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Division of MBAA International
2022 Hybrid Meeting
Chicago, Illinois

ABSTRACT AND PAPER PROCEEDINGS

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of the
BUSINESS AND HEALTH ADMINISTRATION ASSOCIATION

HYBRID MEETING
CHICAGO, IL
March 23rd-March 25th, 2022

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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 2022 President

Joey D. Helton
Clayton State University

Dear BHAA Colleagues,

I welcome you to the 2022 Business and Health Administration Association (BHAA) Conference at the Palmer House in Chicago, Illinois!

Whether this is your first time attending this conference or you are a conference alum, I hope that you will enjoy the presentations. We have a variety of papers and abstracts from various disciplines.

I have been attending this conference for the last five years, and this is by far one of my favorite conferences to attend. I have met many outstanding individuals that I consider friends and colleagues. If this is your first time attending, I look forward to meeting you, and for those returning, I look forward to reconnecting with you.

It has been my privilege to serve as your President for this year's BHAA. First, I would like to express my gratitude to the leadership of our chairperson, Michael Molesky, our editor, Elicia Collins, and many of the past presidents for their support and guidance throughout this year. Also, I would like to extend a special thank you to Aurora Tafili for her contributions to this year's proceedings & program.

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,
Joey D. Helton
President, BHAA 2022

Letter from the BHAA 2022 Conference Chairperson

Dr. Michael J. Molesky
University of Michigan-Dearborn

Dear BHAA Colleagues,

Thank you for your participation and interest in the 2022 Business and Health Administration Association (BHAA) In Person and Virtual Conference held in Chicago, Illinois at the famous Palmer House Hotel and on-line through the modern technology we have all come to be too familiar with over these last two years.

I hope you enjoyed this year's presentations and find the subsequent proceedings filled with the great academic and interesting work of many of your colleagues and some of our students. We had a variety of papers and abstracts from various disciplines and subject areas for this year's conference. Please take the time to look over the presentation list from the MBAA International's conference schedule. The entire BHAA officer contingent and leadership want to express our gratitude for all the efforts, dedication, and time you have put into your submissions and assistance to our Association.

I have been involved with the MBAA International Conference since 1990 and more recently with the BHAA as a participant and officer. I have so many outstanding colleagues and years long friends that I have had the opportunity to share academic efforts and experiences with at the conference. I encourage you to continue to join us and bring your knowledge to share with us all.

It has been my honor to serve as your Conference Program Chair for this year's BHAA. I extend my gratitude to President Joey D. Helton for his leadership, the tremendous work of our Proceedings Editor, Elicia Collins and Aurora Tafili, our continuous helping right hand, as well as many of the past presidents and current colleagues, for their support and guidance throughout this year. Ashish Chandra, Hanadi Hamadi, and Dan Friesner have been especially supportive of me over the years and through making the conference happen.

The entire BHAA thanks you for your participation and continued interest in this year's conference. I hope that we have the opportunity to see all of you and hear your presentations and work at next year's conference back in Chicago.

Sincerely,
Dr. Michael J. Molesky
Program Chair, BHAA 2022

Letter from the BHAA 2022 Conference Proceedings Editor

Elicia S. Collins
Clayton State University

Dear BHAA Colleagues,

Greetings and welcome to the 2022 Business and Health Administration (BHAA) Conference.

This conference is a collaborative that embraces the work of scholars, administrators, educators, and students from all over the world. Some of the industries that are represented here include healthcare administration, healthcare management, nursing, medicine, pharmaceutics, health economics, health policy, public health, health informatics, and global health.

As the proceedings editor for the conference, it is my pleasure to present to you the peer reviewed, conference proceedings in the form of abstracts, articles, and podium presentations. My hope is that you will find the information in the articles, posters, and podium presentations thought provoking as well as informative, thus enhancing your respective areas of practice.

I am confident that you will enjoy your time in Chicago if attending in person, and/or your online experience if attending virtually. We are grateful for your attendance and membership in this great organization. Our goal is to enrich your academic and professional experiences while sharing and engaging in the research process.

Sincerely,
Elicia S. Colins, PhD, RN
Proceedings Editor, BHAA 2022

BUSINESS AND HEALTH ADMINISTRATION ASSOCIATION

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WHY HEALTHCARE ORGANIZATIONS ARE DIFFERENT: A NEW CLASSIFICATION OF ORGANIZATIONS

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WHY HEALTHCARE ORGANIZATIONS ARE DIFFERENT: A NEW CLASSIFICATION OF ORGANIZATIONS

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ABSTRACT

A new typology of human organizations utilizing major dimensions from both micro- and macro-organizational theory is proposed to examine the distinctiveness of healthcare organizations. The primary dimension considers whether the inputs, transformation processes, and outputs are standardized or non-standardized. The second identifies the overarching workflow interdependency creating the output. The third utilizes Covey's continuum to address the maturity level of the workforce. Combined, these dimensions create a framework illustrating why healthcare organizations are different while supporting Mintzberg's (2017) professional and machine bureaucracy/organizations classification. Implied is the need of a unique profession of healthcare management with a unique educational experience.

INTRODUCTION

Healthcare organizations, particularly hospitals, historically are considered different from traditional formal organizations. Contingency theory predicts widespread poor management and organizational outcomes when management is practiced in a manner that reflects the popular and misinformed idea that "management is management." Contingency theory is based upon the observation that one activity is successful in one system state and not another and challenges management practitioners to align the type of management practice to the type of organization to increase effectiveness.

Organizations vary in type as they operate within different external and internal environments that include different levels of standardization in inputs, transformation processes, and outputs. Organizations also vary with the type of workflow interdependence (i.e., pooled, sequential, reciprocal, and team) utilized in the transformation process that addresses the types of standardization of organizational inputs and outputs. In addition, we propose that alignment of the appropriate level of workforce maturity (Covey, 2013) of dependent, independent, and interdependent must correspond with the appropriate workflow interdependence type if the organizational transformation processes are to be successful.

Two of Mintzberg's (2017) organizational forms, the machine organization (which includes factories and clerical offices, p. 153) and the professional organization (inclusive of hospitals, p. 155) are discussed to demonstrate why management is different for different types of organizations. The framework presented suggests configurations of management specialization based upon organizational types. From this framework of contingency and other organizational theories, at both at the micro and macro levels, there is a case that health administration is different from traditional administration.

WHY HEALTHCARE ORGