% described experiencing physical assault within the previous year (May & Grubbs, 2002). Multiple studies have shown how workplace violence increases job dissatisfaction, burnout, and missed workdays. Research has also demonstrated decreased productivity and reduced feelings of security in the workplace, particularly immediately following episodes of violence (Phillips, 2016).

This presentation will provide data regarding the prevalence of violence in healthcare. Several myths regarding workplace violence against healthcare providers will be identified and debunked. Strategies to avoid violence in healthcare situations will be provided and situational examples will be described. The information provided is essential, as clear strategies are needed not only to respond to workplace violence in healthcare settings but also to prevent them from occurring.

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INTER-PROFESSIONAL AND INTER-ORGANIZATIONAL DEVELOPMENT OF A FALLS PREVENTION PROGRAM FOR SHAWNEE COUNTY, KANSAS

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ABSTRACT

The leading cause of injury-related deaths in people age 65 years and older is due to falls, with 50% of these falls occurring in the home (Crawford County Age Well, 2015). Falls can result from hazards in the home, poor vision, medications, decreased physical activity or loss of balance. While there are many reasons falls can occur there are numerous interventions that may be encouraged to reduce the risk and possibly even prevent falls from happening (Crawford County Age Well, 2015). The Topeka Community of Care (COC) 2017 initiative of Fall Prevention was designed to research ways to address this issue in the Topeka and Shawnee County communities. The Topeka Community of Care believes that educating clients on simple, at-home ways to prevent falls is a key component to reducing falls and fall-related injuries. This research describes the fall prevention program developed for the Topeka and Shawnee County, Kansas communities. Additionally, it highlights efforts of students in the physical therapist assistant (PTA)/Bachelor of Health Science (BHS) programs at Washburn University working collaboratively with numerous community partners.

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POSTERIOR WALKER USE IN ADULTS: A PROPOSAL TO MITIGATE EFFECTS OF KYPHOSIS AND REDUCE HEALTHCARE COSTS

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POSTERIOR WALKER USE IN ADULTS: A PROPOSAL TO MITIGATE EFFECTS OF KYPHOSIS AND REDUCE HEALTHCARE COSTS

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ABSTRACT

As individuals age the risk for development of kyphotic posture, or increased thoracic flexion, rises. This paper discusses the physical effects of kyphotic posture as well as the financial impact of associated healthcare costs. Posterior walkers are used for numerous pediatric conditions to assist children with ambulating in a more upright position and with less energy expenditure. This paper discusses how use of posterior walkers in adults could potentially reduce negative effects associated with kyphotic posture and decrease healthcare costs associated with this condition.

INTRODUCTION

Kyphotic posture can be defined as a curvature of the thoracic spine in an anterior direction as demonstrated by increased thoracic flexion (Roghani, Zavien, Manshadi, King & Katzmann, 2016). In younger adults, 20 degrees to 40 degrees is considered a "normal" measurement of thoracic flexion for kyphosis, however in older adults this angle increases to greater than 40 degrees and is often known as "age-related hyperkyphosis" (Roghani, Zavien, Manshadi, King & Katzmann, 2016). Kyphosis is more common in women and occurs in 20 to 40 percent of adults over the age of 60 (Roghani, Zavien, Manshadi, King & Katzmann, 2016). The average angle of kyphosis in older adults is about 48 to 50 degrees in women and approximately 44 degrees in men (Kado, Prenovost & Crandall, 2007).

Kyphosis can be measured in several ways including the use of a kyphometer, goniometer, inclinometer, and flexible ruler in standing as well as using 1.7-cm blocks in supine to measure the distance from the occiput to the table. Regardless of how kyphosis is measured, whether it is measured clinically or with the use of radiology, it is still associated with adverse health effects (Kado, Prenovost & Crandall, 2007).

ADVERSE HEALTH EFFECTS

Several adverse health effects can be caused by kyphosis. Kyphosis impairs pulmonary function as it creates a mechanical restriction on the lungs that can limit vital capacity (Roghani, Zavien, Manshadi, King & Katzmann, 2016). In an article written by Kado, Prenovost & Crandall (2007), three small cross-sectional studies were conducted and reported negative correlations between kyphosis and vital capacity, with a potential 38% reduction in vital capacity (Kado, Prenovost & Crandall, 2007). Similarly, several studies conducted demonstrated kyphosis decreases physical function and the quality of life (Kado, Prenovost & Crandall, 2007). Eighty-five women from the ages of 50 to 82 years old with kyphosis reported having increased difficulty with bathing and washing (Kado, Prenovost & Crandall, 2007). In various studies of performance-based measures involving 50 to 60 year old women, reported bench-press strength had decreased, maximum oxygen uptake decreased, gait speed decreased, a slower timed get-up-and-go test, their grip strength decreased and they had increased difficulty rising from a chair to perform transfers (Kado, Prenovost & Crandall, 2007). Women with kyphosis also demonstrated greater difficulty in reaching and performing housework as well as scored lower on activities of daily living scale compared to individuals without kyphosis (Roghani, Zavien, Manshadi, King & Katzmann, 2016). When using the 1.7-cm block method to determine kyphosis, it was determined that those with 2 or more blocks had increased odds of reporting deficits in bending, walking, and/or climbing (Kado, Huang, Barrett-Connor & Greendale, 2005).

Briggs et al. (2013) demonstrated an increased curvature in the thoracic spine is correlated to increased spinal loads due to gravity and muscle force (Briggs et al., 2007). Kyphosis can also decrease arm mobility as well as change muscle recruitment in the neck and shoulder region (Malmstrōm, Olsson, Baldetorp & Fransson, 2015). In a study conducted by Malmström, Olsson, Baldetorp & Fransson (2015) demonstrated kyphosis resulted in a decrease in maximum arm elevation and decreasing arm movement velocity during upward and downward movement as well as an increase in muscle work during movement.

Kyphosis tends to decrease balance in individuals as it contributes to postural changes and the center of gravity being altered (Roghani, Zavien, Manshadi, King & Katzmann, 2016). Older adults with kyphosis have increased risks of falls and are more likely to fall within the next year than those without kyphosis (Roghani, Zavien, Manshadi, King & Katzmann, 2016). While balance and kyphosis have not been correlated in many studies, one explanation of a lack of balance in kyphosis patients is the weakness of spinal extensor muscles (Roghani, Zavien, Manshadi, King & Katzmann, 2016). McDaniels- Davidson et al. (2017), reported that individuals with increased kyphosis were more likely to report an incident fall, especially when measured using the block method however, all four methods incorporated in the study including the use of a flexicurve ruler, Debrunner kyphometer, Cobb method and block method were able to predict the odds of a fall equally (McDaniels-Davidson et al., 2017).

While kyphosis can contribute to all of the adverse health effects discussed previously, it also can be a risk factor for mortality (Roghani, Zavien, Manshadi, King & Katzmann, 2016). Studies have demonstrated a correlation between kyphosis and pulmonary death. It is postulated kyphosis decreases pulmonary function and puts the individual at greater risk of developing pulmonary disorders including pneumonia and chronic obstructive pulmonary disease (Roghani, Zavien, Manshadi, King & Katzmann, 2016). In an article written by Kado, Huang, Karlamangla, Barrett- Connor and Greendale (2004), it is determined using the block method that the risks of death increases by 44% with the use of one 1.7-cm block of kyphosis (Kado, Huang, Karlamangla, Barrett-Connor & Greendale, 2004). Kyphosis also increases the risks of dying of atherosclerosis by 2.4 times as well (Kado, Huang, Karlamangla, Barrett-Connor & Greendale, 2004).

ECONOMIC IMPACTS OF KYPHOSIS AND FALLS

According to the United States Census Bureau of 2014 there are 62,917,000 people over the age of 60 (United States Census Bureau, 2014, Table 1), of those individuals 20 to 40% have kyphotic posture (Roghani, Zavien, Manshadi, King & Katzmann, 2016). Thus, approximately 12,583,400 to 25,166,800 people may be affected by kyphosis. As discussed previously, kyphosis has several adverse health effects and contributes to decreased balance due to the postural changes and an alteration in the center of gravity (Roghani, Zavien, Manshadi, King & Katzmann, 2016).

Annually there are several falls in the United States, with increased risks in older adults. Statistics provided by the Centers of Disease Control and Prevention determined that one in four Americans over the age of 65 falls every year (National Council on Aging, 2017). Every 11 seconds an older adult seeks medical attention in the emergency room for a fall and every 19 seconds an older adult dies from a fall (National Council on Aging, 2017). Annually, 2.8 million fall injuries are treated in the emergency departments, with over 800,000 of them leading to hospitalizations and more than 27,000 resulting in death (National Council of Aging, 2017). According to Heinrich, Rapp, Rissman, Becker and König (2009) the national fall costs for the United States in 2009 was between 0.85% and 1.5% of total health care expenditures and between 0.07% and 0.2% of the GDP, ranging from 113 to 547 dollars per individual. The average costs of hospitalization per fall ranged from 2,044 to 25,955 dollars (Heinrich, Rapp, Rissman, Becker & König, 2009). In 2014, the total cost of fall injuries amounted to $31 billion and is projected to increase to $67 billion by 2020 (National Council of Aging, 2017). With the economic impact of falls being so enormous, it is imperative to identify methods to reduce falls in individuals with kyphotic posture.

ASSISTIVE GAIT DEVICES

Since kyphosis is most prominent within the elderly population, many people who experience kyphosis rely on some sort of assistive walking device to provide stability and ease of mobility. In the United States alone, 6.5 million people rely on a device such as a cane, crutches, or a walker to assist them while walking (National Institutes of Health, 2017). Kyphosis has been shown to have a negative impact on the quality of one's gait (Sangtarash,

Manshadi, & Sadeghi, 2015). However, one assistive device may have the ability to decrease the effects of kyphosis both during gait and while performing activities of daily living.

Traditionally, front-wheeled walkers or four-wheeled walkers are used for adults who require an ambulatory device for issues of stability and safety. In both walker designs, the frame of the walker is positioned anterior to the user. These styles often cause users with forward flexed trunk posture to lean into the device for stability, therefore resulting in a further development of trunk flexion (Bellamy, 2010). A viable alternative to these designs would be the implementation of posterior walkers, where the main structure of the device is positioned behind the user with bars for upper extremity support positioned on either side. Posterior walkers are not a new concept, as they are often used for children with disabilities. The design poses many benefits for children with cerebral palsy, Down syndrome, and other similar developmental disorders by increasing upright posture and stability as well as decreased energy expenditure during ambulation (Logan, Byers-Hinkley, & Ciccone, 1990).

Posterior Walker Advantages

In a study comparing various gait components of children when using an anterior versus a posterior walker, posterior walkers were found to result in significantly decreased degrees of trunk flexion throughout all phases of gait (Logan et al, 1990). Use of a posterior walker also promotes decreased knee and hip flexion, which in turn encourages more vertical trunk posture (Logan et al., 1990). Limited research has been performed to discuss postural changes in adults with use of a posterior walker. However, if the overall changes in body mechanics reflect those seen in children, the posterior walker would promote trunk extension, therefore declining the progression of kyphosis.

As mentioned previously, the incidence of falls within the elderly population not only affects the involved individuals, but also poses a great economic burden (National Council on Aging, 2017). Existing literature suggests that posterior walkers provide more stability than anterior walkers, therefore decreasing the user's risk of having a fall. Children with spastic diplegic cerebral palsy were found to present with a decreased amount of time in a double support phase when ambulating with a posterior walker compared to an anterior walker (Park, Park, & Kim, 2001). This measurement suggests that posterior walkers provide increased stability and improved functional mobility (Logan et al., 1990). While ambulating with an anterior walker, users often lean forward into the walker, which exaggerates forward flexed posture and, in turn, decreases coordination (Bellamy, 2010). The typical front-wheeled walker design also has a very lightweight frame and provides a smaller base of support, resulting in an increased incidence of lateral tipping (Bellamy, 2010). One study that researched walking-related outcomes in the adult population found that use of a posterior walker provided the user with an increased ability to self-correct with a stepping strategy when experiencing a loss of balance (Bellamy, 2010). The posterior frame design, in addition to the increased weight of the frame, would also decrease the chance of the device tipping during ambulation (Bellamy, 2010).

Alike to children with disabilities, adults with kyphotic posture experience quick fatigue due to increased energy expenditure required to perform activities (Lombardi, et al., 2003). Therefore an assistive device that allows for decreased energy expenditure during ambulation would be helpful in improving overall activity tolerance. It is generally agreed upon that when a gait pattern is closer to what is considered "normal," less energy will be expended (Park et al., 2001). Both oxygen consumption per meter and oxygen usage rate per minute were found to be lower during ambulation with a posterior walker compared to an anterior walker (Park et al., 2001). One study determined that most children also experienced a higher energy exertion in terms of heart rate when ambulating with an anterior walker (Konop, 2009). A study performed on children with cerebral palsy also found that the majority of the test subjects rated a lower perceived level of exertion while ambulating with a posterior walker (Mattsson & Andersson, 1997).

As mentioned previously, kyphosis has a negative impact on adult's gait velocity (Kado, Prenovost & Crandall, 2007). In a study performed on children with spastic diplegic cerebral palsy, gait velocity was shown to improve from an average of 16.23 m/min with the use of an anterior walker to 20.37 m/min with the use of a posterior walker (Park et al., 2001). These results are reflected in Logan, Byers-Hinkleyand Ciccone's study with gait velocity improving from 31.4 cm/sec with an anterior walker to 43.9 cm/sec with a posterior walker. Improved gait velocity would allow adults with kyphotic posture to experience improved functional mobility and activity participation.

Posterior Walker Considerations

There are certain limitations when using a posterior walker, including decreased sit to stand time and a lower forward and lateral reaching distance (Burckardt, 2015). Therefore, it is important to consider an individual's specific daily activities and priorities when determining the appropriate device. Due to the more complex design, posterior walkers also cost more than a typical front-wheeled walker. Medicare Part B covers both front-wheeled and rollator walkers; however, they have to be deemed medically necessary and be prescribed by a physician or medical provider (Medicare.gov, 2017). Also, Medicare will not cover a device if it is only necessary for ambulation outside of the home (Jackson, 2016). Therefore, if Medicare deems that only a front-wheeled walker is necessary for in-home ambulation, they may not cover a rollator style walker.

Posterior Walkers for Adults

Approximately 12,583,400 to 25,166,800 in the United States may have kyphosis with risks of adverse health effects including decreased pulmonary function, physical function, quality of life, balance, arm, neck and shoulder mobility as well as increases the risk of falls and mortality. Due to these health effects and diminished balance in older adults, many older individuals rely on assistive devices for ambulation. Posterior walkers are more commonly used with children and have shown positive effects in ambulation, including decreased energy expenditure with lower oxygen consumption per meter and lower oxygen usage rate per minute, improved gait velocity and an overall improved activity participation. Posterior walkers have also demonstrated the ability to improve vertical trunk posture as well as provide more stability than an anterior walker commonly used with adults. Therefore, it is plausible that individuals with kyphosis could use a posterior walker in the adult population to improve kyphotic posture and assist with decreasing all adverse health effects as well as improve the economic burden of falls by reducing the amount of falls that occur.

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TRACK
POST-ACUTE CARE/LONG TERM CARE

A COMPARATIVE REVIEW OF ELDER SERVICES IN RURAL AND URBAN SETTING: CHALLENGES AND STRATEGIES

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ABSTRACT

This presentation is a comparative review of elder services within rural and urban settings that specifically focuses on the challenges faced within each setting and strategies implemented to overcome the challenges. The presentation addresses different health services offered to elders and trends involving these services within the United States. Challenges and strategies for elder healthcare services are determined, discussed, and compared for both urban and rural settings. The most effective strategies are identified for rural and urban settings based on the review.

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ANIMAL ENGAGEMENT IN LTC: THE BENEFITS

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ABSTRACT

Long term care (LTC) provides a variety of services which help meet both the medical and non-medical needs of people with chronic illnesses or disabilities who cannot care for themselves any longer. Many of these people suffer from cognitive implications that influence how they think, feel, and act around others. Most LTC facilities do not provide more than the basic ADLs (activities of daily living), such as bathing, dressing and eating. In recent years, there have been studies regarding the benefits of using animal interaction in Alzheimer's/Dementia care settings. Studies have shown that the use of pets in these settings can reduce loneliness and decrease depression.

Our research has produced a qualitative study using peer reviewed journals and scholarly articles pertaining to current pet policies in LTC facilities. We focused on the Tri-State geographical area, which includes Connecticut, New York, and New Jersey. Our search was limited to sources published within the last ten years due to the new changes in long term care and the emerging information regarding the effects animals have on nursing home residents suffering from Alzheimer's and Dementia. We focused on the importance of animals in long term care settings, along with how it pertains to benefiting residents suffering from cognitive disabilities. We also wanted to look at the difference in attitudes toward animal engagement between assisted living and skilled nursing facilities.

The information we presented throughout this research study included but was not limited to patient and expert opinions, policies and procedures, and details on how LTC facilities started the shift towards animal engagement. It was found that majority of facilities in the Tri-State used animal engagement in their facilities. The types of engagement they had varied. Some used pet therapy, where certified therapy cats and dogs came monthly to the facility to visit with residents. Some assisted living facilities had a "community pet", where the cat or dog physically lived at the facility with residents. If a facility did not incorporate either of these practices, they had a policy where outside pets could visit the facility if the pet was owned by the resident or a family member.

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HUMAN RESOURCE MANAGEMENT IN HEALTH CARE: A CASE OF TURNOVER IN LONG TERM CARE

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HUMAN RESOURCE MANAGEMENT IN HEALTH CARE: A CASE OF TURNOVER IN LONG TERM CARE

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ABSTRACT

The management of human resources in long term health care is challenging. Whether it is home care, skilled nursing care, hospice care, rehabilitation, case management, medical supply, or pharmacy, the work force consists of skilled, licensed professionals. In a case study of a vertically integrated long term care organization operating in several states, the turnover rates for various positions and types of organization were calculated and analyzed. The results point to acuity level, type of long term care provider, and the possibility of low pay as factors for turnover rates from an acceptable level to extremely high and unacceptable levels.

INTRODUCTION

One of the most perplexing human resource management problems among health care organizations is employee turnover. This is costly and is a problem that impacts the quality of care. In the long term care arena, turnover is an even more exacerbating problem. The proportion of entry level employees to professional health care providers is larger than in other areas of health care. While it might be assumed that replacement costs for entry level health care employees is lower than those for professional level employees, the volume of entry level turnover makes employee turnover expense even larger than for professional health care employees.

In a case study of a vertically integrated long term care organization operating in several states, the turnover rates for various positions and types of organization for a calendar year were calculated and analyzed. The data was collected from a single long term care organization operating in multiple states and employing approximately 10,000 employees. The vertically integrated health care companies include home health care, hospice, rehabilitation, skilled nursing, medical supply, pharmacy, and the corporate entity. In this case, the data were collected during a consulting engagement.

In analyzing the employee turnover results, specific attention was applied to the type of long term care organization and the specific position of long term care employees. Many potential causes were considered, but no specific analysis was conducted that would identify the causes of turnover. Instead, the traditional causes for employee turnover were included in the discussion of the results found. The results point to the possibility that acuity level, type of long term care provider, and the level of the position and its accompanying low pay as distinguishing factors for turnover rates from an acceptable level to extremely high and unacceptable levels.

The typical conclusions about the contribution of supervisory style in turnover were not able to be identified with the data that was available. Future case analysis will require data that allows the association of supervisors with the turnover of their employees, and more in-depth information regarding the management style of those supervisors.

REVIEW OF THE LITERATURE

It is no secret that the high rate of turnover has plagued the healthcare industry over the last decade. Unfortunately, researchers across the country are stating that because of the increasing demand in healthcare due to our aging population, the turnover rate for healthcare workers is going to increase. The aging of the baby boom generation could fuel a 75 percent increase in the number of Americans ages 65 and older requiring nursing home care, to about 2.3 million in 2030 from 1.3 million in 2010 (Manthers, 2016). To match the aging population, the turnover rate for our long term care workers has to decrease. Despite variation in how turnover is calculated, there is ample evidence that turnover rates for clinical care staff in nursing homes range between 55% and 75% (Tilden,

Thompson, Gajewski, & Bott, 2012). This number represents all of the clinical staff that is represented in long term care.

Certified nursing assistants (CNAs), the largest segment of the workforce and the group delivering the largest percent of direct care, turn over at the highest rate, often approaching 100% (Tilden, Thompson, Gajewski, & Bott, 2012). A study conducted in South Carolina by Fitzpatrick concluded that 12 diverse long term care facilities demonstrated an average turnover rate of 65 percent, with a range between 53 and 82 percent (Fitzpatrick, 2002). These statistics are concerning as they allude to a potential shortage of employees in the LTC sector although it is not clear whether or not health care workers change jobs within the long term care sector or leave it entirely (Black, 2015). The Paraprofessional Health Care Institute (2001) estimates CNA turnover costs the industry $2.5 billion per year (Tilden, Thompson, Gajewski, & Bott, 2012). One study on CNA turnover puts this shortage at 200,000 nationwide, however that was done nearly two decades ago (Fitzpatrick, 2002).

In one case study, the Oakland, California-based Medical Hill Rehabilitation Center conservatively estimated CNA replacement costs in 2006 at $1,961 per person (Tilden, Thompson, Gajewski, & Bott, 2012). With an annual CNA turnover rate of 94%, this center estimated its replacement cost for CNAs alone was over $100,000 a year (Tilden, Thompson, Gajewski, & Bott, 2012). Since this small sample study was completed in 2006, we can factor in significant inflation as well as an increase in the nursing population which could frankly take this cost to double or even triple its original amount. Seavey (2004) conducted a meta-analysis of the retention and turnover literature and concluded that a minimum direct cost of turnover per person was $2,500 (Tilden, Thompson, Gajewski, & Bott, 2012).

Interestingly, much research focused on retention of staff in LTC settings has focused on direct care workers, rather than licensed nursing staff (McGilton, Boscart, Brown, & Bowers, 2014). The direct care worker is responsible for providing most of the activities of daily living (ADL), while the licensed nurse delivers treatments and supervises care (McGilton, Boscart, Brown, & Bowers, 2014). The reach of a licensed nurse in the care of all the patients in a facility impacts much more than it appears even though the direct care is typically lacking in comparison with the CAN. Turnover of licensed nursing staff in LTC can negatively affect resident outcomes, organizational productivity, and retention of direct care workers (McGilton, Boscart, Brown, & Bowers, 2014).

With turnover rates in long term care, evaluating the reasons for turnover could result in a valuable conclusion as we attempt to solve the problem. In a study conducted for the licensed nurse, the incentive to stay at the facility was undermined by institutional and organizational factors preventing nurses from performing their roles as they wished (McGilton, Boscart, Brown, & Bowers, 2014). Responses from nurses in this study mimicked the findings of Alderson (2008) that heavy workloads impose time constraints on nurses that preclude the formation of meaningful nurse–resident relationships and the completion of thorough nursing assessments, both essential elements of person-centered care (McGilton, Boscart, Brown, & Bowers, 2014). In other words, licensed nurses were unable to perform their duties without significant bureaucratic factors blocking the creativity that can sometimes be displayed by nursing. In addition, the consistent time crunch that has engulfed nursing has dominated in an industry where nurses are supposed to be allowed time to develop long meaningful relationships with patients. As a result, licensed nurses are unable to foster such bonds with the patients. Insufficient staffing levels have been identified by CNA's and nurses as factors that contribute to turnover within this sector (Black, 2015).

It has also been recognized within the research literature that working in LTC is both physically and psychologically demanding (Black, 2015). The literature indicates that unreasonable expectations and being incapable of providing high quality care have been reasons why CNA's have left LTC homes (Black, 2015). Being unable to provide quality care due to heavy workloads is detrimental for CNA's as it threatens their ability to develop meaningful relationships with residents (Black, 2015). Nurses have similarly expressed the need for sufficient compensation to accurately reflect the demands of their positions (Black, 2015). Reducing staff turnover in nursing homes would benefit both the cost to the U.S. health care system, and, most importantly, the care residents receive in the vulnerable period leading to death (Tilden, Thompson, Gajewski, & Bott, 2012). Proposals for reducing turnover are multipronged, and include standard setting for staff hours per resident day, staff compensation, focused training in leadership and in geriatrics for RN staff, and upfront investments such as residency training for new hires and rewards and bonus programs. (Tilden, Thompson, Gajewski, & Bott, 2012) .

OVERVIEW OF LONG TERM CARE

Long-term care focuses on patients who stay on an average of more than 30 days. During the patient's stay there are various health professionals that work collaboratively to provide care for the patient. Turnover may negatively impact how successfully the roles are able to function. In long-term care facilities, the following skilled professionals provide tiered levels of care. In most of the professions that operate within the long-term care environment, the tiers are well understood to those within the profession. This overview provides general information regarding the primary health care professionals, not all inclusive, that function within the long term care setting. One of the largest is that of Nursing. Nursing areas may include CNA's (Certified Nurse Aide/Nurse Assistants), RN's (Registered Nurses) and LPN's (Licensed Practical Nurses). The nursing director is a role that is operational and would require either an advanced degree or advanced skills within the field of nursing.

CNAs

CNAs are often called the eyes and ears of the environments in which they work because they see the patients often. Educationally, the standard typically required that a CNA be certified in the state in which they work and their names need to appear on the State Nurse Aid Registry. According to the Nursing Assistant Guide, there tends to be a high rate of turnover for CNA positions, which makes it easy to find work. The demand for CNAs is high, especially among establishments that supply continuing treatment and assisted living to elderly patients. A CNA will have many tasks and duties because the work will be with patients that have various levels of health.

Some of the tasks outside of the routine duties of a CNA in a long-term care facility include helping to record patient vital signs and other details and making contact with a nurse or doctor there is a decline in a patient's health or if they are developing a new illness, complication or injury. CNAs may also have the responsibility of some residents that will require assistance to completely bathe, dress, groom and/or feed them so that they can eat safely. These Nursing assistants play an important role in helping patients to avoid the development of bedsores, which is a very big part of maintaining quality care that is expected for all patients. If patients can be mobile on their own, you can help them to get up and moving so that they are not laying in one spot too long. You will help to rotate and move residents in their bed to prevent bedsores if they cannot move on their own. In some cases, the CNA might be helping to deliver medication to patients. This will depend on regulations in your state and the facility for which you work. You might also help to change dressings for patients who need wound care and perform some other basic first aid care.

Nurses: RNs/LPNs

Registered Nurses (RNs) are the largest segment of health professionals, and 48% of them work in general medicine hospital. Most of the others work in doctor's offices, specialized hospitals, nursing homes and home health agencies (5-8%). According to the American Nurses Association, Nurses must all be licensed through their state in order to practice as a nurse. However, there is more than 1 path to have the eligibility to license. Nurses may pursue an Associate degree in nursing (ADN) which is a 2 year degree or a Bachelor of Science in Nursing (BS/BSN) which is a 4 year. Graduate level education enhances the expertise of a licensed nurse with option to complete a Master of Science in Nursing (MSN) PhD (Doctor of Philosophy) and DNP (Doctor of Nursing Practice). Licensed practical nurses (LPNs) and Licensed vocational nurse (LVNs) positions usually require a year or so of specialized training after high school. The number of jobs for RNs is expected to grow 26% between 2010 and 2020. (DuPre', 2016).

In most long-term care facilities, the nurse collaborates with physicians, social workers, dieticians, speech language pathologists, physical therapists, occupational therapists, case managers, pharmacists, respiratory therapists, and other members of the interdisciplinary team. The interdisciplinary team is necessary in long-term care due to the elaborate complexity and extent of patient issues that now manifest in this setting. Long-term care nurses care for patients across the life span with numerous afflictions and diagnoses, although the majority of the patients are elderly. Patients with chronic disease processes such as hypertension, coronary artery disease, hypothyroidism, diabetes mellitus, chronic kidney disease, osteoarthritis, and chronic obstructive pulmonary disease receive care from long-term care nurses. Patients who have been afflicted with progressive illnesses such as Alzheimer's disease, multiple sclerosis, Parkinson's disease, and AIDS wasting complex are also cared for by long-term care nursing staff.

Pharmacists

Pharmacists provide a variety of services within the LTC setting. Pharmacy is another broad are and depending on the type of pharmacy it is will determine how the patients are services. The pharmacy has tiered roles as well, meaning that they pharmacy technicians and pharmacists have varying levels of professional responsibilities.

The Pharmacy Technicians are usually required to Pharmacy Technicians are not required by law to receive additional education beyond high school. However, the standard does require that you register with the state's board to work as a pharmacy technician. These requirements vary by state and select state require technicians to be nationally certified. Typically, the pharmacy technician's role requires a great deal of flexibility. Even if the state doesn't require pharmacy technicians to be certified, some employers by require it. The Pharmacy Technician Certification Board, for example, awards the Certified Pharmacy Technician (CPhT) credential to qualified candidates who pass a national certification exam (*www.ptcb.org*). CPhTs must recertify every two years by earning 20 continuing education credits.

The role of a long term care pharmacist is broad and varied. In long term care environments, the pharmacist's role is described as a dispensing pharmacist or consultant pharmacist. Dispensing Pharmacist provide services that are less clinical and typically operate in-house. Dispensing pharmacists. In the dispensing role, the pharmacists is expected to prepare medications by reviewing and interpreting physician orders, detect therapeutic incompatibilities and possible interactions between drugs, dispense medications by compounding, packaging, and labeling pharmaceuticals, control medications by monitoring drug therapies and advising interventions, completes pharmacy operational requirements, such as: organizing and directing technicians' work flow, verifying technician preparation and labeling of pharmaceuticals, verifying order entries, charges, and inspections, answer questions and requests made by health care professionals. Consultant Pharmacists are integrated into the clinical team and work alongside of the prescribing physician. The Consultant Pharmacist may have responsibilities that take them outside of the actual facility as they may travel within a geographic are in order to service patients and work alongside of the clinical team.

Educationally, the standard for becoming a pharmacist has now changed to a PharmD (Doctor of Pharmacy) degree. There may still be limited numbers of pharmacists who have the BSPharm degree in pharmacy. However, to secure a license to practice pharmacy, the NAPLEX exam, MPJE and in some states compounding medications is required. Pharmacists can attain additional Board Certifications in Specialty areas, which includes Geriatric Pharmacy (https://www.bpsweb.org/bps-specialties/)

Hospice

Hospice is a service that can be provided to patients who have been identified to have less than 6 months remaining to live. Hospice includes services of palliative care for physical, psychological, social and spiritual needs. The services can be provided in an inpatient setting or at home. To be paid, hospice must ensure that appropriate revenue codes are indicated for the LTC facility and that any discharge coding is correct for hospice services.

Home Health

Home health is provided to patients who are confined to the home when services are ordered by a physician. Home Health services are provided by CNA's, LPNs and RN's and the number of hours can be determined by the time spent with each patient. Skilled services can be provided at a patient's home or in an LTAC or at the patient's home. It is based on the level of care that the patient needs. Acute, skilled or long term.

CASE DESCRIPTION

The long term care organization in this case was founded with a single skilled nursing facility and a servicing pharmacy. The founder recognized the advantages of combining a nursing home with a pharmacy since most long term care patients were typically prescribed multiple prescription medications. The organization remains a privately-owned organization which has applied the same economic advantages of vertical integration as it grew. With the addition of additional skilled nursing facilities, long term care organization types expanded to include a rehabilitation company, medical supplies, home health care, and hospice. Case management services were added to coordinate patient care with payment providers. Naturally, additional growth occurred in the pharmacy organization to accommodate geographic spread and state regulations.

With growth in the vertical integration of the organization, corporate support was added. Ultimately, this support required over 200 employees. Innovative leadership of the organization orchestrated a strategic plan that focused on growth through acquisition, modernization of facilities and equipment, and debt liquidation over a planning period of more than ten years. The organization developed a marketing strategic plan and implemented an administrator-in-training program to fill a growing number of long term care administrative positions.

Other innovations included the selection and purchase of an enterprise resource planning system to include financial and human resource systems. This initiative required more than two years to implement and included an impressive expansion of the information technology department. A centralization effort in this long term care organization involved streamlining the administrative functions of the operating units and the enlargement of these functions at the corporate level. Such things as billing, accounts receivable, accounts payable, and human resource management received attention during the centralization process.

Marketing was an emphasis following the ERP and centralization implementations. This involved a re-branding of the organization and the vertically integrated organizational elements. The management interest in marketing received a great deal of attention during which census was emphasized. Case mix was strategically emphasized, with Medicare paid rehabilitation emphasized during budgeting and admissions marketing. With pay-for-performance, these elements received priority value. Financial objectives were emphasized with marketing, case mix, census, billing, and accounts payable management receiving a lot of weight.

The result of these organizational priorities over several years had an unintended effect on human resource management. By placing attention on so many areas, and by including them in a pay-for-performance plan, little time and energy was left for the operating unit leaders to focus on the human resource needs of the operating units. By default, the inability to attend to many human resource basics ultimately led to degrading employee satisfaction and increased turnover.

ANALYSIS

Turnover is calculated by determining the average number of active employees over a twelve-month period and using that to divide into the total terminations for the same period and is presented as a percentage. In this case, turnover was totaled for each type of long term care organization. In this vertically integrated provider organization, turnover ranged from a low of 13.5% for the rehab company to a high of 84.6% for the skilled nursing company. Overall turnover was 74.5%.

Table 1 - Long Term Care Turnover by Company Type

Company Type	Avg Ct	Terms	TO Rate
Skilled Nursing	**6197**	**5243**	**84.6%**
Home Care	**153**	**77**	**50.5%**
Medical Supply	**34**	**17**	**50.0%**
Hospice	**403**	**195**	**48.4%**
Case Mgt.	**55**	**21**	**38.2%**
Corporate	**223**	**85**	**38.2%**
Pharmacy	**204**	**61**	**30.0%**
Rehab	**460**	**62**	**13.5%**
Overall	**7753**	**5774**	**74.5%**

When considering turnover by the major positions in this long term care organization, the results ranged from a low of 4.1% for pharmacist to a high of 103.6% for certified nursing assistant. One factor in this case is that some position titles are used in different long term care company types. For example, LPN is a position in home care, hospice, skilled nursing, and case management. This overlap is considered, but the density of such positions with overlap is obviously greater in certain company types. Therefore, the total turnover for some positions may be

dominant in one company, while some turnover occurred in other companies. A major position like this was that of administrative which occurred in each company type.

Table 2 - Long Term Care Turnover by Major Positions

Position Type	Avg Ct	Terms	TO Rate
CNA	**2653**	**2748**	**103.6%**
Dietary	**671**	**593**	**88.4%**
Delivery Driver	**13**	**10**	**76.9%**
Housekeeping	**559**	**409**	**73.2%**
RN	**491**	**354**	**72.2%**
LPN	**1197**	**828**	**69.2%**
Director of Nursing	**67**	**37**	**55.2%**
Religious Chaplain	**24**	**12**	**51.1%**
Laundry	**218**	**100**	**45.9%**
Maintenance	**115**	**53**	**46.1%**
Social Services	**128**	**58**	**45.0%**
Pharmacy Tech	**116**	**50**	**43.3%**
Administrative	**390**	**159**	**40.8%**
Recreation Activity	**126**	**45**	**35.7%**
Pharmacy Consultant	**22**	**7**	**31.8%**
Medical Records	**68**	**12**	**17.0%**
Speech Therapist	**76**	**12**	**15.8%**
Physical Therapist	**215**	**29**	**13.5%**
Occupational Therapist	**168**	**18**	**10.7%**
Pharmacist	**49**	**2**	**4.1%**

CONCLUSION

In this case, a rapidly growing, vertically integrated, long term care provider, operating in multiple states, was analyzed regarding the turnover rates of its operating companies across a calendar year. The results reveal a dramatic turnover issue which would challenge human resource management in any industry. Some facts were noticed. The higher the acuity, the higher the turnover. However, the larger the proportion of entry level positions, the higher the turnover. All clinical nursing related positions were excessively high. Pharmacists and therapists experienced the lowest turnover rates.

Considering pay levels, the turnover appears to be related to pay. The higher the pay, the lower the turnover, indicating this is an area for further research. In the field of human resource management in health care, turnover has long been felt to be directly related to the supervisory style of those who supervise entry level personnel. This paradox is compelling. Is turnover in long term care a matter of supervision, or is it a matter of pay? While this case analysis did not answer that question, it did provide a unique insight into the turnover issues of a vertically integrated long term care organization.

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THE DEVELOPMENT OF POLYPHARMACY WITH SENIORS IN SOCIAL INSTITUTIONS IN SLOVAKIA

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THE DEVELOPMENT OF POLYPHARMACY WITH SENIORS IN SOCIAL INSTITUTIONS IN SLOVAKIA

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ABSTRACT

Residents in institutions are characterized as ageing, polymorbidity, increased number of cognitive disorders, geriatric syndromes, pharmacotherapy and polypharmacy. We have observed and compared the average number of regularly used drugs and therapeutic groups in selected social care institutions in 2001 and 2010. In 2001, seniors regularly used 5.9 medications on average while in 2010 their average regularly consumption rose to 7.58 medications. We have observed an increase in the number of seniors with polypharmacy taking 5 or more drugs (from 68.2% to 82.9%) and those taking ten or more drugs (from 9.3% to 28.1%).

INTRODUCTION

On 31 Dec 2010, Slovakia had 5 435 273 inhabitants, out of them 1 047 200 were pensioners (19.3%). The 65+ group consisted of 672 724 inhabitants (12.4%). The basic principle and objective of the care for seniors is to keep them in their original family environment. However, there are always people who need institutional care that is provided in the facilities of social care. In 2010, institutional social care in Slovakia was provided in 1060 facilities to 41 329 residents (0.76% of inhabitants of Slovakia) out of them 22 252 pensioners (2.1% of pensioners in Slovakia). In Slovakia, there are several types of social institutions for adults: 306 social care homes for adults with various types of disablement (*eg* mental and behavioural disorders, combination of disablements*)* provide care to 16 030 residents, 236 homes for seniors provide care for 12 659 residents, while 21 specialized facilities are available to 644 residents.

Residents in institutions are characterized by ageing, polymorbidity, worsened functional status in basic and instrumental activities of daily living, increased number of cognitive disorders, geriatric syndromes, pharmacotherapy and polypharmacy.

Elderly pharmacotherapy has its own specifics that result from morphological and functional differences typical of the aging organism. It is characterized by polypragmasy, the prevalence of symptomatic treatment over causality, by a high incidence of undesirable effects of drugs, and by peculiarities of pharmacokinetics and pharmacodynamics. Geriatric pharmacotherapy has some special characteristics. The most important ones are:

- undesirable effects of medicines,
- drug interactions,
- patient collaboration during treatment,
- medicines inappropriate in geriatric practice,
- higher number of drugs used in older age,
- prevention,
- barriers to treatment
- and palliative treatment (*Hegyi and Krajčík, 2015*).

Seniors are experiencing changes in pharmacokinetics and pharmacodynamics. Changes in pharmacokinetic parameters (resorption, distribution, biotransformation, elimination) are due to physiological changes of the organism during aging, pathological changes in the body and external influences. With regard to pharmacodynamic changes, it is known that the old organism responds to some drugs more sensitively (*eg* benzodiazepines, analgesics) and to some drugs or drug combinations less sensitively (*eg* isoprenaline, propranolol) than the younger adult. Due to the large individual differences in aging and in the occurrence of diseases and factors that affect pharmacokinetics and

pharmacodynamics, the differences between responses to the same dose may be 4 to 40-fold in different humans (*Hegyi and Krajčík, 2015*).

Elderly pharmacotherapy is accompanied also by severe problems. They include:

- high economic cost of care and the need to consider the benefits of treatment in terms of prognosis of sick seniors,
- a high degree of polypharmacotherapy and multimorbidity with frequent field complications,
- insufficient diagnostics, treatment of some diseases and often underestimation of some symptoms (pain in seniors, depression, etc.)
- low compliance and adherence of seniors (*Topinková et al., 2012*).

When using multiple medicines, we distinguish polypharmacy (polypharmacotherapy) and polypragmasy. Polypharmacy is indicated use of multiple drugs in one patient, the indication being justifiable and resulting from the present polymorbidity. Polypragmasy is a non-rational combination of multiple drugs in one patient, including self-medication and the use of freely available, over-the-counter medicines. Polymorbidity, inadequate communication between physicians, underestimation of non-pharmacological methods, and the prevalence of symptomatic treatment over causality results in a high incidence of undesirable drug effects characterized by atypical clinical manifestations. As a limit for polypharmacy, most studies state five or more drugs at the same time, and some authors use the term "excessive polypharmacy" for the simultaneous use of ten or more drugs (*Hovstadius and Petersson, 2012*). The authors divide the factors associated with polypharmacy into four groups:

1) Factors of the health care system. This includes extending life expectancy, developing new technologies and new medicines, increasing the use of preventive methods.
2) Patient-dependent factors (age, gender, ethnicity, socio-economic status, patient diagnosis, treatment of individual diseases, patient behaviour).
3) Physician's factors (environment in the consulting room, recommendations for treatment, guidelines, prescription habits, physician's behaviour).
4) Interaction between the patient and the doctor (*Hovstadius and Petersson, 2012*).

Polypharmacy is a two-sided weapon. On the one hand, it is an inevitable consequence and tool for prolonging the life expectancy and resolving polymorbidity in old patients, on the other hand it leads to serious consequences. Polypharmacy in seniors has the following consequences:

- it increases the possibility of using potentially inappropriate medicines for seniors,
- it increases the number of undesirable effects of drugs and drug interactions,
- it increases the number of hospitalizations,
- it leads to increasing financial expenses,
- it prolongs the nursing care for the elderly (*Tamura et al., 2012*).

On the other hand, the larger number of drugs used may not be clearly associated with an increased number of falls, fractures or increased mortality. Polypharmacy also leads to an increased risk of geriatric syndromes – falls, cognitive disorders, urinary incontinence and nutrition degradation (*Shah and Hajjar, 2012*).

The problem is the dilemma between adhering to the recommended guidelines for treatment and polypharmacy in seniors. Apart from individualizing patient care with its priorities and preferences, one of the ways how to address the issue is the use of "low-dose modes", thus administration of lower-than-recommended daily doses than for a common adult population (*Ruberu and Fitzgerald, 2012*).

METHODS

Comparison of the development of pharmacotherapy and polypharmacy regarding seniors in selected social care institutions (institution for seniors, formerly known as pensioner´s homes) in 2001 and 2010. We have observed and compared the average number of regularly used drugs and therapeutic groups.

In 2001, we observed pharmacotherapy in a large group of 1758 seniors in various types of establishments of social care in the region of Trnava. From this group we chose one establishment and compared the pharmacotherapy

provided in 2001 with the therapy in the same institution at the end of 2011. In 2001, the given pensioners' home was inhabited by 151 residents whose mean age was 75.1 yrs. This included 104 females with mean age of 74.7 yrs and 47 males with mean age of 76.1 yrs.

In 2010, the given institution for seniors was inhabited by 146 residents with mean age 77.5 yrs. This included 101 females with mean age of 78.23 yrs and 45 males with mean age of 75.9 yrs. We observed and compared the overall number of regularly used medications, polypharmacy (simultaneous use of 5 or more medications) and excessive polypharmacy (simultaneous use of 10 or more drugs).

RESULTS

In 2001, seniors regularly used 5.9 medications on average while in 2010 their average regularly consumption rose to 7.58 medications. The increase in the number of medications was statistically significant. The increase in the number of regularly used drugs was observed in both genders and in the age groups of "older" and "very old" seniors.

In relation to our study, we ascertained polypharmacy with a statistically significant increase in the number of seniors from 68.2% to 82.9%, and excessive polypharmacy with an increase from 9.3% to 28.1%.

Characteristics	**2001 (*n*=151)**	**2010 (*n*=146)**	*p*
Average number of drugs per one resident	5.90	7.58	< 0.0001
Average number of drugs – males	5.45	6.42	0.12
Average number of drugs – females	6.11	8.09	< 0.0001
Average number of drugs up to 74 years of age	5.47	6.50	0.098
Average number of drugs above 75 years of age	6.29	8.05	< 0.0001
Administration of 5 or more drugs	103 (68.2 %)	121 (82.9 %)	$\chi^2 = 8.61$ $p = 0.003$
Administration of 10 or more drugs	14 (9.3 %)	41 (28.1 %)	$\chi^2 = 17.40$ $p < 0.0001$
No drugs administered	4 (2.6 %)	5 (3.4 %)	$\chi^2 = 0.152$ $p = 0.696$
Range of the number of drugs	0 to 14	0 to 16	

Table – Polypharmacy and its development between 2001 and 2010

DISCUSSION

According to our results, over the course of nine years, the number of regularly used medicinal products has increased significantly by one resident from 5.90 to 7.58 medications. Similarly, there was an increase in regular medication in men (from 5.45 to 6.42), in women (from 6.11 to 8.09 drugs), in age groups up to 74 years and above 75 years. It is also important to note that there has been an increase in the number of seniors with polypharmacy,

taking 5 or more drugs (from 68.2% to 82.9%) and those taking ten or more drugs (from 9.3% to 28.1%). The number of seniors who did not use any drugs remained unchanged.

Recent works confirm frequent polypharmacy in seniors. In a population of 13 507 nursing homes in the US, the mean number of drugs used was 8 and polypharmacy (9 or more drugs taken at the same time) was found in 39.7% of the seniors. The authors observed an increase in the prevalence compared to 1996 by 25% (*Dwyer et al., 2009*). In a study from the area of Prague and the Central Bohemian Region, 58.7% of the population used six or more drugs and 21.4% of seniors used eleven or more drugs (*Kalafutová et al., 2014*). Wawruch et al. reported the use of more than 6 drugs in 62.3% of hospitalized patients on release from the hospital (*Wawruch et al., 2009*).

Addressing the issue of improving prescribing and reducing polypharmacy is complex. The review by Loganathana et al. highlights the interactive interventions consisting in educating doctors through a direct interview between a group of experts and prescribers; nursing education and family education. Interventions include regular computerised Clinical Decision Support System, CDSS (*Loganathan et al., 2011*). Regular weekly control of patient treatment by a geriatric, clinical pharmacist and nurse team led to a reduction in the total number of drugs and prescription of psychotropic drugs.

Our doctors are repeatedly criticized for prescribing a large amount of medication to older people. The results of our work show that drug use is comparable to other advanced countries (*Van Dijk et al., 2000; Furniss et al., 2000; Roberts et al., 1988*). We can confirm the authors' conclusions (*Topinková et al., 2012*) that the prescription of drugs in our country does not differ significantly from abroad.

CONCLUSION

Pharmacotherapy of the elderly in the establishments of social care belongs to the most important and topical issues of the health care for seniors. Throughout a period of nine years we observed an increase in the number of regularly used medications and stated polypharmacy in case of the elderly residing in the social care facilities. It is questionable if polypharmacy is caused by ageing of the residents, geriatrisation of medicine, worse health condition, improvements in diagnostics or by inappropriate medication.

Senior prescribing and administering of medication is one of the most common medical activities for doctors and nurses. The objective of treatment should be individualized, rational, safe and effective prescription, implemented as far as possible with the least number of drugs and at the lowest cost. Senior pharmacotherapy also has a social and ethical dimension. Efforts by regulators to save money should not lead to a decline in the quality of pharmacological treatment and, ultimately, in the quality of life of old people.

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TRACK
HEALTHCARE PROFESSIONALS

DRUG DIVERSION

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ABSTRACT

Drug diversion among nurses is a growing issue with a strong correlation between medical errors and patients' lives. The author conducted an interview with three employees in a hospital; they were a Pharmacist, a nurse administrator, and two Human Resources (HR) employees. As a result of the literature review and interview, the author recommended strategies to overcome the drug diversion among nurses. These strategies included having mandatory drug tests, having an educational program for all nurses including nursing administrators, having a new additional task for nurses in each unit, having an additional mediational form for a charge nurse to fill out, and having a form that examines the patients' level of satisfaction with the given pain medication. This paper would be a useful resource for nursing administrators in how to recognize the signs and symptoms of nurses' drug diversion and addiction.

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GENERAL SUPERVISION OF LICENSED DENTAL HYGIENISTS IN THE STATE OF GEORGIA: NEW PARADIGMS OF CARE

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GENERAL SUPERVISION OF LICENSED DENTAL HYGIENISTS IN THE STATE OF GEORGIA: NEW PARADIGMS OF CARE

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ABSTRACT

The lack of access to dental care exists in many states across the country. Georgia is among this group and needed to address this problem. The recognition that lack of access promotes poor oral health, and that poor oral health will lead to systemic health issues, adds emphasis to the need to solve the problem. With a change in the supervision model Georgia is joining the states that will use expanded practice dental hygienists. This paper outlines the changes in the supervision law and then describes how the changes can provide for new practice models that will potentially improve access and reduce dental healthcare costs.

INTRODUCTION

Lack of access to adequate dental care among various populations has been well documented and discussed (Fitzpatrick & Duley, 2012; Guay, 2004). Unfortunately, in the State of Georgia, as in other localities, the problem is still very much existent (Cao, Gentili, Griffin, Griffin, Harati, Johnson, Serban, & Tomar, 2017). The lack of access issue has major implications that extend beyond oral health. Research has clearly demonstrated that the lack of oral health can infuse the entire body with systemic markers of inflammation (Montebugnoli, Servidio, Miaton, Prati, Tricoli, & Melloni, 2004). These markers have been implicated in a number of health conditions. Perhaps the most significant and serious of these is cardiovascular disease (Meurman, Sanz, & Janket, 2004). Other sequelae include hypertension, diabetes, arthritis, osteoporosis, and stroke (Tavares, Lindefield Calabi, & San Martin, 2014). In a time when most governmental entities are desperately seeking to reduce their health care expenditures any contribution to overall health should be welcomed. By improving oral health we can have a dramatic impact on reducing some of the most costly systemic conditions.

The expansion of the role of the dental hygienist and how this role could lead directly to reduced health care costs has been discussed (Fitzpatrick & Duley, 2012). And now the possibility of that expansion is attainable in the State of Georgia. Beginning January 1, 2018 dental hygienists, who have practiced at least two years in Georgia, will be moved to general supervision by dentists. What in effect this means is that a licensed dentist has authorized the scope of practice duties of a licensed dental hygienist, but does not have to be present when these duties are carried out.

The changes to the scope of practice for dental hygienists will have major implications for the people of Georgia. Access to dental care will be expanded as we set up paradigms for private dental offices and care in safety net settings which include: public health facilities operated by federal, state, county or local governments, schools, long-term care facilities, free clinics, and others.

We recognize that adding the afore mentioned to the scope of practice of Georgia's licensed dental hygienists will have many salutary benefits. It is, however, in our opinions only a first step. When you recognize that across the United States over one third of households reported missing necessary dental care because of cost, it becomes obvious that it is necessary to provide less expensive alternatives (Phillips, Gwozdek, & Shaefer, 2015). Bringing dental hygienists up to the designation of midlevel dental practitioners is in our opinion a necessary step to reduce these costs. Midlevel practitioners have been shown to be able to perform 48 to 66 percent of necessary services at lower costs (Phillips et al., 2015). By adopting the midlevel practitioner model the State of Georgia could increase access, reduce costs, and increase employment for dental hygienists.

Scope of Practice: New Paradigms

Georgia now joins 39 other states (See Figure 1.) that allow patients direct access to dental hygiene care. Georgia licensed dentists have the option of authorizing the Georgia licensed dental hygienists they employ and supervise to perform specific dental hygiene duties under general supervision, as long as certain requirements are met. The hygienist must have practiced at least two years.

The Georgia Board of Dentistry Rules and Regulations established a new definition of "general supervision", which is:

"General supervision means that a license dentist has authorized the delegable duties of a license dental hygienist but does not require that a licensed dentist be present when such duties are performed."

Settings Where General Supervision is Permitted

In addition to the current setting in which direct supervision does not apply (e.g., At CODA approved educational training institutions of dental hygiene students; public health; and in the department of corrections), Georgia licensed dentists will be able to authorize up to four (4) Georgia licensed dental hygienists to perform a limited number of hygiene functions under general supervision in (I) Private dental offices; and (II) Safety net settings.

Private Dental Offices

In private dental offices, Georgia licensed dental hygienists may only perform the following functions under general supervision:

a) Application of sealants;
b) Oral prophylaxis and assessment;
c) Fluoride treatment;
d) Oral hygiene instruction and education; and
e) Exposure and processing of radiographs if provided for by specific standing orders of the authorizing licensed dentist, including any protocols regarding urgent dental issues that arise.

However, before a Georgia licensed, supervising dentist may authorize general supervision in his/her office, the following requirements must be met:

a) A new patient of record must be clinically examined by the authorizing dentist during the initial visit;
b) A patient must be examined by the authorizing licensed dentist at a minimum of 12 months intervals; and
c) A patient must be notified in advance of the appointment that she/he will be treated by the licensed dental hygienist under general supervision without the authorizing licensed dentist being present or being examined by the authorizing licensed dentist.

Impact of Change to General Supervision in Private Dental Offices

- Access to Direct Care- Under general supervision, the opportunities to better accommodate the needs of the patients will increase. Hygienists will be able to better schedule patients to accommodate requested appointment times needed for working patients and others requiring special appointment time considerations. Dental hygiene schedules may begin earlier in the day, continue later in the day and also provide care on the weekends for the dental practice patients of record. The dentist may have a separate schedule addressing restorative dental care needs of the patient but hygiene care will no longer be driven by the dentist's schedule. This new flexibility has been shown to increase access to preventative dental hygiene care in private dental practices (National Governors Association Report). Dentists employing dental hygienists will be able to schedule time away from the office without sacrificing income related to dental hygiene practice production. In the past, the dentist was required to be in the office for the hygienist to treat a patient.
- Reduced Costs to Patients- As dental practice changes to accommodate the general supervision rule, increased production may allow some services to be offered at a reduced fee. A dentist employing up to four hygienists and generating increased income may be positioned to offer hygiene service at a lower fee.

Advertising expanded office hours and lower fees may increase patient flow and result in both the practice and the dental hygiene patients receiving benefits from this new general supervision model.

- Increased Employment for Dental Hygienists- The number of dental hygienists employed by a dentist in a practice is driven by the availability of dental operatories for dental hygiene patient care. The new flexibility with general supervision will allow each dentist to employ up to four hygienists at one time. The impact of practices seeking to employ more dental hygienists to practice under general supervision is anticipated and will be well received by current licensed dental hygienists. The overall increase in patient care should be recognized, and increased revenue well documented by practices participating in this new paradigm.

Safety Net Settings

The new Georgia law does not expressly define or use the term "safety net settings", however a Georgia licensed dentist may authorize up to four (4) Georgia licensed dental hygienists to function under general supervision in safety net settings, which are:

a) Title I schools;
b) Schools in which at least 65% of the students are eligible for free or reduced lunches;
c) Head Start programs;
d) Georgia's Pre-K Program;
e) Hospitals;
f) Nursing homes;
g) Long-term care facilities;
h) Rural health clinics;
i) FQHCs;
j) Health facilities operated by federal, state, county, or local governments;
k) Hospices;
l) Family violence shelters; and
m) Free health clinics.

Unlike in private dental offices, Georgia licensed dentists, may only authorize their employed dental hygienists to perform the following functions under general supervision in safety net settings:

a) Apply topical fluoride;
b) Perform the application of sealants; and
c) Oral prophylaxis.

Georgia licensed dental hygienists performing these functions under general supervision in safety net settings must provide a written notice to the patient containing the following information:

a) Name and license number of the Georgia licensed dental hygienist and authorizing, Georgia licensed dentist;
b) Any dental hygiene issues that the Georgia licensed dental hygienist identified. If the patient is ineligible to receive hygiene services due to dental pain or clearly visible evidence of widespread dental disease, such written notice must contain a statement that the patient cannot receive hygiene services under general supervision until she/he receives a clinical examination by a Georgia licensed dentist and said dentist provides written authorization allowing for hygiene services to be performed under general supervision; and
c) A statement advising each patient to seek a more thorough clinical examination by a Georgia licensed dentist within ninety (90) days, unless the authorizing, Georgia licensed dentist performed an initial clinical exam.

Another difference between the requirements for authorizing general supervision in private dental offices versus safety net settings is that a prior exam by the supervising, Georgia licensed dentist is not required in safety net settings. To offset this concern, there are several patient safety protection measures incorporated into the new law:

a) Dental hygiene services shall not be performed on a patient that has dental pain or clearly visible evidence of widespread dental disease. Such patient shall be immediately referred to the authorizing, Georgia licensed dentist for a clinical examination and treatment. The hygienist shall notate the patient's file, and the patient shall not be eligible to receive dental hygiene services under general supervision until a Georgia licensed dentist provides written authorization that such services may be performed on the patient;

b) The authorizing, Georgia licensed dentist shall practice dentistry and treat patients in a physical and operational dental office located in Georgia within fifty (50) miles of the setting in which Georgia licensed dental hygienists are performing hygiene services under general supervision; and
c) Dental hygiene services provided by Georgia licensed dental hygienists in mobile dental vans shall always be provided under direct supervision.

Impact of Change to General Supervisions Working in Safety Net Settings.

- Access to Direct Care- For the first time in Georgia, patients may be treated by a dental hygienist without a prior oral exam by the supervising, Georgia licensed dentist employer while working in a safety net setting. People may now receive an oral prophylaxis, an application of topical fluoride and the application of sealants. This type of direct care will work to increase the number of evaluations of the oral health status of many patients who have needs that have previously gone undetected. As the hygienist will be employed by a Georgia licensed dentist, the impact on the need for restorative patient care in the dentist's private dental office may be overwhelming. One major outcome for the state may be a shortage of dentists and the need to educate more dentists in Georgia by adding a second school of dentistry.
- Reduced Costs to Patients- Eliminating an oral exam previously required by a Georgia licensed dentist before a hygienist could treat the patient will automatically reduce the treatment cost to the patient. Hygienists routinely complete an oral health assessment examination on all patients as part of the dental hygiene diagnosis. In the past, the dentist would examine the patient after the procedures were completed by the hygienist, but patients paid for the dental examination.
- Increased Employment for Dental Hygienists- The services that are most effective in preventing serious dental disease are tasks that fall within hygienists' normal scope of practice. (National Governors Report) The Bureau of Labor Statistics (BLS) reports that approximately 20% more hygienists are employed in the United States than dentists. (Ref). With the opportunity for Georgia licensed dentists to employ up to four hygienists in their dental practice or in safety net settings, an automatic increase of employment opportunities for dental hygienists in Georgia will be realized.

Minimum Requirements for Georgia Licensed Dental Hygienists Working under General Supervision

To further ensure the safety of the patients in this state, the new law imposes additional requirements on Georgia licensed dental hygienists working under general supervision in both private dental offices and safety net settings:

a) In both private dental office and safety net settings, any licensed dental hygienist working under general supervision must have at least two years of experience in the practice of dental hygiene; shall be in compliance with CE and CPR requirements; and shall be licensed and in good standing with the Georgia Board of Dentistry; and
b) All Georgia licensed dental hygienists practicing under general supervision shall maintain professional liability insurance in accordance with board (of dentistry) rules and regulations.

CONCLUSION

Lack of access to adequate oral health care services is an ongoing problem in the United States, and complex barriers to accessing those services exist for many populations. Even with an expanded scope of practice and less supervision, some of the barriers to access for underserved populations will be the same, regardless of whether services are provided by a dentist or a dental hygienist. Those barriers include low health literacy, low reimbursement rates for the publicly insured and high administrative burdens for reimbursement from public payers. (National Governors Report)

Innovative state programs are showing that increased use of dental hygienists can promote access to oral health care, particularly for underserved populations, including children. Such access can reduce the incidence of serious tooth decay and other dental disease in vulnerable populations, which suffer disproportionally from untreated dental problems. There is evidence indicating that these practices can be both safe and effective.

As demand for oral health services rises- in part due to changing demographics and expanded access to dental insurance- states can consider doing more to allow dental hygienists to fulfill these needs by freeing them to practice to the full extent of their education and training. While the changes in the supervision regulations in Georgia are encouraging, they are only a first step. We would recommend the removal of the requirement that when dental hygiene services are provided in a mobile van direct supervision is required. This removal would allow greater access to services in safety net settings that are more rural and underserved. Expanding the scope of practice for dental hygienists has been proven to improve oral health outcomes (Langelier, Continelli, Moore, Baker, & Surdu, 2016). Expansion has frequently taken on the Advanced Practice Dental Hygienist model. An appropriate example would be the one used by Kansas (See Table 1.) By requiring the additional education needed beyond the bachelor's level, the State of Georgia could and should institute this model. It has been proven to be successful in Kansas (Myers, Gadbury-Amyot, VanNess, & Mitchell, 2014) and would also in our opinions be so in Georgia.

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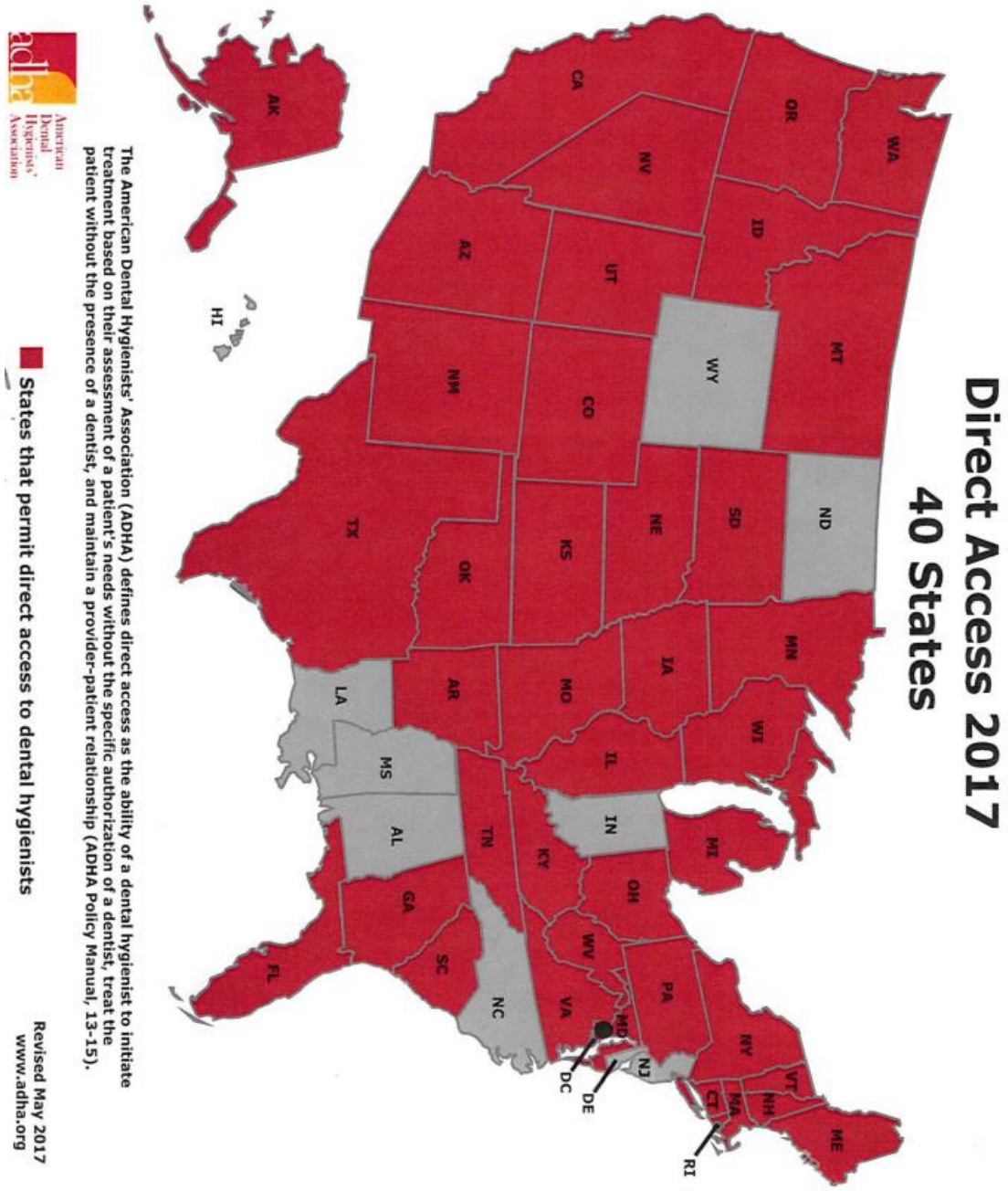
Table I: Kansas Extended Care Permit I and II Regulations

	ECP I	ECP II	ECPIII
Population Served	• Low income children • Adults in prison • Federally qualified health centers • Local health department	• Same as ECP I • Persons over age 65 • Special health care needs population	• Same as ECP I and ECP II
Requirements	• At least 1200 clinical hours, or Dental hygiene instruction of at least 2 years in the previous 3 years • Maintain CPR certification • Dentist sponsorship with signed agreement • Maintain professional liability insurance	• At least 1800 clinical hours, or Dental hygiene instruction of at least 2 years in the previous 3 years • Six additional training hours, specific for care of special needs patients • Complete minimum of 6 hours continuing education in area of special needs care every 2 years • Dentist sponsorship with signed agreement • Maintain professional liability insurance	• At least 2000 clinical hours, or Dental hygiene instruction of at least 3 years in the previous 4 years • Completion of 18 hour KS Dental Board approved course • Maintain CPR certification • Dentist sponsorship with signed agreement • Maintain professional liability insurance
Scope of Practice	• Prophylaxis, fluoride application, patient education and assessments	• Same as ECP I • Removal of overhang restorations and periodontal dressings, administer local block and infiltration anesthesia and nitrous oxide (under general supervision)	• Same as ECP I and ECP II • Identify decay, remove with hand instrument and place temporary filling, glass ionomer or other palliative material • Denture adjustments, soft relines • Smooth sharp teeth with slow speed handpiece Simple extractions of deciduous teeth Application of topical, local and block anesthetic
Location of Practice	• Schools, health departments, correctional facilities • Head Start programs	• Same as ECP I • Adult care homes, hospital long-term units, state institutions, homebound patients	• Same as ECP I and ECP II

Source: Kansas Dental Board

Figure 1.



HEALTH CARE FOUNDATIONS: ASSISTANCE FOR THE PROVIDER & HELP FOR THE PATIENT

Rita DiLeo, The University of Scranton
Anthony DiLeo

ABSTRACT

There are well-known organizations such as Susan G. Komen or Robert Wood Johnson Foundations, however, many are not as familiar to the public or at times, providers. This presentation informs the audience on the importance of less common foundations dedicated to specific diseases and chronic conditions that have a far-reaching impact on the delivery of healthcare. The resources available on the Foundations websites or by request offer the potential to improve patient outcomes and quality of care while educating the patient.

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HOW WELL DO WE TRUST OUR GENERAL PRACTICE PROVIDER?

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ABSTRACT

Physician-patient communication associates with all areas of health care; such as treatment adherence, patient outcomes, and providing quality health care. Communicating with a physician is desired by a patient as they navigate the health care system. Incorporated into this communication is the need for the patient to have trust in physician's provision of care for the patient. This study seeks to examine the trust between various age groups and their general practice physician (GP). Individuals (n=247) completed a survey assessing trust within their GP. Responses were analyzed using gender, age, length of time with the same physician. patient having health insurance, patient having to change to another GP due to health insurance changes, and the number of annual visits the patient makes to the GP.

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MEDICAL SCRIBES: A POTENTIAL SHORT-TERM SOLUTION TO PHYSICIANS' FRUSTRATIONS WITH ELECTRONIC MEDICAL RECORDS

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MEDICAL SCRIBES: A POTENTIAL SHORT-TERM SOLUTION TO PHYSICIANS' FRUSTRATIONS WITH ELECTRONIC MEDICAL RECORDS

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ABSTRACT

Despite their widespread use, electronic health records have created difficulties for physicians, especially those working in busy emergency departments. After a brief discussion of the causes of the problems, a potential solution – the use of medical scribes – is presented. The extant literature regarding results obtained following the implementation of medical scribes in emergency departments is reviewed and some conclusions regarding the future of this phenomenon are presented.

INTRODUCTION

The Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 was enacted to stimulate the adoption of electronic health records (EHRs) and supporting health information technology in the United States (Halamka and Tripathi, 2017). The Act was successful: the adoption of EHRs in Emergency Departments in the U.S. rose from 46% in 2006 to 84% in 2011, a statistically significant trend. (Jamoom and Hing, 2015). In 2015, the American Hospital Association reported that 96% of non-federal acute care hospitals had a Certified EHR (Henry et al., 2016). Clearly, EHRs have become an increasingly important component of the ED toolbox.

Although it has been suggested for some time (IOM, 2003, 2012) that EHR use should help to improve health care quality, safety, outcomes, and productivity, many physicians are unhappy with the current state of the technology (Bank, 2014; Friedberg et al., 2013; Grant, 2004; Hafner, 2014; Shultz and Holmstrom, 2015): EHRs can be difficult to use, time consuming, and inefficient (Boonstra and Broekhuis, 2010; Menachemi and Collum, 2011; Washington et al., 2017). These concerns are magnified for medical providers without assistance to help manage the flow of information (Friedberg et al., 2013). Difficulty associated with the usability of EHRs remains an important source of professional dissatisfaction: specifically, concerns have been raised about the amount of computer time spent documenting care (Bukata, 2009; Guglielmo, 2006; Jamoom et al., 2013; Meyer, 2010) and adversely affecting the physician-patient relationship (Reuben et al., 2014); e.g., early adopters reported the technology apparently interfered with communication during doctor-patient interactions by interfering with patient–clinician eye contact (Asan and Montague, 2014 Friedberg et al., 2013; Makam et al., 2014).

In light of the above concerns and problems, medical scribes have been suggested (Campbell et al., 2012; Hafner, 2014**)** as a possible solution to improve patient engagement and the flow of information while using EHRs during the physician-patient encounter, especially in the ED. Medical scribes reduce providers' data input burden by serving as a non-medical secretarial assistant, allowing more complete documentation of the physician's interaction with the patient which potentially increases reimbursement and net margins, while reducing stress levels for the doctor (Brady and Shariff, 2013). They do this by the detailed charting of physician-patient encounters in real-time and by generating referral letters, managing and sorting medical documents within the EHR system, and assisting with e-prescribing, thus reducing significantly the non-clinical workload that EMRs place on providers. Before the conclusion of the patient encounter the physician reviews the medical record as written by the scribe for accuracy and makes any revisions before signing off (Meyer, 2010; Bukata, 2009; Shultz and Holmstrom, 2015). By handling data management tasks for physicians in real-time, medical scribes can potentially allow a physician to increase patient contact time, give more thought to complex cases, better manage patient flow, and increase productivity (Patel, Rais and Kumar, 2012). Nowhere would this be more important than in a busy Emergency Department, where multiple patients with greatly differing conditions must be treated quickly and efficiently, as the incoming flow of patients in this venue never seems to end, and where only 32% of physician time is spent providing direct patient care, with 21% spent on non-patient care and the rest (47%) spent on indirect patient care (Hollingsworth et al., 1998).

RESULTS

Documentation consumes physicians' time because it interferes with direct patient care and impedes productivity (Scheck. 2004, 2009). The use of medical scribes represents a potential solution to this situation. Here, we'll examine the studies which have examined various impacts of medical scribes on efficiency and satisfaction in emergency departments.

Time Studies

In the ED, a significant part of a doctor's time is spent on documentation, although estimated vary. Hollingsworth et al. (1998), in an observational time-and-motion study at a 36-bed urban ED with annual census of 84,000, found that ED attending physicians spent 17% of their time, and ED residents spent 23% of their time, on documentation of patient encounters. Weigl et al. (2009), observed internists and surgeons at a 300-bed German municipal hospital, finding that 27% of their time was spent on documentation. Füchtbauer, Nørgaard and Mogensen (2013) observed 9 resident physicians at a 360-bed community hospital in Denmark over three-minute intervals for a total of 137 hours during dayshifts of a normal week at the ED, and found that these individuals spent 31% of their time documenting their work. Scheck (2004), estimated that documentation required at least 15 minutes per patient.

Several other studies have observed effects of actual implementation of medical scribes in clinical settings. Marshall et al. (2012), in a study of attending ED physicians at a Midwest urban U.S. medical center with over 70,000 annual visits, found that the number of patients seen per hour increased significantly ($p<0.001$) from 1.81 to 2.09 after the introduction of medical scribes. Harris and Switaj (2013) reported a 7.64% increase in patients per hour in the ED at a NJ hospital where 68,000 patients were seen annually. In a small pilot study involving 3 emergency physicians practicing at a tertiary, not-for-profit, private Catholic hospital in the southeast of Melbourne, Australia where 24,000 attendances were treated annually, Walker et al., (2014) saw a 19% mean increase in patients seen per hour ($p = 0.001$) after the utilization of medical scribes. Again, putting this into clinical perspective, the introduction of medical scribes would have allowed 4 additional patients to be treated in a 12-hour shift. Hess et al. (2015), in a prospective quasi-experimental pre-post study conducted at a teaching hospital with approximately 100,000 annual patient visits, found a statistically significant increase in the amount of time providers reported spending face-to-face with patients. The weighted average of self-reported time spent with patients went from 37% pre-intervention to 48% post-intervention, an increase of 30% (($p<0.01$).

Time to Doctor

Patel, Rais and Kumar (2012), in a case study, reported a dramatic decrease in wait times to see a clinician due to decreased need for the physicians to provide documentation, but did not provide any empirical data to support this claim. Based upon a retrospective study at an adult ED where over 65,000 patients were seen annually (approximately 185 patients per day), Allen et al. (2014) reported a decrease of 0.01 hours in door to triage wait ($p = 0.008$), 0.06 hours in door to provider ($p = 0.073$), door to disposition wait ($p < 0.0001$), door to exit wait ($p = 0.021$), 0.21 hours in provider to disposition ($p < 0.0001$) for all discharged and admitted patients. Bastani et al. (2014), based upon a before and after study at a suburban community hospital where approximately 78,000 adult and pediatric patients were seen annually, reported decreases of 0.2 hours in mean time to clinician ($p < 0.001$). These results were obtained despite a 7.5% increase in volume between the pre-scribe and post-scribe cohorts. Walker et al. (2014), in a pilot observational study at a private tertiary, not-for-profit, Catholic hospital in the southeast of Melbourne, Australia where approximately 24,000 adult and pediatric patients are seen annually, found that mean time to clinician decreased by 0.37 hours ($p = 0.0001$).

Time to Disposition

Several studies reported a decrease in time to disposition associated with the use of medical scribes in the ED. Marshall et al. (2012) reported a mean reduction in time to disposition ($p = 0.001$) of 23.3 minutes when scribes were employed and Allen et al. (2014) reported that time to disposition of admitted and discharged patients decreased by 12.6 minutes per patient ($p = 0.0001$). A greater reduction was found by Bastani et al. (2014) where scribes were associated with a 52-minute mean decrease in time to disposition ($p < 0.0001$).

ED Length of Stay (LOS)

Although Arya et al. (2010-ok) and Hess et al. (2015) reported no statistically significant changes in ED LOS, Harris and Switaj (2013) reported a 15.85% improvement in LOS for adult patients and a 26.40% improvement in LOS for pediatric patients and Bastani et al. (2014) noted a 14 minute decrease in LOS for discharged patients (from 283 minutes to 269 minutes) and a 13 minute decrease in LOS for admitted patients (from 455 minutes to 442 minutes), despite a 7.5% increase in number of patients between the pre-scribe and post-scribe cohorts. Unfortunately, neither Harris and Switaj (2013) or Bastani et al. (2014) reported the statistical significance of their findings. Allen

et al. (2014) reported a decrease in most, but not all, throughput measured, including a 0.01 hour decrease in time from door to triage ($p = 0.008$), a 0.06 hour decrease in door to provider time ($p = 0.073$), a 0.27 hour decrease in door to disposition ($p < 0.0001$), a 0.15 hour decrease in door to exit ($p = 0.021$), and a 0.21 hour decrease in provider to disposition ($p < 0.0001$). Bansal et al. (2015), in a study of 8,258 patients who had LOS of five days or less and were treated by the Rochester General Hospitalist Group between January 2014 and October 2014 found that the LOS of patients admitted by the team using medical scribes was 2.84 ± 1.34 days while the LOS for patients admitted by the team not using medical scribes was 3.02 ± 1.38 days ($p < 0.0001$).

SATISFACTION STUDIES

Several studies have examined physician satisfaction after implementation of medical scribes; although concerns have been raised about the potential impact of medical scribes on patients (Hafner, 2014) and on the physician-patient relationship (Reuben et al., 2014), fewer studies have examined these latter concerns.

Physician Satisfaction

Satisfaction, by its very nature, is a subjective construct and therefore does not lend itself to easy quantification. Friedberg et al. (2013, p. 111) found that EHRs were a major contributor to physician dissatisfaction due to "poor EHR usability, time-consuming data entry, interference with face-to-face patient care, degraded clinical documentation (as a consequence of template-based notes), and inefficient and less fulfilling work content."

Evidence regarding the effects of implementation of medical scribes upon physician satisfaction with EHRs is, however, mixed. Based upon Press Ganey surveys, Bastani et al. (2014) reported that doctors' satisfaction increased from 62% to 86% ($p = 0.0001$) after the employment of medical scribes. One study (Brown et al., 2014-ok) reported that medical scribes allayed factors associated with burnout ($p = 0.034$). Allen et al. (2014, p. 3-4) reported that

> "100% of all providers [surveyed] indicated that scribes are a valuable addition to the department and that they enjoy working with scribes. 90% of all providers indicated that scribes increase their workplace satisfaction and increase quality of life. Over 80% of all providers indicated that scribes increase levels of focus at work and decrease levels of stress at work, and 70% of all providers indicated that scribes decrease levels of stress at home. 63% of all provider types indicated that the use of scribes will likely extend their careers.

However, using a self-developed survey, Hess et al. (2015) reported no statistically significant changes in physicians' job satisfaction following implementation medical scribes in an ED, despite a 36% reduction ($p<0.01$) in documentation time and a 30% increase ($p<0.01$) in time spent in direct patient contact.

Patient Satisfaction

Evidence here is somewhat mixed. Bastani et al. (2010) noted that the implementation of a computerized physician order entry system (a precursor to an EMR) in their community ED correlated with a significant decrease ($p < 0.0001$) in patient satisfaction. In a later study using Press Gaines satisfaction surveys, Bastani et al. (2014) found that patients' satisfaction with the care provided by the ED increased from 58% to 72%, but the statistical significance for this increase was nor provided. Koshy et al. (2010) found that patients' satisfaction rates in the presence of a medical scribe were not only high but were higher than when a scribe was not present (93% versus 87%), but the difference was not statistically significant ($p = 0.36$).

Financial Studies

Few published studies have reported directly on financial returns associated with medical scribes in the ED. In the non-academic emergency literature, estimated revenue gains of $50 to $60 per hour have been reported (Meyer, 2010) and the Tri-City Medical Center in Oceanside, CA reported a billing increase of 10% per provider per hour in their ED after the introduction of medical scribes.

Resource-based Value Units (RVUs) have been used as a surrogate for financial returns in several academic studies. Anecdotally, RVUs per patient are thought to increase with the use of medical scribes due to better documentation of patient encounters (Patel, Rais and Kumar, 2012). Terry et al. (2008) found that the use of medical scribes resulted in a 15% ($42) increase in billing ($p = 0.0001$) in the ED of an academic medical center. Arya et al. (2010) developed a model to estimate the effect of medical scribe utilization on patients per hour in the adult ED of a university-based academic medical center, and estimated an increase of 0.24 RVUs per hour per 10% increase in utilization of medical scribes ($p = 0.0024$). Assuming 100% utilization of medical scribes and a 12-hour shift, this would allow 6 additional patients to be treated. Harris and Switaj (2013) reported a 5.87% improvement in average RVU per patient and a 14.82% improvement in average RVU per hour. Hess et al. (2015) reported statistically significant increases of 5.5% of RVUs per hour and 5.3% per patient.

CONCLUSIONS

Current EHR technology, although increasingly being implemented in emergency departments and elsewhere, may well be insufficient in its present state to fully meet the needs of clinicians, especially regarding time necessary for clinicians to input information into the system. While the technology will no doubt improve which should lead to improved satisfaction of all concerns, the more widespread use of medical scribes as a "work around" could potentially delay the improvement of the technology itself, at least in the short run. However, as long as medical scribes reduce the need for clinicians to perform clerical tasks while not negatively impacting patient care or the "bottom line," scribes will continue to be used.

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POPULATION HEALTH MANAGEMENT AND CONCIERGE MEDICINE

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ABSTRACT

The shift from fee-for-service to value-based-payment will have a significant impact in the healthcare industry. There is also a stronger emphasis on primary care and prevention with population health being the larger platform for health. As organizations struggle to adapt to the new payment methods, the concept of concierge medicine (a.k.a. boutique medicine) is gaining popularity. This concept of care targets a relatively small fraction of the society but

pays close attention to their health and income. With changing metrics to evaluate quality, and payments being tied to value instead of volume, focusing on the patient experience could be the key to adapting a value based reimbursement model. This paper discusses how concierge medicine fits into the idea of population health and how this new type of service will benefit both patients and providers. Examples are provided to illustrate how concierge medicine can be designed and adapted into the current health systems. A discussion on the pros and cons will be part of the presentation.

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THE ROLES AND IMPACTS OF A CAREER AS A NURSE PRACTITIONER, PHYSICIAN ASSISTANT, AND PHYSICIAN

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ABSTRACT

The increase in nurse practitioners and physician assistants has lead to a debate on what career path should upcoming healthcare workers choose and what are the prospects of those choices. The increase and projected growth in nurse practitioners and physician assistants is shifting the healthcare economy and reshaping laws and powers granted to

these individuals in order to supplement the physicians who are in demand, but are in short supply. This study compares the benefits that each career path brings, the unique role they play, and how they are shaping the healthcare industry by changing laws, and lowering the cost of healthcare while providing the same or better service.

Keywords: healthcare, nurse practitioner, physician assistant, physician, healthcare careers

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TRACK
PUBLIC HEALTH

THE EFFECTS OF POOR AIR QUALITY ON ASTHMA

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ABSTRACT

Asthma is a significant public health concern and continues to affect a substantial population worldwide. In the United States, the prevalence of asthma has increased from 7.3% in 2001 to 8.4% in 2010. An estimated 24.6 million people, including 6.2 million children, have asthma. Uncontrolled asthma is a common reason people seek medical attention. The association between asthma and poor air quality is well established by repeated studies. Signs and symptoms of asthma may be triggered or exacerbated by irritants and particulate matter present in the air. Comprehensive research to study the effects of poor air quality on the asthmatic and non-asthmatic population is essential for effective policy development. The annual economic cost of asthma in 2007, including medical costs and lost school and work days, amounted to more than $56 billion. Reducing exposure to indoor and outdoor environmental pollutants is important for asthma management.

A systematic literature search of PubMed was performed for studies published in English from January 2000 to September 2017. Combination word searches related to air quality and asthma resulted in 4,096 articles. Applying our inclusion criteria resulted in 3,312 articles that discussed the link between air quality and its effects on the asthmatic population.

Predominantly the research articles were cross-sectional and observational study designs that were published in or after the year 2000. Out of theses 180 were clinical trials. Overall, we observed a number of consistent findings. Associations between air quality and asthma differed according to age, race, gender, geographical location and socioeconomic status.

Congruent findings have shown that various environmental factors may be correlated with asthma exacerbation. This study was limited to the fact that the studies included in the systematic review were mostly cross-sectional research study designs. However, causal inferences could not be drawn regarding the effects of environmental factors on asthma. The findings of this study may contribute to policy decisions aimed at improving indoor air quality by making homes no smoking zones, installing air purifiers and testing for indoor air pollutants. Outdoor air quality can be improved by making city centers no vehicle zones, building more biking trails and putting stricter restrictions on emissions by coal power plants. Planting trees and making our cities greener are some other public health initiatives that can come out of our study. Wearing masks and reducing time spent outdoors during poor air quality days are some measures that can be taken to avoid harm.

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ORAL HEALTH SCREENING RESULTS OF CHILDREN ATTENDING TWO EARLY CHILDHOOD DEVELOPMENT CENTERS IN SOUTH AFRICA: A RESTROSPECTIVE ANALYSIS

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ORAL HEALTH SCREENING RESULTS OF CHILDREN ATTENDING TWO EARLY CHILDHOOD DEVELOPMENT CENTERS IN SOUTH AFRICA: A RETROSPECTIVE ANALYSIS

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ABSTRACT

A convenience sample study sought to look at the differences of oral health outcomes between boys and girls at the Mustadafin Foundation Early Childhood Development Centers. The participants were children between the ages of 4 to 12 (N = 368), and assented for an oral health screening provided by a dental hygienist. Untreated dental decay (76%), caries experience (77%) and urgent dental treatment (43%) were significant for all participants. In the age adjusted logistic regression, two variables were significant: oral injuries for boys (P =.005), and poor to fair overall impressions of teeth (P = .02). These finding suggests a need for oral health interventions.

Keywords: oral health, traumatic dental injuries (TDIs), boys/males, dental decay, caries experience.

INTRODUCTION

In South Africa, apartheid left indelible marks on the economy with political violence and unrest, and unemployment. As a result, many communities or informal settlements do not have the resources to provide health care services to the people of these communities, especially children, including oral health care. Oral health is important for overall health and well-being. Children with dental pain due to poor oral health, can have poor nutrition, cannot learn and may miss days of school. Overall, the prevalence of tooth decay in South Africa is 49.8%, and 51% in children aged 4 to 5 years (Phakela, 2009). In addition, the prevalence of untreated tooth decay is approximately 43.5% and among children aged 4 to 5 years it is 47% (Phakela, 2009). Of the nine Provinces in South Africa, the Western Cape area, which includes Cape Town, has the highest prevalence of dental decay among children. In this region, the dental decay prevalence is 77% among 4 to 5 year old children and the prevalence of untreated dental decay among this same age group is 72% (Phakela, 2009). The Crossroads Township is an impoverished community in the Western Cape area just outside of Cape Town.

In addition to dental caries, traumatic dental injuries (TDIs) are common in children worldwide and variations of TDIs exist between and within different countries (Glendor, 2008). In the review of the literature, it has been reported that boys sustained injuries almost twice as often as girls (Haug & Foss, 2000; Cavalcanti, Bezerra, DeAlencar & Moura, 2009; Naidoo, Sheiham & Tsakos, 2009; Rodriguez, 2007). Although gender is a significant factor, other studies have shown that the environment such as playing sports or participating in other physical activities play an important role in TDIs (Haug & Foss, 2000; Cornwell, 2005; Glendor, 2008; Cavalcanti et al, 20009; Ferreira, DeAndrade, Katz & Rosenblatt, 2009). One of the most common TDIs is fractured anterior teeth, where over one-third is observed in the primary dentition of preschool children and one-fourth is seen in the permanent dentition of school-age children (Glendor, 2008).

The primary purpose of this screening program is to provide the Mustadafin Foundation a baseline of oral health indicators and identify any oral health issues among the children of these two ECD centers in the Crossroad Township. The primary aim of this study is to see if there is a difference in oral health outcomes between male and female children of the two ECD centers in the Crossroads Township, South Africa.

METHODOLOGY

Study Sample and Data Collection

Male and female children, aged five to twelve years, were recruited from two of the twenty-three Mustadafin Foundation Early Childhood Development Centers (ECD), located in the Crossroads Township, outside of Cape Town, South Africa. After receiving oral health education, and a demonstration of an oral screening procedure, the children were seen by a dental hygienist for an oral health screening.

The screening consists of a non-invasive open mouth assessment in which the dental hygienist looks into the child's oral cavity. Demographic information includes the sex and age of the child. The oral health screening assessments involves noting untreated cavities, dental caries experience, the presence of sealants, and the number of quadrants needing dental treatment, oral injuries, gingival inflammation, urgency of treatment, and the overall impression of the child's oral health status. All of the dental caries and gingival screening indicators were dichotomous (yes/no) responses. The dental materials used in the screening consisted of disposable dental mouth mirrors, tongue blades, gauze, and penlights. Appropriate Infection control procedures were followed as outlined by the Centers for Disease Control and Prevention for oral health screenings and surveys. Training and calibration of the screeners took place prior to the delegation visiting South Africa via a screening manual. In addition, an orientation and calibration meeting was held the day before to answer any questions concerning the screening process. Assent for dental screening was given by the child and permission for the dental screening was given by the parent(s) prior to the screening program.

Data Analysis

All analyses were performed using PASW statistical software version 18 (PASW Inc., July 30, 2009, Chicago, IL). Due to the special purpose of this survey, all of the data were treated as categorical data. In addition, for data analysis purposes, some of the categories were collapsed from three or four categories to two categories. These categories are from the questions of "# of quadrants needing dental treatment (none and 1-4), "oral injuries" (no injuries and injuries), "treatment urgency" (no obvious problems and early/urgent dental care), and "overall impression of teeth" (good/very good and fair/poor). To describe the sample, frequency distributions were utilized. Bivariate associations between males and potential categorical correlates were assessed by means of contingency table analyses, prevalence ratios, their 95% confidence intervals, and respective P-values. Significance was defined by $\alpha \leq 0.05$. Furthermore, the use of logistic regression to identify independent correlates of the oral health screening of males from either of the two ECD centers and the variables were entered using an age adjusted hierarchical model. In the bivariate analysis, any of the correlates that achieved significance at a 0.15 level were added to the hierarchical model one at a time and were not included if they were not significant at $P \leq 0.05$.

RESULTS

Characteristics of the Sample

Three hundred and sixty-eight (N = 368) children from the two ECD centers participated in this screening program. There was a slightly larger contingent of female (52%) children than male (47%). The average age of the children in this study was 6.43 (SD = 2.1), and the median was 6.0 years of age (range 4 to 12). The majority of the oral health screenings took place at Clinic 1 (77.4%). The majority of the children screened have untreated dental decay (76.1%) and caries experience (77.2%). Only 1.9% of the children screened displayed dental sealants on their permanent molars. Additionally, 4.2% of the children screened had signs of injuries to the mouth and 19.6% displayed signs of gingival inflammation. Of the children with untreated dental decay, 36.1% of the children needed all four quadrants of their mouth treated for dental decay, and 43.8% needed urgent dental care. There is almost an even distribution of the overall impressions of the children's teeth between good/very good category (50.5%) and fair/poor category (49.5%). The demographic characteristics are provided in Table 1.

Table 1: Characteristics Among Children Attending ECD Centers in South Africa

Variable	N (%)
Clinic	
Clinic 1	285 (77.4%)
Clinic 2	83 (22.6%)
Sex	
Male	173 (47%)
Female	195 (53%)
Untreated Cavities	
No	86 (23.4%)
Yes	280 (76.1%)
Missing	3 (.8%)
Caries Experience	
Yes	284 (77.2%)
Sealants on any Permanent molars	
Yes	7 (1.9%)
# Quadrants needing dental treatment	
0 quadrants	105 (28.5%)
1 quadrant	36 (9.8%)
2 quadrants	53 (14.4%)
3 quadrants	41 (11.1%)

4 quadrants	133 (36.1%)
Oral Injuries[a]	
No injuries	348 (88.8%)
Injuries	44 (4.2%)
Gingival signs	
Yes	72 (19.6%)
Treatment Urgency	
No obvious problems	91 (24.7%)
Early dental care	115 (31.3%)
Urgent dental care	161 (43.8%)
Overall Impression of teeth[b]	
Good/Very good	186 (50.5%)
Fair/Poor	182 (49.5%)

[a]Oral injuries were condensed from four categories to two categories. The injuries include bike, organized sports, or other. **b** Overall impression of teeth categories were changed from three categories to two categories (from very good, good, fair/poor, to good/very good, and fair/poor)

Bivariate Associations

Table 2 provides the observed bivariate associations. Males were more likely to have oral injuries (Prevalence Ratio [PR] = 1.77, Confidence Interval [CI] = 1.38 - 2.72, P = .002), and have fair/poor overall impression of teeth (PR = 1.30, CI = 1.05-1.63, P = .02). In addition, Table 2 also presents associations for two other variables achieving screening significance ($P \leq .15$): 1 to 4 quadrants needing dental treatment (PR =1.21, CI = .93 - 1.57, P = .14) and early or urgent dental care treatment (PR = 1.25, CI = .94 - 1.66, P = .10).

Logistic Regression

An age-adjusted hierarchical logistic model was used. The data analysis used a series of four independent models, and the dependent variable sex, to compare males to females. Table 3 provides the data analysis for the four models. The males were almost five times more than the females to have oral injuries (Odds Ratio [OR] = 4.88, CI = 1.60-14.9, P = .09). In addition, two-thirds of the males have fair to poor overall impressions of their teeth than the females (OR = 1.64, CI 1.09-2.49, P = .02).

Table 2: Bivariate Associations between Males and Potential Categorical Correlates among Children Attending the ECD Centers in South Africa

Correlate	N (%) Males	PR	95 % CI	*P*
Untreated Cavities		0.95	0.74-1.22	0.69
Yes	130 (46.4%)			
Caries Experience		0.98	0.76-1.27	0.90
Yes	133 (46.8%)			
# Quadrants needing dental treatment		1.21	0.93-1.57	0.14
None	43 (41%)			
1 to 4 quadrants	130 (49.4%)			
Oral Injuries[a]		1.77	1.38-2.72	.002*
No injuries	157 (45.1%)			
Injuries*	16 (80%)			
Gingival signs		1.15	0.90-1.49	0.27
Yes	38 (52.8%)			
Treatment Urgency[b]		1.25	0.94-1.66	0.10
No obvious problems	36 (39.6%)			
Early or Urgent dental care	137 (49.5%)			
Overall Impression of teeth[c]		1.30	1.05-1.63	0.02*

Good/Very good Fair/Poor	76 (40.9%) 97 (53.3%)			

*Significant at α = .05. [a]Oral injuries were condensed from four categories to two. The injuries include bike, organized sports, or other. [b]Treatment urgency was changed from three categories to two (no obvious problems, early, or urgent dental to no obvious problems and early or urgent dental care). [c]Overall impressions of teeth categories were changed from three categories to two categories (from very good, good, fair/poor, to very good/good, and fair/poor)

Table 3: Age-Adjusted Model of Associations between Male and Female Children

Correlate	Adjusted Odds Ratio	95 % CI	*P*
# Quadrants needing dental treatment	1.42	0.90-2.25	0.13
Oral Injuries	4.88	1.60-14.9	.005*
Treatment Urgency Early or Urgent dental care	1.51	0.93-2.45	0.09
Overall Impression of teeth Fair/Poor	1.64	1.09-2.49	0.02*

*Significant at α = .05

DISCUSSION

The findings from this study of South African children from the Mustadafin ECD centers, revealed that a majority of the children had untreated dental cavities while only a small percent had dental sealants. This is consistent with findings from the World Health Organization (WHO), where 60% to 90% of school aged children have untreated dental disease (Petersen, Bourgeois, Estupinan-Day & Ndiaye, 2005).

This study also revealed significant variations in the overall oral health between the sexes, with boys having 64% higher odds of fair or poor overall oral health than do girls. Furthermore, after adjusting for the effect of age, boys had almost an 88% higher probability of TDIs than did girls. The findings concerning traumatic dental injuries are consistent with other studies. A study by Robson et al (2009) revealed that the prevalence of TDI among preschool children to their primary dentition were 39.1% and the most common type of TDI were enamel fractures (49.7%). A previous study in South Africa reported that boys were at least 2.5 times more likely to have a TDI than girls (Naidoo et al., 2009). The behaviors of the children as well as the environment, such as engaging in a sports activity, playing at home or at school are considered risk factors for traumatic dental injuries (Haug & Foss, 2000; Cornwell, 2005; Glendor, 2008; Cavalcanti et al, 20009; Ferreira et al, 2009). Having untreated tooth fractures can have a direct impact on the appearance of the children and this can affect their self-esteem (Naidoo et al., 2009). In addition, children with TDIs can experience more difficulties with eating and can be the subject of teasing and taunting than those without TDIs (Naidoo et al., 2009).

Implications for Public Health

TDIs are a public health dental problem because it affects children and can become a lifetime oral health concern. The TDIs and poor oral health status is an important public health issue among the boys in our population, who are at a higher risk than girls. In addition to TDIs and poor overall oral health outcomes, the prevalence of dental decay and caries experience, as well as the need for urgent dental treatment suggests that dental caries is a public health issue among South African children in the Crossroads Township. The findings suggest that preventive efforts are justified to decrease the oral injuries and poor oral health status among boys, as well as the dental caries rate among all children. Additionally, further investigation is needed to gain a better understanding of the issues and perceptions that children and their parents have toward preventive dental care that can include the use of protective gear to prevent mouth injuries, improved oral hygiene habits, as well as healthier dietary habits to reduce the need for urgent dental treatment.

Limitations

The findings from this study are limited by the use of a convenience sample design. The findings are based on the dental screener's perception of the child's oral cavity. To minimize inter-rater error, prior to the screening program, all of the screeners received a standardization manual and participated in a calibration meeting. In addition, due to the language barrier, we may not have fully captured some of the oral health issues upon screening. Sample selection bias may also be a limitation because these children were present at the ECD centers at the request of their parents.

CONCLUSION

Among the Mustadafin ECD centers, male children are at an increased risk for TDIs and fair to poor overall oral health status, than the female children. However, all of the children have a tremendous amount of noted dental decay and very few applications of dental sealants. These findings can facilitate the Mustadafin ECD centers to offer oral health interventions and treatment, as well as focus educational programs for the prevention of oral injuries, to improve the oral health status of boys, as well as to decrease the prevalence of dental caries among all of the children in the Crossroads Township.

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PERCEPTIONS OF PUBLIC HEALTH AMONG COLLEGE STUDENTS IN HEALTH PROFESSION FIELDS

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ABSTRACT

Public health seeks to protect and improve the health communities through the promotion of healthy lifestyles, research for disease and injury prevention, and detection and control of infectious diseases. In recent years, public health courses have been incorporated into degree requirements for a variety of health-related professions; however, some studies have shown that there are misperceptions and negative attitudes toward public health courses among students in non-public health professional fields.

This descriptive research project analyzed the perceptions of public health held by health profession students at a small, private liberal arts college in the Midwest. A sample of 194 students was derived from a population of undergraduate students in Nursing, Athletic Training, Exercise Science, Clinical Laboratory Science, Public Health, and pre-professional majors. An email which included a Survey Monkey link was sent to potential participants. The survey included 18-questions, both close- and open-ended. However, of the 60 participants who were able to continue the survey because they had taken a public health course previously, only 38 participants fully completed it.

About 40% of the participants were knowledgeable about more than two different aspects of public health, while half (50%) stated that public health were related to their career goals in treating patients and achieving client health outcomes. Majority of the participants (57.89%) stated that they were moderately familiar with public health terms and concepts. When asked to rank the usefulness of public health topics, chronic disease, communicable disease, global health, and mental health were rated the most useful. Majority of the respondents (52.63%) felt that the study of public health was valuable to health professional students. More than half (52.63%) of participants also felt that there were many applications for public health concepts in their major. When asked to identify what they liked about public health courses, 23.7% of the respondents indicated that they liked the informative nature of the courses.

Our study shows that among students who had taken public health courses at this university, more than half had positive attitudes towards their public health coursework. The public health educational experience of this sample seems to suggest that students majoring in non-public health professional fields feel that public health education is a positive addition to their educational curriculum. Future studies should examine specifically what aspects of the public health courses affect students' perceptions regarding public health.

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PrEP: VARYING DOSING REGIMENS FOR KNOWLEDGEABLE CONSUMERS

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ABSTRACT

The Centers for Disease Control and Prevention (CDC) recommends Truvada for pre-exposure prophylaxis and, taken daily, it is 90+ percent effective against HIV. A well-educated and motivated group of sexually active men have chosen to alter the recommendation to a schedule based on planned sexual activity. Truvada is taken one week before a planned episode, during the time frame of the event(s), and a week after the event(s). An anecdotal convenience sample of men have voiced confidence in this self-directed dosage for their prevention method and it is tentatively a trend that will increase. Further study is needed.

INTRODUCTION

Literature

Cohen, et.al, (2011) surmised from his study that "Antiretroviral therapy that reduces viral replication could limit the transmission of human immunodeficiency virus type 1 (HIV-1) in serodiscordant couples." However complications and side effects of the drug most commonly used, Truvada, discouraged some consumers' use of the treatment due to side effects and cost. The economic impact of the dosing modifications is advantageous for those with only intermittent

risk. Intermittent dosing, if effective, will decrease cost in terms of HIV cases prevented especially when sexual activities are predictable and less frequent. Investigation as to the efficacy of this treatment modification has not been done but should be to understand if the purpose of PrEP, decreased risk of transmission of the virus, will be achieved.

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THE COST OF OPIOID EPIDEMIC IN WEST VIRGINIA

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THE COST OF OPIOID EPIDEMIC IN WEST VIRGINIA

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ABSTRACT

The rate of overdose-related to the use of licit and illicit opioids has drastically increased over the last decade in the U.S. The epicenter being West Virginia the highest rates of overdoses accounting for 41.5 deaths for 100,000 people among the 33,091 deaths in 2015. The number of people injecting drugs has increased from 36% in 2005 to 54% in 2015. The total U.S cost of prescription opioid abuse in 2011 has been estimated at $25 billion, and criminal-justice-system costs to $5.1 billion. The reasons for this opioid epidemic incidence in WV have been a combination of sociocultural factors, a depressed economy, lack of education, and a high rate of prescribing and dispensing of prescription opioids. These strategies were evaluated through a systematic literature review and semi-structured interview that displayed a broad array of tactics used in West Virginia to keep up with the rate of related opioid overdoses.

*Keywords**:** epidemic, sociocultural factors, management, lack of education, unemployment*

INTRODUCTION

Historically opioid medications, used for the treatment of chronic pain, were viewed as non-addictive substances. In the past couple years, light has been shed upon the real implications of using this form of medication in at-risk populations. Out of the total Medicaid beneficiaries in the United States (U.S.) that were prescribed opioids

for pain in 2010, 40% had at least one indicator of potentially inappropriate use, including overlapping prescriptions for pain relievers, overlapping pain reliever and benzodiazepine prescriptions, long-acting or extended-release prescription pain relievers for acute pain, and high daily doses (CDC, 2016a).

Staggering 33,091 deaths per the total 2015 U.S. population occurred due to opioid overdose (CDC, 2016b). West Virginia, has suffered, disproportionately to the other four states with the highest opioid overdoses in 2015 in the U.S. The states that had the highest opioid overdoses following West Virginia were New Hampshire (34.3 per 100,000), Kentucky (29.9 per 100,000), Ohio (29.9 per 100,000), and Rhode Island (28.2 per 100,000) (CDC, 2016b).West Virginia contributed more deaths to the U.S. total in the year 2015 than any other state, with 41.5 deaths per every 100,000 people (Rudd, Seth, David, & Scholl, 2015).

During the past seven years, major drug wholesalers including McKesson Corporation, Cardinal Health, and AmerisourceBergen inundated the state with 780 million hydrocodone and oxycodone pills, which was equivalent to an astounding 433 opioid tablets per resident in West Virginia (Luo, 2017). These distributors ignored regulations to report suspicious orders for controlled substances to the state board of pharmacy. Moreover, the board of pharmacy failed to enforce those same controls, while the distributors had a blind eye turned to tiny pharmacies in southern counties such as Boone, Greenbrier, Logan, and Mercer that ordered 423 million opioids between 2007 and 2012, far more than could have had been needed by patients in such small communities, which yielded $17 billion to those three major drug manufacturers (Paschall, 2016). One underlying factor that has escalated West Virginia's opioid epidemic has been the disproportionate number of jobs requiring manual labor, like the coal mining industry jobs (Haegerich, Paulozzi, Manns, & Jones, 2014). These dangerous occupations commonly held by West Virginians has led to more frequent opioid prescriptions to treat the injuries associated with these labor-intensive jobs (DATR, 2013).

West Virginia regimes have made preventive advancements in opioid misuse; however, an upsurge in opioid overdose rates has been occurring. Overall methadone deaths decreased by 455 deaths of the 5,000 total deaths recorded in 2015 (Paschall, 2016). In 2010, deaths that involved other types of opioids, unambiguously illegal synthetics, and heroin had been involved in just 8% of total overdose deaths, and by 2015 they were involved in 18% of total overdose deaths. Furthermore, there were increases in heroin and synthetic drug-related deaths; there was a drop-in overdose death involving natural and semisynthetic opioid analgesics, including prescription drugs like oxycodone and hydrocodone (WVHA, 2017). Obama Administration, along with local and private efforts, had significantly increased funding to $1.1 billion for prevention and treatment programs; conversely, physicians still needed a radical alternative to treat chronic pain (Rudd, et. al., 2015). Multiple approaches to tackle opioid abuse have been tried.

The Food and Drug Administration has restricted some widely-prescribed painkillers using limiting refills. The means of limiting prescription opioid refills has been done by databases that have been used to monitor the volume of pills that were distributed and what physicians were prescribing them (Webster, 2016). Physicians that were trained in the 60s and 70s were taught to reserve opioids for the most severe forms of pain, which included end of life management and specific cancer treatments (Grossman, 2016). Fast forward two decades where arguments have been made that physicians undertreated common types of pain that could have been relieved by opioids; including back and joint pain (Grossman, 2016). The case was that undertreated pain by physicians initiated the movement to increase the prescribing of opioids for these diseases.

The purpose of this research was to examine and analyze the cause of the opioid epidemic and subsequent responses to it in the state of West Virginia.

METHODOLOGY

The primary hypothesis of this study was that if physicians continue to overprescribe opioids for chronic pain, then more individuals are at risk for developing opioid dependence; therefore, increasing the likelihood of substance use disorders and potential overdoses. The secondary hypothesis of this study was that if physicians abruptly stop prescribing opioids, then patients are at risk for entering withdrawal; therefore, increasing the likelihood of obtaining opioids through illegal prescriptions or using illicit opiates such as heroin. The conceptual framework used for this review was adapted from Shi, Stevens, Faed, and Tsai (2008). The use of this theoretical framework is appropriate because both studies seek to identify factors as they relate to vulnerable populations (Figure 1). The

conceptual framework identifies that risk factors must be present for individuals to develop a substance use disorder and that access to care dramatically impacts the health outcomes of those individuals.

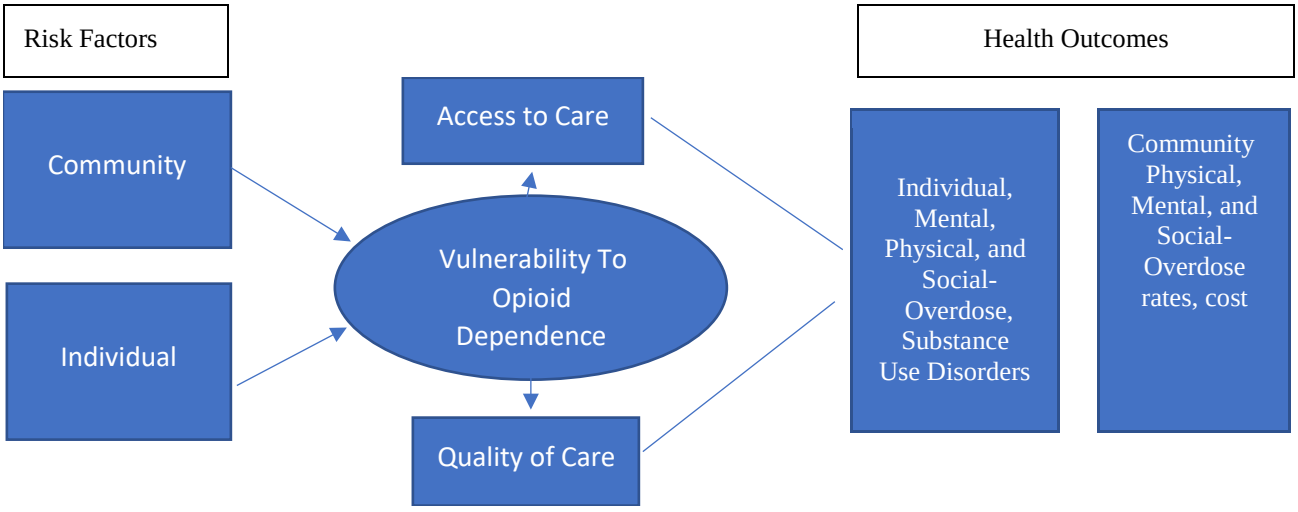

Figure 1: Conceptual Framework
Source: Shi, Stevens, Faed and Tsai, 2008

The literature review was conducted in three distinct phases. The three stages of this process were 1) literature identification and collection, 2) literature categorization, and 3) literature analysis.

Step 1: Literature Identification and Collection

The literature review was conducted using Medline, PubMed, EBSCO Host, and Google Scholar databases. To identify articles for review, the keyword search terms were 'opioid epidemic' or 'opioid misuse and West Virginia or 'chronic pain' or 'naloxone' or 'prevention' or 'response.' Next, to analyze the gathered information, the results were categorized into subsections that were previously determined.

Step 2: Literature Categorization

All articles selected were in the English language. Only articles that were published in the years 2006 to 2017 were selected from the yielded results. References that were chosen for further review were determined based on the following criteria: demonstrated results identifying the cause of the opioid epidemic in West Virginia in addition to the keyword search terms.

Step 3: Literature Analysis

Lastly, the articles that were selected for this literature review were analyzed for information directly and indirectly related to the hypothesis and purpose of this paper. The results of this analysis and the articles were presented in the results section of this manuscript. In the initial results and introduction 37 resources were selected. These sources were selected by RM, NB, SK, and AC acted as a second reader and validated the resources.

Furthermore, a semi-structured interview was conducted after the literature was reviewed. The interviewee was a licensed physician practicing in the state of West Virginia. The physician provides both primary care and substance use treatment services. The physician was referred to as Expert in Opioid Dependence throughout the review.

RESULTS

Preventing Consequences of Opioid Misuse

Syringe exchange for IV drug users has created an opportunity for public health outreach workers to reduce the harm caused by needle sharing. This outreach has also provided an opportunity for those detrimentally affected by opioids to engage in conversations about treatment and recovery. If individuals that have been suffering from opioid dependence were also experiencing homelessness, a brief encounter with a syringe exchange nurse could create a valuable moment to educate those persons on housing assistance available within their community (Scalise & Didden, 2016).

West Virginia has implemented harm reduction programs with much success. The Cabell Huntington Health Department and Kanawha- Charleston Health Department have opened syringe exchanges for individuals who use substances intravenously. Both health departments operate one clinic, one day per week. Since the start of the harm reduction program at the Kanawha -Charleston Health Department in December of 2015, 2,228 people have been served over 7,040 visits (The city of Huntington, 2016). While these programs have provided an opportunity for intervention and referral to treatment, they have also offered a possibility to stop the spread of infectious disease, which has historically been a co-occurring diagnosis for individuals with substance use disorders. Common contagious diseases included Hepatitis B and C, and HIV. The harm reduction programs offered needles, metal cookers, bottled water, condoms, gauze, tourniquets and more. The goal has been to provide individuals with all the supplies they need to inject substances, namely heroin, so they do not resort to sharing needles or using unsanitary water or other devices. Initial funding for the program was provided by the Department of Health and Human Resources of $10,000 with an additional $10,000 for technical support (DHHR, 2015). In an article published by the City of Huntington in fall 2015, Dr. Michael Kilkenny, Physician Director of Cabell Huntington Health Department, stated that the health department planned to expand the program to five more locations in the city. The expansion has not occurred. Funding for the program will impact future implementation throughout the state (City of Huntington, 2016).

Lifting of Federal Ban on Needle Exchange Program

The ban placed on the needle exchange program was lifted during 2009 to 2011, through this period the number of needle exchange programs were increased. A total number of 221 programs were reported to obtain state or local funding during the same period (Macneil, and Pauly, 2011). The rate of exchange of needle exchanges was increased to greater than 30 million in the year 2008, according to the North American Syringe Exchange Network (Health, 2009). Centers for Disease Control and Prevention (CDC), has reported that while the utilization of syringe services program, the number of people injecting drugs have raised from 36% in 2005 to 54% in 2015, out of which only 1 in 4 injection drug users have obtained all the syringes and needles from sterile sources, representing higher than 50% of the new drug users, and reported to have the highest rate of syringe sharing (Abbasi 2017).

The Centers for Disease Control and Prevention's Prescribing Guidelines for Primary Care Providers

New guidelines provided by the (CDC) that have been adopted by many institutions in West Virginia including all seven system hospitals and associated clinics within West Virginia University Medicine (Paulozzi, Mack, and Hockenberry, 2014). These guidelines included using non-pharmacologic therapies, such as exercise and cognitive behavioral therapy, and non-opioid pharmacologic therapies, such as anti-inflammatory medications, to treat chronic pain whenever possible (WVSOM, 2016). Prescribers that have followed the new CDC guidelines have enforced a start low and go slow principle, measured effectiveness by functional goals rather than pain severity, and monitored patients through regular follow-up (Bolen, 2016).

The new CDC guidelines included a two-page prior-authorization form which was mainly a checklist of recommendations by the CDC. If the physicians did this, it would have allowed physicians to keep their patient on the current dosage that had been recommended. Likewise, physicians also followed a template that had encompassed an opioid treatment plan that had listed safe prescribing practices (Silverman, 2016). These requirements exempted opioids prescribed to cancer and terminally ill patients. The CDC guidelines reported opiates should not be the first choice for treating chronic pain and suggested prescribing the lowest dosage possible while monitoring their patients carefully (Dowell, Haegerich, and Chou, 2016). According to an Expert in Opioid Dependence, the adoption of the

CDC Guidelines has decreased the number of opioids prescribed throughout the state; however, it may increase the number of individuals who were without proper treatment for their condition. The expert stated that the alternative treatments for these conditions could be costly to patients and unavailable in the state. (Appendix A).

Figure 2: CDC's Checklist for Prescribing Opioids in Primary Care
Source : DHHS, n.d

Licensing of Chronic Pain Clinics in West Virginia

For facilities to have met the definition of a pain clinic, more than 50% of the patients in practice during any one-month period had been treated for chronic pain for non-cancer conditions which made them eligible for licensure after that. Moreover, licensure has ensured that all chronic pain management clinics conformed to common set of standards and has required minimum requirements for treatment, safety, and comfort of patients (HHR, 2014).

The Chronic Pain Licensing Act stated that the designated physician owner of an opioid-based clinic must have completed a pain medicine fellowship that has been accredited by the Accreditation Council for Graduate Medical Education or such other similar program or was certified by the American Board of Pain Medicine or current board certification by the American Board of Anesthesiology (CDC, 2016c).

Senate Bill 4035: Provision of the Distribution for Naloxone to the General Public

The purpose of this bill was to permit pharmacists to supply Naloxone Hydrochloride in agreement with standardized procedures or protocols that have been set in place by the West Virginia Board of Pharmacy and the West Virginia Board of Medicine (Burris, et.al., 2009). The cost of Naloxone, has cost anywhere between $100 and $3,700 each time it is purchased from the pharmacy. The range of price has been more depended on the manufacturer and the way it was administered (Jacobs, 2016).Every person that purchased Naloxone from a pharmacy must be trained by a pharmacist on how to recognize an overdose. Similar to the syringe exchange, this bill has been expected to bring people suffering from addiction one step closer to treatment opportunities, while systematically reducing societal costs of opioid addiction (White, Galanter, Humphreys, & Kelly, 2016). Local emergency medical agencies have administered 4,186 doses of Naloxone in the year 2016; this was an increase from 3,351 doses of Naloxone in 2015 (Jacobs, 2016). West Virginia received a $1 million federal grant that implemented a project that provided more than 4,000 of two-dose kits that were dispersed to high priority areas; these areas included needle exchange programs as well as police and fire departments in the major cities of Huntington, Charleston, Wheeling, and Morgantown and rural areas of West Virginia (Virtanent, 2017).

Programs such as this have faced several critical barriers. Naloxone's prescription status created many questions about how the drug can be made available to drug users or others who may be in a position to help (Binswanger, Koester, Mueller, Gardner, Goddard, & Glanz, 2015). A total of 53,032 individuals from 1996-2010 were trained in naloxone administration and overdose response. Further, a total of 10,171 overdose reversals were reported between 1996 and 2010 (Jones, Lurie, & Compton, 2016).

Financial Impact of Opioid Epidemic in the U.S

The Institute of Medicine has reported that a total number of 116 million Americans had suffered from the persistence of pain from weeks to years and had resulted in a financial crisis ranging from $560 billion to $635 billion per year in medical treatment, lost productivity (IOM, 2011; Pizzo, and Clark, 2012). In the U.S, approximately 240 million opioid prescriptions were dispensed in the year 2015 which accounted for one for every adult in the general population Makary,Overton, & Wang, 2017). The total economic burden from the prescription opioid overdose was projected to be $78.5 billion for the year 2013. Approximately one-third of the total costs which was $28.9 billion was due to the augmented health care costs and substance abuse treatment costs. The public-sector costs in healthcare, substance abuse treatment and criminal justice costs were projected to be around one-fourth, $19.6 billion (Florence, Zhou, Luo, & Xu, 2016).

DISCUSSION

This study was created with the intention to compile and evaluate literature regarding the opioid epidemic in West Virginia and current responses. West Virginia has been at the epicenter of this outbreak with the highest rates of overdose, 41.5 deaths per 100,000 people (Rudd et. al., 2015). Both the literature review and semi-structured interview showed that West Virginia had developed promising responses to the epidemic, but efforts have fallen short as evident by the continued climb of the overdose rates in the state. With the highest percentage of overdose in the nation, a comprehensive approach to addressing this issue is crucial.

The initial findings have suggested that in response to the opioid epidemic, West Virginia has utilized prevention efforts, widely distributed naloxone, enacted and enforced the regulation of chronic pain clinics, which were identified as a contributing factor to the extensive misuse of prescription opioid medications. The needle

exchange programs have depended on the funding from state and local funding also as a result of federal ban for several years. These programs have offered needles to intravenous drug users, and a means to minimize the spread of HIV/AIDS With an aim to mitigate the harm and address the opioid epidemic.

There has been the significant impact on the society with the drug abuse concerning clinical and economic burden. The drug overdose has resulted in 830,652 years of loss of the potential life under the age of 65 years which was like the many years of the lives lost from the motor vehicle accidents. The increase in the number of deaths has explained the widespread occurrence of the opioid over usage. The pain prescription spending in the U.S has increased to higher than $9 billion spending every year, drug abuse costs to the U.S government was estimated to be $300 billion in a year (Manchikanti, 2006). Even though the treatment of opioid abuse has a positive effect on the society, there has been a significant effect on the payers of both public and private sectors due to increase in costs.

The interview with the Expert revealed that the responses to the opioid epidemic analyzed in the results do not address the current population with substance use disorders that are without treatment services. The expert supported their opinions with experience both as a primary care physician and a physician who has treated opioid dependence in the state. It was identified that the three main contributing factors to the opioid epidemic had been 1) the mental health status of the state's population, 2) labor-intensive occupations, and 3) the financial incentive that accompanies the distribution of prescription opioids and illicit opiates, both legally and illegally (Appendix A). The responses to the opioid epidemic have not addressed the contributing factors identified by the expert. To appropriately respond, an increase in access to care for both physical and mental health conditions is required. The expert further stated that funding is crucial to addressing this epidemic. Funding directly ties to the practical implications of this study. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), West Virginia was allocated $5.8 million for State Opioid Response Grant. While West Virginia received this assistance, bordering states such as Kentucky and Ohio received double and quadruple that amount based on their population size. West Virginia DHHR has been responsible for distributing this funding to areas of need. The distribution has required careful consideration, of the needs of the population and the political climate. This funding has provided much-needed help; however, grant funding has historically initiated services with the notion that they will sustain themselves by other means such as health insurance reimbursement. The threat to repeal the Affordable Care Act has drastically impacted the success of the implementation of these services and future treatment options. Many of the participants in Substance Use Treatment Programs have Medicaid, and many of them received it through the expansion. Without health insurance, those individuals will be at risk for not being able to afford treatment services. An additional barrier to implementing these strategies to address the epidemic is the lack of education and awareness about ongoing efforts including overdose prevention. Lack of robust research and resources hampered many of the existing programs and prevented their scale-up. Law enforcement and political actors also have opposed the initiatives for fear of enabling or sanctioning illegal drug use, while witnesses of overdoses involving illegally-obtained drugs avoided summoning emergency response (Davis, and Carr, 2015).

The literature review has various limitations including researcher bias, publication bias, and search strategy. The researchers of this study were subject to bias due to previous knowledge and opinions on the subject matter. The articles selected for further review are impacted by this bias. Publication bias was also a limitation in this study. Articles with statistical significance were selected for publication at a higher rate than those without. The documented response to the opioid epidemic has recently begun; therefore, many statistics on the impact of these strategies has not been evaluated. The search strategy impacted the availability of articles for review, as the researchers only utilized four databases.

CONCLUSION

The current efforts implemented to address the opioid epidemic have led to increased education and awareness about overdose reversal and safe prescribing practices. While the overdose rate continues to climb, the number of strategies employed is expanding. Over the next few years, West Virginia will spend time initiating new procedure and expanding upon old ones with the addition of federal funding.

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APPENDIX A

Questions Asked in Semi-Structured Interview of a Primary Care Physician and Expert in Substance Use Treatment on March 30th, 2017.

- If you had to narrow down the cause of the Opioid Epidemic in West Virginia to three main contributing factors what would they be?
- In your professional opinion, are there alternatives to treating chronic pain with opioids?
- How often do you see those patients that are prescribed opioids and how far apart are your follow up appointments for those same patients?
- When treating patients with Suboxone, do you notice a difference between patients who are dependent on prescription opioids vs. heroin?
- What is the most challenging aspect of treating opioid dependence in West Virginia?
- Do you think the West Virginia's adoption of the CDC Guidelines for Prescribing Opioids in Primary care will reduce the number of individuals treated for chronic pain? What challenges do you foresee with these guidelines?

Dental Health Status of India: Challenges, Strategies, and Recommendations

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Dental Health Status of India: Challenges, Strategies, and Recommendations

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ABSTRACT

India has the largest democracy and second most populated country in the world. However, 70% of the population is still living in the rural areas Some of the historical Indian Literature provide evidence of the dental practice in India since 2500 BC. Although the dental treatment practices are common in India since 2500BC and continually emerging as best oral & dental health provider, but oral and dental disease are one of the significant issues in India specifically in rural area. The disparity in distribution dental care facility, high treatment cost, absence of oral health awareness in rural population, lack of dental insurance and oral health policies are worsening the oral and dental health status in rural population of country. Introduction of tele-dentistry, dental insurance, oral and dental health policies by the government can provide basic oral health need of the extensive underserved population.

INTRODUCTION

Dental profession in India has made tremendous progress and is moving towards the advancement in every aspect such as an increase in number of dental colleges, implementation of technology in dental practices etc. Like other branches of medical education, dental education in India has received incredible recognition and accolades over the past years. (Mazumdar, 2011) Not only this, there are evidences which show the existence of dental treatment in India since 2500 BC, lord Krishna in Mahabharata wanted to test the "dana veerata" of dying Karan in the battlefield of Kurukshetra disguised as a Brahman, Krishna asks for gold in donation and Karan proved his worth by donating his gold-filled tooth (Ahuja, 2011). Dr. Rafuddin Ahmed, "Father of dentistry in India", it's his dedication and hard work that, India stand today as the oral health care providers (Mazumdar, 2011). However, dental and oral disease are one of the most crucial public health issues in India. Poor oral health can result in dental caries, periodontal disease, decrease in economic productivity, and risk factor for many systemic diseases including cancer. WHO consider the oral health as an integral part of general health. In India there is a great disparity between the access and quality of dental care provided in the rural and urban area (Gambhir, 2016) This has resulted in low standard of treatment protocols either in the form of removal of the teeth or preferred to be left untreated.

The oral health education and emergency dental treatment are low in priority of the government of developing countries when it comes to healthcare development. This become more worse when the people prefer to invest less on dental and oral treatment as compared to any other treatment or surgeries, due to lack of oral hygiene awareness. The consequence of this lead to newer challenges where dentists are inclined towards substandard material and hinderance to implement modern technologies as a part of their treatment plans as well as office settings. In India there are more than 300 dental colleges, and approximately 25000 graduates pass out annually including 5000 dental specialists (Gambhir, 2016). However only 10% of dentist practices in rural area where 70% of Indian population resides, and 90% of dentist prefer to practice and work in the urban area where just 10% of Indian population exist (Gambhir, 2016). Hence, there is no shortage of the dental work force in the country but the deployments of oral and dental services are inadequate.

The one of the basic reason for low utilization is the high cost involved in the dental machines, instrument and dental material etc. which resulted in widening the difference of oral health care among the socioeconomic classes of India. The population in urban area are well aware of the importance of good oral health and aesthetic, and are capable to pay the high cost associated with the dental treatment. The National Oral Health Policy was drafted in 1995

at the conference of Central Council of Health and family welfare at New Delhi aimed to develop an efficient oral health care delivery system however, it still remains as a draft due to poorly motivated policy maker of the country (Gambhir, 2016).

ORAL HEALTH BURDEN ON INDIA

The burden of oral and dental disease is reached at an alarming level. According to the survey there are high prevalence of dental caries, malocclusion, periodontal diseases and oral cancers. It is estimated that approximately 50% of school children are having dental caries, and 90% of the adult are affected by different level of periodontal disease (Kaur, 2009). This data indicates the problem in existing Oral Health Care system in India. The most vulnerable population for oral and dental disease consist of elderly, pregnant ladies and children specifically residing in the rural area. The National Oral Health Surveys of India in 2002-2003 shows that the prevalence of dental caries in the children of 5 year aged was 50%, in 12 years old 52.5%, 61.4% in 15years old, 84.7 % in the age of 65 to 74 years old (Bali, 2004). The incidence of oral cancer in India in standardized age is 12.6 per 100,000 population. The 19% population of 65 to 74 years of age are toothless (Kharbanda, 2017). Due to increased consumption of tobacco products in recent years, oral cancers are emerging as major threat to the younger population of India. According to research, more than 200,000 cases of oral cancers are diagnosed every year. India contributes approximately 7.8 % of global cancer and 8.33 % of global cancer death (Prasad, 2014).

DENTAL EDUCATION SYSTEM IN INDIA

Dental council of India(DCI) is the main regulatory body who supervise and review the dental education. DCI was instituted as outcome of Dentist Act of 1948 which was deliberated to control the dental practices and encourage dental advancements and check the progress (Kakkar, et al., 2015). DCI is the organization under the government of India. The authorities of the DCI include inspection of dental education, colleges, profession, and ethics and it's an representative intermediate with the government to acquire administrative approval for dental colleges and higher educational courses (Kakkar, et al., 2015). Dental colleges of India fall into one of the three main classes: (a) Government dental school, as a part of a government university, (b) private dental school affiliated with a government university and (c) private dental college as a part of private university (Kakkar, et al., 2015).

License procedure in India is pretty straight forward and simple, unlike United states which has its dental licensure examination and a state licensure examination after the formal dental training. In India, all the students pursuing dental program called as Bachelor of Dental Surgery(BDS) constituting a successful completion of 5 years curriculum which includes mandatory one year of rotary internship grants them license to practice dentistry all across the nation (Kakkar, et al., 2015). The dental curriculum comprises of both theory and practical/clinical elements. In addition, dental school graduates are required to register with a state and national governments by submitting the aforementioned certificate and applicable fees. Dental licenses are issued by the state government and helps in regulating the dental practice through state law under the supervision of Ministry of Health and Education of the respective state (Kakkar, et al., 2015).

CURRENT DENTAL MARKET OF INDIA

Even considering the glitch and flitch of Indian Dental Market, there has been some interesting facts that validates the significant progress and tremendous change in the trend. Comparing the Compound Annual Global Rate (CAGR) of dental market which is approximately growing at the rate of 5% in the last five years, while the Asian countries depicts the highest data with the growth rate of almost 10% followed by the Unites States by 5.5% which is above the Global rate by almost half of the Asian countries (Morulaa, n.d.). According to the market analysis, it is expected that that the dental market in India will show an exponential growth by 20% to 30% in coming years. Due to more investors across the globe and promoting dental chain concepts has made this growth practically possible (Morulaa, n.d.).

With the motive to improve the dental health in India and drastic increase in the foreign investors, quality of the service provided has momentously escalated in the past decade. A vast quantum of dental products are being imported into the country. According to one of the data, it has been estimated that a large pool of the material is being imported from the Germany, Japan, China, and Italy. Many foreign companies have set up their manufacturing plants in India facilitating a faster and efficient usage. Some of the esteemed dental companies such as KAVO, Ivoclar, Densply, 3M, Noble biocare, Coltene, SS White, Sirona and many others have setup their sales and marketing office in India (Morulaa, n.d.).

SHIFT IN PARADIGM OF THE DENTALCLINIC MODEL

From past many decades, "stand-alone" clinic has been the formula for the Dental Health providers in India. It is typically run by a one or two dentist with minimal auxiliary staff. This genre has predominantly been unstructured and ill organized. But there is a radical change in the past couple of years, where technology and the development has played a crucial role in this transformation (Wharton University of Pennsylvania, 2014). "The concept of the individual dental clinic in the neighborhood is losing its charm," says V.S. Venkatesh, CEO of Alliance Dental Care, a joint venture between Apollo Hospitals and Trivitron Healthcare, a global company headquartered in the southern Indian city of Chennai (Wharton University of Pennsylvania, 2014).

The new dental practice chain concept like Castle Dental and Brident in the U.S., is intended to provide a more comfortable, with highest quality dental experience. "The idea was to design a dynamic space that does not resemble a typical dental clinic," says Amarinder Pal Singh, CEO of Star Dental India. Star, which manages its dental centers under the umbrella of the Clove brand name, is a enterprise of Star Dental of the U.S. that has target to launch 600 super-specialty dental clinics in India by 2018(Wharton University of Pennsylvania, 2014). Another big cooperation known as Alliance who runs it clinic under the brand name of Apollo White Dental also admits that the impression and the atmosphere of the clinic has been their one of the top primacy. The CEO of the MyDentist chain Mr. Vikram Vora, has included in their policy that the waiting time of any patient is not more than 15 mins in their clinic (Wharton University of Pennsylvania, 2014).

DENTAL INSURANCE COVERAGE IN INDIA

Majority of the oral health provided in India are paid from out of pocket. Thus, this becomes the biggest hindrance for the low socioeconomic population. On the other hand, majority of this population resides in the rural area considering the low living cost. Education, is a ground root solution of all the problems. People living in two and three tier cities have a minimal awareness of the dental or oral health. The Dentists who prefer to practice in these cities, ultimately have to compromise in the dental standard that is being offered making it sure that is more affordable and feasible for the mass population. Since there are no guidelines and body who keeps a check on the treatment cost, it becomes hard for the fresh graduate to compete with the age-old dentist. Paying from the cost and considering oral health as an important element of overall health creates a huge barrier both for the dentist and the society. It is when the need of the dental insurance comes into play which can be a major gamechanger in oral healthcare of India.

Government and some of the private insurance companies have taken a step but it is still in the very preliminary stage. In India, there is a scarce number of the insurance companies that exclusively provide the dental coverage. Among all, most of the coverage are contingent to accidental case thereby limiting the regular dental checkups. An example of the commentary is the Bharti AXA Smart Health Insurance plan, which conceal treatment with the cap of just Rs. 5,000 (BankBazaar, n.d.). A recently launched India's first dental insurance plan known as OCARE, an Independent Insurance process as a service (IPAAS) came into existence in the mid-2017 (BankBazaar, n.d.). Currently OCARE has been introduced only in one state which is Maharashtra and is proposed to commence in other states in the near future. OCARE is being aimed to provide access and affordable oral care for all and is mainly targeted to the rural cities of the state. Some of the key points of this that it covers dental treatment up to Rs. 25,000 INR per year which is around 400 USD with an annual premium of Rs. 1,699 which is equivalent to 26 USD 000 (("OCARE launches India's", 2016). The company is hoping to get 2 Million policy holders by next year.

BARRIERS TO ORAL HEALTHCARE IN INDIA

Myth and taboos

Indian population includes people from different culture and religion. The cultural influence is seen in all disciplines of medical practice, and dental or oral treatments are no exception. Health outcomes of people are highly influenced by the society, culture and behavioral patterns. The most common myth related to oral health in India is that the milk teeth need no care as they are going to replace by permanent teeth (Mythri, 2015). However, studies have shown that early loss of the primary teeth or milk teeth can be due to serious genetical implication and should be addressed seriously as it also affects child's nutrition, malalignment of their teeth and thus affecting the child social and personal development. Another common misbelief is that the extraction or removal of upper teeth can affects the vision hence people fear to visit dentist for treatment of upper teeth[5]. Others believe that the professional cleaning and whitening loosen the teeth. They give consideration to charcoal, salt, rice rusk, tobacco in powder form as compare to

tooth paste for cleaning of teeth. The reason for these misconceptions are cultural beliefs and social misconceptions etc. which are deep seated in the rural population of India (Mythri, 2015).

Tackling Quackery

Dental quacks are running their practice in the most of the rural areas of India. They are incompetent and unqualified but operating dental clinic for their personal fulfillment. Most of the quacks learn some dental treatment by observation during their job at dental clinics and go to rural areas to start their own dental practice (Hans, et al., 2014). The reason for their success is that 70% of Indian population is residing the rural areas and a large portion of rural population are below the poverty line. The Survey shows that, India has one dentist per 10,000 people in urban areas while one dentist per 2.5 lakh population in rural areas (Hans, et al., 2014). The lack of awareness, high illiteracy rate, high cost associated with dental treatment, poor accessibility of dental clinic and multiple appointment for dental treatment are the reasons to motivate rural population to rely on these quacks dental practitioner.

'Quack' dental practitioners are least bother about the sterilization of their instrument and its effects on patients. Some the basic procedure done by quacks are extraction, restoration using self-cure acrylic resins, use of suction disc for retention of completer denture, splitting by using self-sure acrylic resin, and use of self-sure acrylic resin for fixed partial dentures etc. (Hans, et al., 2014). These unethical and nonmedical treatment worsened the oral health of patient in rural area for example use of self-care resin for fixed partial denture can result in erosion of gingival and palatal tissues or may cause oral cancer due to continuous irritation and exposure to chemical.

Deficient Dental Manpower planning and projection

Until 1966, all the dental colleges were financially aided by the government of India Forecast of shortage of dental manpower resulted in an exponential increase in number of colleges mostly in private sector (Tandon, 2004). On the other hand, the growth of government college was stagnant due to inadequate budget allocation to the dental health sector. The number of private dental colleges has increased massively but there is lack of homogenous geographical distribution beside the quality of dental education in these colleges has become a cause of concern. The steady increase in number of dental graduate require adequate planning and massive infrastructures to efficiently use the manpower (Tandon, 2004). Hence, lack of adequate planning may result in loss of interest of prospective student to enroll in dental colleges.

Inadequate work force in rural areas.

In spite of a huge workforce of qualified dentists in India, the most basic oral health education and simple interventions are also not available to vast majority of population and this is the misery of whole scenario. The high cost associated with running dental practice and lack of basic comfort, poor infrastructure, poor education quality and career opportunity resulted in migration of dentist from rural areas to urban areas. It is estimated that the rural population are served by only 15% of the dentist of India (Kharbanda, 2017). Very low number of dentist in rural area is a significant barrier in the access of oral and dental health care in rural population. It is often difficult for the rural population to access emergency care, and they have to travel miles of distance even for small treatment procedures. Various health condition such as diabetes and hypertension, along with harmful oral habits can lead to serious complicated oral disease. These diseases are commonly occurred in marginalized adults and children with malnutrition, poor oral hygiene and inadequate access to oral health care (Kharbanda, 2017).

Private Oral Healthcare and oral health Inequality

In India, health care delivery is primarily responsibility of state and national governments, but heavy work burden, sinking finds, lack of equipment in government hospitals, and high absenteeism impinging the government's efforts (Chavan, et al., 2012). In contrast the growth of private oral health sector is increasing exponentially, providing better services or care. However, there is lack of regulation for the private practitioners increasing treatment cost and health inequity. There are many cases in past occurs where private oral health provider denied services to low socioeconomic status groups. Increasing cost of treatment of oral and dental care in private dental practices making a barrier for rural population to access the quality of oral healthcare (Chavan, et al., 2012).

STRATEGIES TO IMPROVE ORAL HEALTHCARE

Referral from physician

The tendency of rural population to consider oral health care as non-threatening can be change by the increasing referral of patient from different physician to the oral healthcare provider. Physician can also provide counseling to the parents, conduct informative session with patient and their families, and explain them the benefits of dental treatment in initial stages (Chavan, et al., 2012). Pediatricians can play important role in the oral health status of children by encouraging the parents for regular dental consultation (Chavan, et al., 2012). Oral health treatment in

the early stage not only help to improve the oral health status but it will also be helpful in reducing the financial burden of complicated dental treatment for families as it rightly said- prevention is better than cure.

Tele – dentistry

India has achieved an enormous development in the world of telecommunication in the past few years. Internet is tremendously used as a fascinating way of personal and mass communication among both in urban and rural population. Oral health care provider can use these techniques to improve the awareness of oral and dental health in the rural area. It can also be used to provide treatment in underserved areas of rural India (Khemka, et al., 2015). Tele dentistry can be considered in many ways such as web based self-instructional educational system, interactive video conferencing, and for a continuous education program for the dentist practitioners in rural areas. Tele dentistry can also be used to provide direct or indirect dental consultation to the patient in underserved and rural areas of India (Khemka, et al., 2015). The successful implementation of tele-dentistry could be only possible by the collaborative effort of professional dental organizations, NGO (Non-government organization), government and local civic societies. The Government should support it and take initiative actions to highlights the benefits of tele dentistry in rural areas by providing basic facilities and infrastructures.

Mandatory internships in rural communities

To improve the oral and dental health status of population living in country side of India, Dental Council of India should initiate mandatory dental practice or internship in rural area in dental education curriculum. The Government should initiate providing extra incentive to dental those who are willing to practice dentistry in countryside area. These will help to balance the ratio of dental professional practitioners in rural areas.

Dental Insurance

Dental insurance is still in its early stage as compared to developed countries, and rural population are mostly unaware of such policies. Therefore, rather than concentrating on marketing and promoting dental insurance in urban areas, private insurance company should collaborate with the government to educate the rural population about these policies. Dental insurance will provide incentive to regular visit to dentist and preventative dental treatment at affordable prices. The geriatric population in rural area usually require prosthodontics care but due to the high cost they avoid to visit dentist. If the removable or fixed prosthodontic treatment will get covered under dental insurance, it will provide better dental health to the middle-class elderly patients (Khemka, et al., 2015). Furthermore, health insurance company should also facilitate health insurance benefits for disease and disorder affecting craniofacial tissue, oral and dental tissue genetic disease, congenital defects or chronic orofacial pain condition (National Oral health Programme, n.d.)

Oral & Dental Health Care Reform

Several developed countries made commitment to oral and dental health by formulating policies to improve the oral and dental health status of the population and increase the access of primary dental care services. Such as the public health outcomes framework (2013-2016) of National Health Services in England has included "tooth decay in 5-year-old children", as an outcome indicator. In 2014-2015, NHS has included indicator related to patient's experience of dental services and access to NHS dental devices. Under a reform of Israel's National Health Insurance Law in 2010, free dental services were offered to children up to age of 12 years.

Like other developed countries, the government need to include the oral & dental health care outcome measures under family health policies. The Government need to improve the existing oral health policies to improve the access of dental health facility in rural area, promote the preventive oral and dental health and increase the awareness of oral health and different policies among the rural population in India. Although in 2018 healthcare budget the government is planning to raise the percentage of GDP allocated for healthcare from 1.15% to 2.50% by 2025 but there is no separate allocation for oral health policies (Mathew, 2018).

CONCLUSION

Primary oral and dental health without any barrier is missing the rural area of India. The high cost associated dental treatment, unequal distribution of dental health professional among urban and rural area and lack of awareness of oral and dental are most important barrier for good oral health in rural areas. The government, local civic societies and non-government organization should come together to increase the awareness among rural population, and introduction of tele-dentistry in remote areas. Implementing compulsory internship in dental education curriculum, better infrastructure and employment opportunities in the primary health center in rural area can incentivize dental professional to stay in rural areas. Introduction of dental insurance and reformed oral health policies can aid lower treatment cost, and increase access to primary oral and dental treatment to the rural area population of India.

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TRACK
STUDENT-LED PAPERS

A COMPREHENSIVE ANALYSIS: DEVELOPING NEW LEADERSHIP COMPETENCIES WHEN NURSES TRANSITION INTO NEW OR HIGHER RANKING LEADERSHIP POSITIONS

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A COMPREHENSIVE ANALYSIS: DEVELOPING NEW LEADERSHIP COMPETENCIES WHEN NURSES TRANSITION INTO NEW OR HIGHER RANKING LEADERSHIP POSITIONS

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ABSTRACT

This essay will focus on nursing leadership in sub-acute and long-term health care settings. This field of interest is important in helping to understand the current workplace conflict that exists amongst nursing assistants and nurse managers as well as the high turnover rates of nurse managers due to an increase of duties that they have never experienced, and are not trained or qualified to handle. In addition, this essay will seek to identify what it takes to achieve the competencies required to become a nurse manager and if professional development should occur prior to obtaining the clinical skills of the nursing profession. The related foundational theories associated with this essay are based upon leadership competency models, human resource competency models, and clinical skill nursing competency models. The content in this essay is applicable to nursing leadership in sub-acute and long-term health care settings, but may be applied to other leadership work systems in other industry settings. The effectiveness of transformational leadership, job design, job enlargement and job enrichment from a human resources perspective that focuses on benefits of professional development at the forefront of clinical skills will be proposed in this essay to determine if new nursing competency models need to be constructed to include levels of competency for proactive professional development. The purpose of a new competency model is to ensure that nurses are competently prepared to transition or become promoted into a new or higher ranking leadership position.

INTRODUCTION

Nursing leadership competency refers to the personal attributes that are conducive to effective performance in a nursing leadership position. Nursing leadership competency models are used to recognize and expand the competency level that is required for the role.

Transitioning into a new or higher ranking nursing leadership position usually involves career development after the promotion or transition has occurred. Clinical skills are the proficiency skills related to performing skilled nursing care. The proficiency of clinical skills makes the transitioning or new nurse advanced in that specific nursing role but this does not necessarily mean the nurse is advanced enough for a leadership role.

Career development programs are created by human resource development personnel. Because the nursing leadership role usually involves managing others and being responsible for a variety of analogous and challenging circumstances within a healthcare organization, competency levels of the nurse must be taken into consideration. Assessment of the leadership competency level will require a leadership competency model that measures the skill level and personal attributes that are applicable to a nurse leader. Therefore, in making the decision to promote or transition the nurse, human resource management should determine if leadership can be taught to nurses, if experience is the best teacher, and if professional development for nurse managers should occur prior to clinical skills and before transitioning or promoting them into a leadership position.

Professional Development

The development occurs over a period of time after the existing employee has transitioned into their new role. The essential components of new hire nurse competency assessments are only applicable to their clinical skills at their point of hire. The essential components of competency assessments of existing and transitioning nurses are

only applicable at their initial point of hire as well. The transitioning or promotion of a new or existing nurse does not require assessing them for higher ranking or new levels of competencies.

Career advancement opportunities typically take place when the existing employee has completed or received a professional certification or educational degree required for the leader or higher ranking leadership position. Additional ways that existing employees advance into higher ranking leadership positions may be due to their exceptional level of performance in their current position, the number of years spent working within the organization, and possibly by personal (family ties) and professional relationships with colleagues that are already in high ranking leadership roles within the organization.

Employees that are new to nursing are moving into leadership roles at faster rates than those in the 20th Century. New nurses may require additional training with their clinical skills after becoming licensed to perform nursing duties. This usually done under the supervision of an RN as their clinical preceptor of training to make new nurses competent enough for their new role. This is why leadership development is very important for the purpose of this essay and to organizations. Leadership development helps to identify the strengths and weaknesses of the nurse leaders. It will expose their capabilities and areas that require development prior to promotion or transition into a higher ranking nurse leadership position.

A framework to support preceptors' evaluation and development of new nurses' clinical judgement has been created and may be used to assist with determining the competency levels of new nurses as it relates to their clinical skills only. The developers of this framework felt the framework was necessary due to today's complex, fast-paced world of nursing, new graduate nurses do not have well-developed clinical judgment skills (Nielson, Lasater, Stock, 2016).

Due to the autonomous nature of the nursing profession, (Nielson et al., 2016) created a clinical judgement model and rubric and used them as the framework for a new evaluation tool and orientation process for new nurses. The findings indicated that having a structured framework provided objective ways to evaluate and help develop new graduate nurses' clinical judgment. It is hypothesized that academic clinical supervisors may find such a framework useful to prepare students for transition to practice (Nielson et al., 2016).

The framework does not account for the non-clinical competencies that new nurses today must possess to be able to handle the overall complexities of their role. The findings also indicate that there is some existing clinical competencies that new nurses struggle with, so why are they being promoted and transitioned to take on additional duties that they may not be competent enough to handle? This reinforces the importance of developing new competencies when nurses are promoted or transition into new or higher ranking leadership positions. This essay will attempt to build onto this framework to add necessary professional development competency criteria levels.

Continuous Education

Continuous education in the nursing field is very important. Nurses are expected to maintain their nursing credentials by obtaining CEU's. This acronym stands for continuing education units. In or for a nurse to maintain their professional licensing and continue to work as a nurse they must earn a specific number of credits or hours of continuous education per year.

The continuous education contact hours may be completed by attending professional conferences and by taking clinical skill refresher courses. These courses can be taken either on-line or in a classroom setting. In the state of Michigan it is required that LPNs' and RNs' are to renew their license every two years by March 31, and complete 25 hours of board approved continuous education. The education nurses receive from these required contact hours focuses on clinical skills and pain and symptom management.

The required continuous education does not place any emphasis on nursing leadership development or leadership competency. The focus is solely placed upon development of clinical skills. This also demonstrates the importance of proactive professional development and need for a new leadership competency framework for nurses.

Nursing Leadership Competency Levels

Human resource departments have the primary responsibility to select candidates that best fit the culture, mission, and vision of the organization. This is how human resource departments determine if candidates align with the business strategy. The selection process for the new hire candidates that best fit the organization usually undertakes many assessments to determine if they are the best candidate for the position.

The new hire nurse candidate; pre-hire testing may consist of personality, substance abuse, skills, and ability assessments prior to new candidates being offered the position. Successful candidacy for job openings are achieved, when the strategies used by human resource departments to plan the assessments for new hires are carefully proposed covering the entire essential components of the competency assessment process for the position.

The essential components of new hire nurse competency assessments may vary depending on the strategies that human resources managers develop for handling the management of human, physical, and financial resources of an organization. At the time of hire the new nurse employee that is considered the best fit for the position is extended the job offer, provided with a job description as well as a list of the job duties and responsibilities they are to perform.

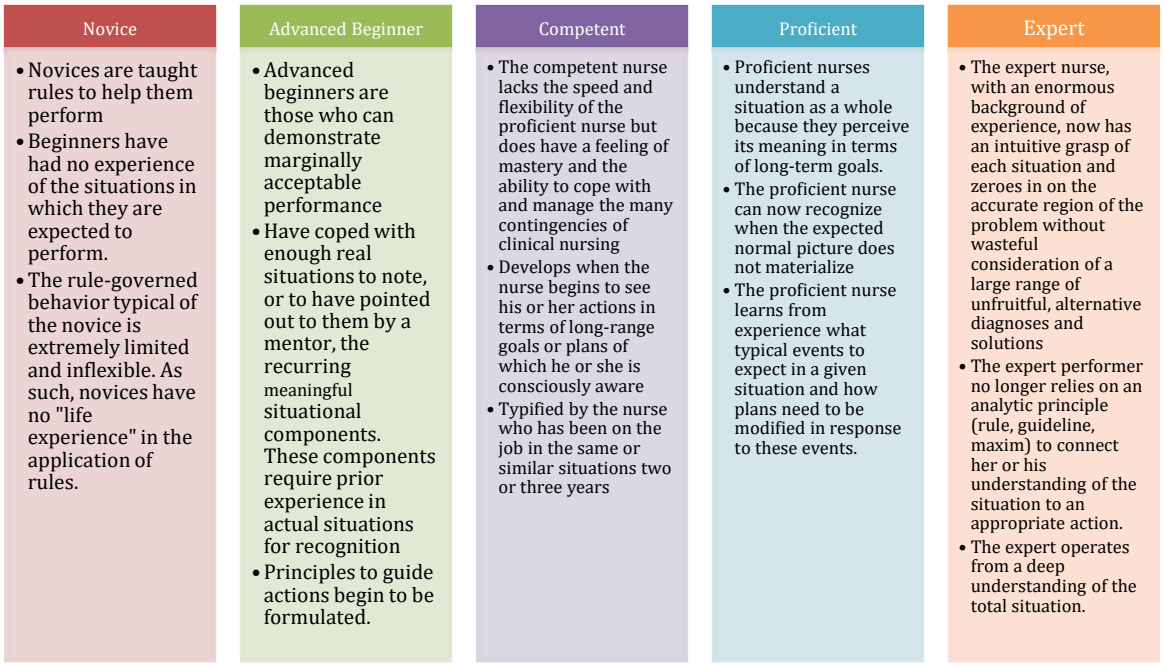
Nurses of an organization often seek to advance their careers by applying for higher ranking leadership job postings within the organization. They typically are not tested to determine if they are the best fit candidate to advance or become promoted to the position. Advancing into a higher ranking nursing leadership role within an organization is a rewarding transitional process. The transitioning process requires learning new concepts, processes, and skills. Leadership development then becomes part of the pre-transitional process.

The Dreyfus Model Competency Levels

The Dreyfus Model is a framework that was created in the 20th Century by nursing theorist Dr. Patricia Benner. The Dreyfus model is known as Benner's Stages of Clinical Competence in the nursing continuum. During education and training, nursing students pass through five levels of proficiency: novice, advanced beginner, competent, proficient, and expert. These different levels reflect changes in three general aspects of skilled performance

> According to Dr. Benner, one is a movement from reliance on abstract principles to the use of past concrete experience as paradigms. The second is a change in the learner's perception of the demand situation, in which the situation is seen less and less as a compilation of equally relevant bits, and more and more as a complete whole in which only certain parts are relevant. The third is a passage from detached observation to involved performer. The performer no longer stands outside the situation but is now engaged in the situation (Benner, 1984, p 13-34).

Figure 1 Five Levels of Proficiency



As shown in Figure 1, nurses are classified as novice, advanced beginners, competent, proficient, and experts over the continuum of their career in healthcare. The classifications in the Dreyfus model lacks a competency level that recognizes and addresses leadership competency and management as it relates to teamwork, communication, and delegating tasks amongst the nursing assistants and other employees working under the nurse.

Due to the demand for nurses in the 21st Century, new nurses that are considered as novice in their career are quickly becoming nurse managers in long-term care facilities. Licensed Practical Nurses (LPN) obtain certification to practice practical nursing after completing one year of nursing education. Once the state issues their LPN license they are able to work in nursing homes and some sub-acute care settings. While working under the supervision of a registered nurse (RN), LPN's are immediately given supervisory responsibilities and duties to manage nursing assistants, nurse techs, and other duties as instructed as well as perform their skilled duties in patient care.

The Nursing Leadership Institute Levels of Competency

To address the gaps in the Dreyfus model and nursing leadership competency levels needed for the 21st Century nurses, the Nursing Leadership Institute created additional levels of competencies. The levels were created to include personal mastery, financial management, human resource management, interpersonal effectiveness, caring and systems thinking.

The Dreyfus model does identify the range of competency levels in nursing but does not explain why novice and new beginner nurses are given leadership roles when they have not achieved the skills and personal attributes to make them competent for such roles.

Figure 2 NLI

The theories behind the Nursing Leadership Institute Competency model is based upon conclusions reached by the organization when they conducted research to identify the critical competency levels needed in nurse leadership positions in the 21st Century. The levels of this competency model addresses leadership competency and management as it relates to teamwork, communication, and delegating tasks amongst the nursing assistants and other employees working under the nurse. A novice or new beginner nurse, if assessed and can demonstrate mastery in these levels may have a greater chance at being successful in a new or higher ranking leadership position.

The competency model fails to address the locus of control, conscious and unconscious competency levels and behavioral based competency levels that may occur in nurse leadership due to the high demand, administrative duties, and multidisciplinary clinical expectations, demanding work, high turnover, and nursing shortages. Nurses in the 21st Century are expected to be versatile and flexible in their scope of practice instead of specializing in one area of clinical expertise as well as perform other duties.

There is a lack of evidence to support why novice and beginner nurses that have transitioned into higher ranking leadership positions are being assessed against these leadership competency models. There is evidence to support that they are measured against them. This process is subject to scrutiny as it causes questioning of whether or not the transitioned or promoted employee is the right candidate for the higher ranking position and if this process is a contributing factor in the high turnover rates of novice to expert nurses.

Why are employees that have advanced into higher ranking leadership positions being measured against competency models they have never been assessed for? When does the professional development of these competency levels occur? Are novice and new beginner nurses placed in sink or swim situations in the healthcare field? Can leadership be learned? This comprehensive analysis seeks to enlighten on the aspects that influence this decision. In this analysis the evaluation of leadership competency models will be examined for any gaps in competencies that will require implementation of a new level of competency framework.

SYNTHESIS

The key topics that will be addressed within this synthesis will be to determine if nurse leadership can be taught, outdated leadership competency models, nurse leadership locus of control, human resource competency models, transformational leadership and the benefits to the organization for designing and implementing a new

leadership competency framework for nurses that have transitioned or been promoted into higher ranking leadership positions. The essay will research the current evaluation tools, current leadership competency frameworks, and metrics used in human resource departments for nurse leaders within organizations.

Focus of Essay

The focus of this essay is to examine the issues with existing leadership competency frameworks and to increase awareness to the fact that nurses that have transitioned into higher ranking positions may not always be the best fit for the position because they are not competently prepared or simply want a one dimensional nursing position. Without the use of a competency model that identifies the alignment gaps, challenges, behavioral based competency levels, conscious and unconscious competency, locus of control, and levels of incompetency an existing transitioned employee has, there is no way to define metrics for leadership development.

The existing leadership competency models require changes to accommodate for new challenges transitioned leaders will face for the first time and to determine if the promoted employee is a good and long-term fit for the higher ranking leadership position they have acquired. The new levels of nurse leadership competency framework will address the current challenges such high turnover rates, nurse leader fatigue and burnout and implementing professional development prior to technical skills to make the nurse leadership transition successful.

The Challenges

In the 21st Century and beyond it appears that there are and will continue to be challenges in the nursing profession and a need for nurse managers to manage the day to day functions in healthcare. Management of people, processes, and care plans will present many challenges to the nurse leader. Additional challenges associated with nurse leaders are:

1. Technology
2. Burnout/ Employee Fatigue
3. High Turnover Rates
4. Resistance to Change
5. Leadership Locus of Control
6. Incompetency of newly acquired responsibilities
7. Lack of soft, problem solving and people management skills
8. Engaging a disengaged healthcare team
9. Experience being the teacher (sink or swim nursing)
10. Implementing proactive Professional Development

Challenges such as these take on a negative connotation, especially given the high turnover rates in nursing when novice or new beginner nurses encounter these challenges with little to no preparation, or no desire to handle such challenges. However, these can be the challenging experiential opportunities a nurse can tackle and use to give them the level of competency needed to take on a leadership position which makes experience the best teacher.

According to authors Kouzes and Posner (1987, p. 39), there are three important lessons that can be learned from this and applied to nursing in the 21st Century. Their findings suggest that not all personal best leadership experiences are self-initiated. The lessons are:

- Nurses that become leaders do not always seek the challenges they face. Challenges also seek the nurse leaders
- Opportunities to challenge the status quo and introduce change opens the doors to doing one's best. Challenge is the motivating environment for excellence.
- Challenging opportunities can bring forth skills and abilities that people do not know they have. Given the opportunity and the support, ordinary nurses can get extraordinary things done in organizations.

Novice and new beginner nurses are given and promoted to leadership roles despite having the ability, skills, and competency levels to handle such challenges. This may result into the possibility of the position being too hard for the nurse to make the transition with just clinical skills alone so they may choose to walk away from the profession, which contributes to the high turnover rates experienced in the nursing profession.

In researching the foundational theories and scholarship associated with nurse turnover rates, it has become apparent that experience may not be the sole and best teacher for nurses. If nurses fail to have a well-balanced level of competency that encompasses clinical skill, leadership abilities and proactive professional development they may quit or opt out of maintaining the continuous education requirements to keep their nursing license. It also appears that competency levels have a connection to the impact on the patient centered care approach that core clinical care leadership teams are currently placing high emphasis on.

A nursing team or nurse leader should know from their clinical skill training that patients are not strictly like traditional customers. Patients are frequently more anxious and vulnerable. If the nursing team and nurse leaders unconsciously or consciously display signs of incompetence, stress, and team conflict it can easily be detected in the care provided by the patient or their family members or can lead to medical errors that may result in death.

Unconscious/Conscious Competency

The unconscious/conscious competency model will be discussed in this essay as the author's way of correlating the unconscious and conscious levels of competency associated with Dr. Benner's The Dreyfus Model. The unconscious/conscious competency model is the process that affects the way that nurses think as they learn new skills (conscious) and their skill level (competence) According to the model (The Mind Tools Content Team, n.d) , we move through the following levels as we build competence in a new skill:

- **Unconsciously unskilled** – we don't know that we don't have this skill, or that we need to learn it.
- **Consciously unskilled** – we know that we don't have this skill.
- **Consciously skilled**– we know that we have this skill.
- **Unconsciously skilled** – we don't know that we have this skill (it just seems easy).

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An example of a unconsciously unskilled nurse may be a novice nurse being promoted to a team leader position that has never had any management experience or skills The new or novice nurse is still learning his/her clinical skills and expected to learn additional skills outside of their scope of clinical practice. This promotion or transition may be a result of the new nurse having clinical skills that his/her team members do not have. The nurse received the lead position based upon his/her clinical skills alone, this does not make them qualified to lead the team.

An unconsciously unskilled nurse typically will not know how to delegate tasks and effectively communicate with the team members which may cause conflict amongst the team. This can lead to confrontation, a disengaged team, and feelings of frustration when a member of the team does have management and effective communication skills, but they are not the person in charge. In most cases such as this the RN will instruct the new nurse or novice nurse with no life experiences on how and what to do when it comes to team management and communication.

The consciously unskilled nurse may learn from the unconsciously unskilled example above and choose to self-reflect to improve their skill level. Once the new or novice nurse has self-reflected they may now realize that he/she may have team members that have skills they do not have. The consciously unskilled novice nurse may use this as an opportunity to reach out to the team members for guidance and help with the skills they lack or he/she may feel as if they are struggling too much ,cannot perform the duties expected of them and choose to quit. If the nurse uses this as an opportunity to grow, it can improve the dynamics of the team as well allows the new nurse to see the importance of learning new skills.

The consciously skilled nurse may be considered competent or proficient in a sense that they have worked in the nursing field for a while and received the clinical knowledge, skills and confidence to perform day to day nursing duties. The clinical activities become easier with concentration and repetition of the activities.

When a nurse expert can easily perform their clinical duties with little effort or conscious thought they become unconsciously skilled. The unconsciously skilled nurse has mastered their clinical skills and has the ability to teach clinical skills to others. As a preceptor this can really help the new or novice nurse while they learn new skills. It is at this level that the nurse may seek to acquire new skills and outside of their scope. It is also important that the unconsciously skilled nurse use their mastered skills regularly so that they will not lose those skills.

The correlation between the Dreyfus Competency Model and the unconscious/conscious competency model reflects that there is a need for new leadership competency levels that will amalgamate the two models and incorporate competency levels for proactive professional development needed to address the current and future challenges in nursing. The foundational theories, models and scholarship used to construct this essay will be used to identify the additional competency levels needed in nursing leadership.

Foundational Theories and Scholarship

The foundational theories the author applied to this comprehensive essay seeks to inform as well as improve on the competency level frameworks for nursing leadership. The current leaders of the 21st Century and their effective attributes are the ones that will influence, and develop strategies that can assist with the survival of such organizations in the future. Many leaders have shared their perspectives and theories applicable to leadership over the years. These leaders and their contributions to the 21st Century will impact future leaders and organizations.

To make the nursing profession survival possible, current nurse leaders will need to look at the sustainability of their organizations. The sustainability of the organization encompasses the community, governing of self, and education. When nurse leaders are faced with challenges to the sustainability of their organizations they create innovative solutions to such challenges and transform the organization. This can provide leaders of tomorrow with the insight and reference in leadership needed to assist with the unknown in the organizations of the future.

Transformational Leadership Theory

James McGregor Burns was the developer of the transformation leadership theory. In his theory Burns (1978) explained that leaders and followers help each other to advance to higher level of morale and motivation for situational changes without changing the entire culture and behavior of the organization. Due to Mr. Burns' lack of ability to create an entire organizational culture based on recognized and desired behaviors theorist Bernard Bass improved on the original theory. Burns' applied the cognitive, behavioral, and functional traits to his version of the transformational leadership theory.

Bernard Bass made the transformational leadership theory all-inclusive by way of adding four elements to the theory. The four elements encompass the leader's vision, ethics, mentorship, and approach to risk taking. According to Bass the transactional leader tends to maintain a steady state situation and generally gets performance from others by offering rewards. (Kouzes & Posner, 198 p. 281).

A nurse leader that has a competency level or grade that places them at the mixed combination of transformational and transactional leadership may have high expectations of themselves and others. This leader will be results driven (appreciates big and small wins), collaborative (teamwork driven), situational, intense, customer and employee oriented. A new leadership competency framework that can be applied to nurse leadership should incorporate cultural change, growth, cognitive, behavioral, and functional traits.

HR Competency Models

Human Resource competency models include technical and general competencies. According to authors Reed and Bogardus (2012), these competencies have a required proficiency levels that given a grade level. This approach helps HR professionals to create a visual roadmap to achieving specific and desired levels competency or proficiency.

Many HR competency models, initiatives, and theories have developed over the years due to the challenges and changes that have taken place over the years as it relates to human relations. Some of the pioneers that led studies into research of human relation in the workplace are:

- Abraham Maslow: The Hierarchy of Needs Theory (1954)
- B.F Skinner: Operant Conditioning (1957)
- Fredrick Herzberg: Motivation/Hygiene Theory (1959)
- Douglas McGregor Theory X and Theory Y (1960)
- David McClelland Acquired Needs Theory (1961)
- J. Stacey Adams: Equity Theory (1963)
- Victor Vroom: Expectancy Theory (1964)
- Clayton Alderfer: ERG Theory (1969)

In addition to the many theories developed over the years, many leadership concepts have been researched and written about. Thomas Carlyle was the pioneer of the "great man" theory. The "great man" theory resonates with a question raised in this essay. Can leadership be learned? Thomas Carlyle believed that leadership could not be learned. His theory expressed that "leaders are born with innate qualities that set them apart from other mere mortals" (Reed & Bogardus, 2012).

Carlyle's theory led to trait theories of leadership. The leadership trait theories focused on intellect, physical, and personality traits. These traits were used to identify and explain and individuals ability to lead others. The traits theory had many downsides to it. "Trait theories did not explain how leaders were successful in different situations using very different methods. Researchers then opted to use other avenues for investigation such as behavioral, situational, and contingency theories of leadership" (Reed & Bogardus, 2012).

Nurse Leadership Competency Models

Nursing competency models and assessments are developed to ensure nurse leaders have proficient clinical skills, standards of professional performance and leadership skills. The nurse leadership competency models examined for this essay lacked a common voice. Each model was different and was primarily focused on the leadership of expert or proficient RN's, Nurse Practitioners, and nurse managers with competent or proficient clinical skills.

Before "2006 issues such as change management, unit performance management, strategic planning, communication, team building and team management, personal development, quality management and organizational values were core skills for middle managers. However, while some nurse managers were able to use these skills instinctively; there was no formal training or education"(Koc, Ankara, Eurkus, & Koceali, 2013).

These nurse leadership models fail to include the new or novice LPN that has been assigned the title or position of nurse in charge or nurse manager in long-term healthcare care setting. One may try to argue that this is a simple fix that can be rectified by applying the same model and assessment tools to an LPN. However, the same discrepancies and drawbacks other researchers found in the Carlyle trait theory can occur with this framework if we try to make it work in its current form for LPN's. For example, the ANA Leadership Institute developed a competency model practice regulation. The foundational framework of standards evolves around quality, safety and evidence.

Figure 3 ANA Leadership Model

This model also includes ten standards that correlate with the expectations of performance for Registered Nurses (ANA Leadership Institute, 2010). The ten standards are:

- Collaboration
- Communication
- Education
- Environmental Health
- Ethics
- Evidence Based Practice and Research
- Leadership
- Professional Practice Evaluation
- Quality of Practice
- Resource Allocation

Leadership Competency Models

Leadership competency models are critical to the development of leaders. The leadership competency models make it possible to assess the leader and they essentially become the rubric that sets the guiding principle for standards of behavior for the organization. According to author Quint Studer (2004 p. 111), an organization can adopt standards of behavior but if it has not trained a nurse leader to confront problem employees it will not work.

Studer's approach to development is proactive by nature and promotes the inclusion of proactive professional development proposed in this essay. The competency of the non-clinical competencies nurses need to develop in the ever changing and demanding nursing profession.

Proactive Professional development that occurs prior to nurses seeking clinical skills will allow for professional resolutions to demands and changes in long-term healthcare settings. In developing leaders within organizations "it is important to recognize the phases of change the leaders will face. This allows organizations to make sure the leader possess the competencies to move the team, department, unit, and organization through each phase. Otherwise, it's easy to panic" or quit the profession (Studer, 2004, p. 111)

Nursing Leadership Locus of Control

The term locus of control relates to the decision making process and stress coping ability that a nurse leader may or may not have. In 1954, psychologist Julian Rotter suggested that our behavior was controlled by rewards and

punishments and that it was these consequences for our actions that determined our beliefs about the underlying causes of these actions (Cherry, 2017).

When a person has an internal locus of control they feel as though they have control of the outcome when faced with a challenging situation. When a person has eternal locus of control they feel as if they have no control of the outcomes associated with a challenging situation they are exposed to.

"Your locus of control can influence not only how you respond to the events that happen in your life, but also your motivation to take action. If you believe that you hold the keys to your fate, you are more likely to take action to change your situation when needed. If on the other hand, you believe that the outcome is out of your hands, you may be less likely to work toward change" (Cherry, 2017) As a nurse leader it is imperative that they possess the competency of internal locus of control. This demonstrates that the nurse leader has a sense of urgency and desire to take action. The nurse that possesses an internal locus of control is motivated by action and results.

Gaps in Literature

The gaps in the literature that relate to the focus of this essay may be applicable to the locus of control leadership and competency level as a pillar for a new competency model for LPN's. There also appears to be areas that can use additional scholarship on LPN leadership competency levels and further elaboration on the topic of LPN's as nurse managers the literature used for this essay are all loosely based and geared towards the RN as manager or leader.

SUMMARY

Development of nurse leaders with a clear vision can effectively become change agents to the human tendencies of resistance by being able to identify the basic needs, beliefs, feelings, obligations, and gain understanding of themselves and others. This is critical to an organization's success because if nurse leaders can identify with these things the more successful they will be at influencing others, social relationships and transforming change. According to Elsbach, Kayes & Kayes (2016), leadership describes the process as leaders influence others to help achieve something important to the organization. Leadership development can help to identify the best fitting person and leadership style to the demands of the situation, the requirements of the people involved and the challenges facing the organization.

Experience and thinking according to Dewey, requires active and passive elements. The active element allows one to learn by way of experimental, consequential, and physical change for achieving experience and learning (Dewey, 1916). The five senses of sight, sound, touch, taste, and smell create a variety of ways that we gain experience and learn. Dewey's results may be from another century, but they imply what we see in the 21st Century. That is that the activities of the mind and body allow us to learn and continue to learn. The analysis of the various competency models allowed the author to see this in action as well as the active and passive elements of a nurse's mind as a leader.

It is apparent that soft skills, clinical skills, hard skills, social skills, knowledge and experience are very important competencies and attributes for nurse leaders to have. Leadership is both innate and learned. There are people with an innate ability to lead that do not become leaders and there are people with less innate ability that work hard to become good leaders. Then you have people with innate leadership abilities that work hard to become better. Future nurse leaders can benefit from a new leadership competency model that is based on situational and behavioral theories, the innate ability to lead, work hard to become good leaders and have the desire to lead. They can also benefit from possessing active and passive elements of thinking; learning and experience within their locus of control.

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DOES THROWING FASTBALLS OR CURVEBALLS PREDISPOSE BASEBALL PITCHERS MORE TO UCL SPRAIN?

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ABSTRACT

Over the years, the incidence of ulnar collateral ligament (UCL) injury in baseball pitchers has increased (Keller et al., 2016). Most often these injuries result in surgery so the athlete may return to play faster. The increased incidences have led researchers to examine underlying causes. The studies analyzed pediatric pitchers, major league baseball pitchers, and high school pitchers. Biomechanics and pitch count for both fastballs and curveballs were studied in order to determine reasons for the escalation of this condition.

The results of the studies identified the potential risks associated with pitching and the potential for increased UCL injury. The studies focused on pitchers specifically and did not discriminate between age groups. All of the subjects were males because the question focused specifically on baseball and not softball. The biomechanics of pitching were analyzed along with the type of pitch delivered. Several studies used high-speed cameras to capture the forces that go through the elbow during pitching. The purpose of this presentation is to highlight results of the literature review and identify precipitating factors in an effort to decrease risk for development of UCL injury.

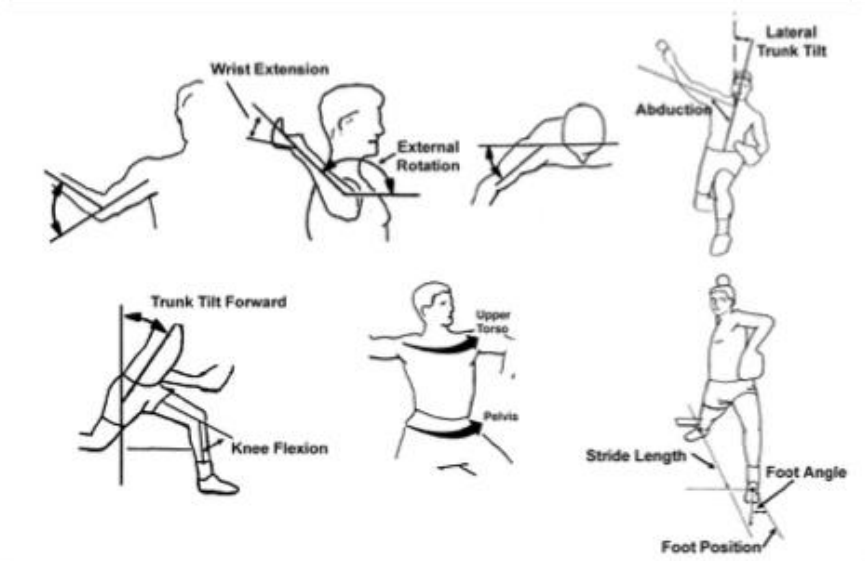
INTRODUCTION

The prevalence of Ulnar Collateral Ligament (UCL) sprains and other elbow injuries in baseball has increased in the past few years. In fact, in Major League Baseball (MLB) alone about 25 percent of pitchers undergo UCL reconstruction (Keller et al., 2016). There are several reasons why this could be occurring, including number of pitches thrown, velocity of pitch, and type of pitch thrown. The purpose of this literature review is to compare fastballs to curveballs, and which predisposes baseball pitchers more to UCL sprains.

Biomechanics

In order to understand how pitching can affect the UCL, the biomechanics of pitching must be analyzed. Valgus forces that are produced when throwing, translate through the elbow causing tension on the UCL. Just like any overuse injury, repeated stress on the medial elbow can cause the ligamentous tissue to tear or rupture, thus an UCL sprain would occur. During delivery of a pitch, speeds of 3000 degrees per second have been recorded through the elbow (Werner, Murray, Hawkins, & Gill, 2002). This type of loading is called valgus extension overload and is one of the major predisposing factors of UCL injury (Werner et al., 2002).

Pitching mechanics are divided into phases, including the windup phase, early cocking phase, late cocking phase, acceleration phase, deceleration phase, and follow-through phase (Limpisvasti, Elattrache, & Jobe, 2007). These phases are common through all types of overhead throwing and are shown in the photo below. This photo outlines angles and forces through the body when doing a basic throw. It is thought that most shoulder and elbow injuries occur in the late cocking phase where the arm is in external rotation and horizontal abduction (Limpisvasti et al., 2007). The angles and forces vary slightly with different pitches, including a significant difference between proximal elbow force when throwing curveballs versus fastballs (Fleisig et al., 2006; Limpisvasti et al., 2007). During a fastball, elbow valgus torque measures eight to nine percent greater than that of a change-up. During the deceleration portion of pitching the elbow flexor torque was nine to fourteen percent greater in the fastball than the



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curveball and change-up (Fleisig et al., 2006). These biomechanical differences in pitching mechanics show how pressure is distributed through the arm and may affect the integrity of the elbow with repeated pitching.

Review of Literature

There have been several studies that compare the type of pitch thrown by baseball players, and the prevalence of UCL sprains in the elbow. The major increase in UCL injury to MLB players has encouraged researchers to study why this injury is becoming so common. This literature review will examine the difference between fastballs and curveballs to compare which is more detrimental to the integrity of the UCL.

A study by Keller et al. (2016) examined velocity and type of pitch thrown as the most likely risk factors in pitchers who suffer from a UCL injury. The researchers gathered information on 83 MLB pitchers who underwent UCL reconstruction surgery between the years of 2008 and 2015. Researchers reviewed pitching statistics for each of the 83 pitchers for two seasons before they underwent UCL reconstruction surgery (UCL-R). The pitchers' statistics were cross referenced with a group of 83 control pitchers with no history of a UCL injury. An initial analysis showed no statistical difference between throwing motion for the two groups. There was, however, a difference in the number of fastballs thrown by the UCL-R group. "The UCL-R pitchers pitched 46.8% fastballs compared to 39.7% in the controlled group" (Keller et al., 2016). The study also demonstrated a two percent increase in the number of fastballs thrown, increased the chance of a UCL injury by one percent. This did not occur with any of the other types of pitches analyzed, including curveballs, change-ups, and sliders (Keller et al., 2016).

Torque through the elbow is different between different types of pitches. An analysis of torque between different types of pitches was conducted in adolescent and adult pitchers (Sabick, Torry, Lawton, & Hawkins, 2004). Using high speed cameras to record their pitch mechanics. The film was analyzed for shoulder and elbow kinetics. Sabick et al. (2004) found that maximum torque through the elbow was 18 Nm in adolescents compared to 90 Nm in professionals. A smaller torque value is recorded in children; however, the integrity of the elbow can still be compromised as the children are young and still developing. Although the research doesn't talk about valgus force through the elbow, it does state increased shoulder external rotation is linked to an increase of stress on the elbow. In turn, this means those pitchers who have a greater external rotation of the shoulder when pitching have a greater risk of UCL injury (Sabick et al., 2004).

Lyman et al. (2002) found that out of 467 adolescent baseball pitchers, over half of them would suffer from elbow or shoulder pain after one season. After collecting data on pitch type, pitch count, and pitching mechanics it was found that throwing a curveball was associated with 52% increase of shoulder pain, while the slider was associated with an 86% increase in elbow pain. There was also a correlation between number of pitches thrown in a game and both shoulder and elbow pain.

Electromyography and high-speed film were used in a study by Glousman et al. (1992). These researches investigated the muscle activity in the elbows of several different pitchers. There were ten competitive baseball pitchers with medial elbow insufficiencies and 30 uninjured elbows examined. Each pitcher was evaluated while throwing both curveballs and fastballs. After looking at the film and the electromyography, it was shown that the extensor carpi radialis brevis and longus had greater muscle activity in the injured pitchers regardless of the pitch thrown. The triceps, flexor carpi radialis, and pronator teres showed less activity during the fastball regardless of injury status. Only the triceps was shown to be less active in the curveball. The study showed that regardless of pitch type, the muscle differences were observed in the late cocking and acceleration phases of the pitch (Glousman et al., 1992). This means the muscle differences are occurring at a point when there is the greatest amount of stress placed on the UCL. The study provides evidence that asynchronous muscle activity predisposes the elbow to greater joint injury (Glousman et al., 1992).

In a study by Fleisig et al. (2016), 111 healthy baseball pitchers were analyzed; 26 of them were youth, 21 high school, 20 collegiate, 26 minor leagues, and 18 major league pitchers. The study used an indoor biomechanics lab with high-speed cameras to view each pitch. Overall, the study concluded that fastballs had greater elbow kinetics than any of the other pitches analyzed. It also showed that there were no significant differences between pitch type and competition level.

The only study in which curveballs were found to be more detrimental than fastballs included an assessment of younger adolescent baseball pitchers and the nature of injury due to pitching (Escamilla, Fleisig, Groeschner, & Akizuki, 2017). A total of 93 students were divided into groups. The first group included shoulder injuries and the second group included elbow injuries. Within the elbow injury group 53 of the 66 total injuries were an injury to the UCL (Escamilla et al., 2017). Each athlete was interviewed over the phone, or with consent of a parent. Within those phone interviews the pitchers with UCL injury self-reported throwing curveballs before the age of 14 and throwing over the maximum number of pitches allowed in a season (Escamilla et al., 2017). The study was unable to separate the two variables thus making it unclear whether the cause injury was due to overuse or type of pitch thrown. This study did not look at biomechanics like the rest of the studies, which allows for some discrepancies with the results of the study.

A study that did look at biomechanics was by Aguinaldo et al. (2016), the researchers found that there are six biomechanical variables that may also contribute to valgus force on the elbow. A combination of reduced shoulder external rotation, late trunk rotation, and increased elbow flexion appear to create greater toque of the medial elbow. When you combine those factors with sidearm pitching the risk for UCL sprain increases tremendously (Aguinaldo, Buttermore, & Chambers, 2007).

DISCUSSION

Contrary to common beliefs, fastballs seem to be the reason for the increase in UCL injury; as opposed to curveballs. The mechanics between throwing a curveball and fastball show that fastballs produce a greater amount of valgus force on the elbow when compared to change-ups and curveballs (Fleisig et al., 2006; Keller et al., 2016; Werner et al., 2002). Elbow torque was also greater when pitching fastballs compared to curveballs (Keller et al., 2016). These biomechanical differences cause an increased force through the elbow, especially valgus force, which over time can decrease the integrity of the ligament. When the ligament has become over-worked or over-stretched it can begin to tear or separate, which creates a UCL sprain in the elbow.

The literature contains information on both adolescents and adult pitchers, and there doesn't seem to be a difference. Although there is less torque through the elbow in adolescent pitching, the integrity of the elbow has not yet reached full maturity. This fact, combined with increase force shown through the elbow when pitching (Fleisig et al., 2006; Keller et al., 2016; Limpisvasti et al., 2007) allows for the conclusion that throwing fastballs increases a baseball pitchers risk for UCL sprain. The one research study that did demonstrate curveballs to be more detrimental to the UCL had little evidence and only used interviews with adolescents.

Although most of the literature thus far, has provides evidence that fastballs cause greater wear and tear on the UCL, there needs to be more research on the topic. Many of the studies cannot differentiate between the number of pitches thrown from the type of pitch, therefor, more research needs to be done to separate the two. This will give

a better understanding in order to help prevent future injury. There also needs to be more research on the topic in general. There are limited studies that specifically look at the type of pitch thrown. A wider range of studies could help determine why there is a rise in UCL injuries to pitchers. More biomechanical studies could be conducted to compare the mechanical differences between older and newer styles of pitching to see if a change overtime may have contributed to the increase in injury.

Researchers should also consider comparing shoulder and elbow pain. A couple of studies alluded to the fact that shoulder instability may increase the risk of elbow injury (Glousman et al., 1992), especially with external rotation shoulder insufficiencies. Since the arm is part of the throwing kinetic chain it may be very relevant to the integrity of the elbow. Since there is currently an increase in the prevalence of UCL sprains in baseball, it would be pertinent to get more information. This knowledge could decrease the risk pitchers have for UCL sprains, allow for better prevention techniques, and provide better rehabilitation outcomes.

IMPLICATIONS

Identification

Those caring for pitchers or athletes who use a lot over overhead pitching motion, need to know the common signs and symptoms a pitcher may have if their UCL is compromised. There are several common things a pitcher may complain about which includes; loss of pitch velocity, pain in the elbow, loss in command of a pitch, and subtle changes in mechanics (Limpisvasti et al., 2007). If a patient is complaining of medial elbow pain in the late cocking phase of a pitch that may indicate the UCL has been injured (Limpisvasti et al., 2007). Communication between patient and care-giver are important with these kinds of injuries, early diagnosis and recognition may be the key to avoiding a full UCL rupture. It is important for athletic trainers and other health care professionals to understand these common signs and symptoms so that the best possible care can be provided.

Prevention

A UCL injury can be very debilitating for a pitcher, especially when their career and livelihood are on the line. This means that when a UCL injury does occur, especially in the major leagues, it can be beneficial for a pitcher to get the UCL surgically repaired. Since the surgery's creation in the 1970's there has been a 65-95% return to play rate in baseball players (Ford, Genuario, Kinkartz, Githens, & Noonan, 2016). One study examining the comparison between surgical and nonsurgical intervention found that 75% of those who did not undergo surgery returned to pitch baseball; however, those who did undergo surgery returned to play 100% of the time (Ford et al., 2016). This is a positive outlook for those who have UCL injuries. This outlook improve even more if UCL injuries could be prevented beforehand.

Pitching involves a kinetic chain. When throwing pitches, that chain starts in the legs, goes through the trunk to the shoulder and elbow, and into the hand. According to Dines et al. (2009) one factor that contributes to shoulder pain is an insufficient UCL in the elbow. In this case the opposite should also be true, that increased shoulder external rotation over time would cause UCL insufficiency and injury. The results of the study indicated that those with UCL injury or instability had more total shoulder range of motion but no difference in elbow range of motion (Dines et al., 2009). This might indicate that increasing shoulder stability and rehabilitation may be key to decreasing the number of UCL injuries in baseball players. If a pitcher can increase the external rotation of the shoulder and decrease the amount of total internal rotation, overall improving their posture, they can potentially lower their risk for UCL injury.

Prevention of injuries usually begins at a young age, the same is true of UCL sprains. Nissen et al. (2009) examined fastballs and curveballs thrown by adolescents. Through the study 33 baseball pitchers underwent a three-dimensional analysis, throwing either curveballs or fastballs, data was collected on the movement of the thorax, legs, pelvis, and arms. Once the data was compiled it showed that internal rotation of the shoulder was significantly greater when throwing a curveball when compared to the fastball. On the other hand, maximum valgus elbow force was greater in the fastball when compared to the curveball. Overall the study concluded that fastballs create greater motion through the arm when pitching. The findings of Nissen et al. (2009) are different than what is believed by the baseball population. Curveballs have always been limited by baseball programs, this may mean fastballs need to be limited for young athletes in order to prevent injury.

The American Sports Medicine Institute (2017) created some prevention recommendations for adolescent baseball pitchers. The recommendations state that there should be no overhead throwing of any kind for two to three months per year, and they should not pitch more than 100 pitches in a game. There are also rules for each state in terms of high school pitchers and number of pitches allowed in each game. These recommendations are set in place to decrease the risk of elbow and shoulder injuries in adolescent pitchers.

Athletic trainers should be at the forefront of prevention in baseball pitching. The scope of practice of an athletic trainer includes prevention of injury in athletes. If athletic trainers are aware of the common biomechanical implications, as well as, predisposing factors in pitching they can work with athletes and coaches to prevent UCL sprains. Athletic trainers should also educate their athletes, providing them with current and up to date research on the effects of pitching and the elbow.

CONCLUSION

Overall there are several studies which conclude that fastballs are more detrimental to the UCL than curveballs. Between the biomechanical factors of pitching and the review of the literature it is conclusive that those who throw more fastballs than curveballs are at an increased risk for UCL injury. Although, more studies are needed to separate the number of pitches thrown and type of pitch thrown, the literature seems to agree fastballs are more detrimental. Those who depend on pitching as part of their livelihood should consider taking preventative measures; including increase shoulder external rotation, strengthening the core, and changing pitching mechanics to reduce elbow valgus force. These biomechanical changes along with increased body and pitch awareness could lead to a decrease in UCL sprains.

As an athletic trainer, it is important to understand and listen to your athletes especially when they complain about elbow pain. Be aware of the common signs and symptoms associated with UCL injury, and understand each athlete's pain tolerance and levels. Athletic trainers should consider preventative rehabilitation and strengthening for all overhead athletes, especially pitchers, to reduce injury and risk.

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EFFECTS OF MUSIC THERAPY IN REDUCING ANXIETY AMONG PATIENTS UNDERGOING SURGERY

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ABSTRACT

Having a surgery is one of the most stressful life events for some patients, regardless of the type of surgery. The burden of emotional states such as anxiety, depression and stress in people undergoing surgery is in-disputable, for this is a critical event that is perceived as an unknown and frightening reality (Batista dos Santos, 2014). Usually hospitals tend to use medications to relax the patient before the surgery and calm them down. However, music may decrease the anxiety experienced by patients before surgery. In this proposed intervention, the anticipated benefits of music therapy to patients who are about to undergo surgery will be greater than the potential cost and risk of the current practice. The proposed intervention is transferable and feasible to the target setting and audience. The evidence-based protocol is therefore worthwhile to be set up in order to improve the patients' experiences of anxiety. The clinical research question is "In patients undergoing surgery (P), does the use of music therapy (I) as a nursing intervention reduce anxiety (O) and physiologic response to stress in the preoperative setting compared to only using pharmacological interventions (C)?"

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INCREASED NEED FOR CULTURAL COMPETENCE AMONG HEALTHCARE PROVIDERS IN THE 21ST CENTURY

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ABSTRACT

In the United States, the Mexican population accounts for 63.3% of the total population with a projected increase of Latinos to 107 million by 2065. This brings an increased responsibility for healthcare providers to understand the many facets of Mexican folklore healing and the preference of choosing care methods that may be opposed to western healthcare methods. Exploring the beliefs, traditions, and attitudes towards western medicine and folk medicine among the Mexican population sets a direct course for necessary healthcare in the 21st century. What are the beliefs of the Curandero and what common factors motivate this population to delay western medicine healthcare methods? What are the implications of the delays? Measuring outcomes for hospital stays, mortality and morbidity across the spectrum of varying illnesses presents a much-needed collection of knowledge to treat different populations in the US. The purpose of the study is to increase cultural competence among healthcare providers.

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PHARMACOGENOMICS: HOW DOES IT WORK FOR THE HUMAN BODY?

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ABSTRACT

Pharmacogenomics is a relatively new phenomenon that combines science and the study of genetics to develop medications, which work specifically with the individual's DNA. Communication and education to the patient is considered one of the most important aspects of healthcare. The study of genetics can greatly affect a patient's response to certain medications, and may influence how the patient is treated. In healthcare, adverse reactions can lead to sentinel events, unnecessary hospitalizations, or severe physical impairments. Considering the legal and ethical impact that may be involved in pharmacogenomics, this issue is pertinent to all healthcare. Evidence-based practice coupled with research, has brought healthcare to the point where changes are made in the way of medication administration and improve patient outcomes.

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REDUCING INITIAL TIME TO DEFIBRILLATION FOR IN-HOSPTAL CARDIAC ARREST: A DMAIC QUALITY IMPROVEMENT PROJECT

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ABSTRACT

In 2016, the American Heart Association (AHA) reported that after onset of in-hospital cardiac arrest, mortality rate was greater than 75% and survival percentage decreased by 10% for every minute that a patient remained in cardiac arrest, not discounting poor neurological outcomes associated with cardiac arrest related anoxia if survival occurred. Cardiac arrest teams (CAT) or Rapid Response Team (RRT) responds to the location of a cardiac arrest after event notification resulting in RRT slow arrival minutes after cardiac arrest onset or detection has occurred. Reduction of unnecessary delays to critical, lifesaving, and quality of life preserving interventions such as the placement of defibrillator pads, interpreting initial cardiac rhythm, and defibrillation, if indicated, as a result of low confidence levels to appropriately initiate cardiac arrest measures by staff nurses may be decreased with a Staff Nurse Cardiac Arrest Lean Six Sigma Quality Improvement (QI) Project. This involves cardiac arrest high fidelity simulation practice as well as additional leadership training on managing critical situations. The purposeful outcomes of the Staff Nurse Cardiac Arrest Lean Six Sigma QI Project are the standardization of staff nurse response to cardiac arrest to increase confidence in immediately performing cardiac arrest skills. This results in improved in-hospital cardiac arrest survival rates and neurological outcomes for patients by eliminating unnecessary time delays because of waiting for RRT arrival to manage cardiac arrest, as well as reduced staff training costs as opposed to the cost of training and maintaining a cardiac arrest team.

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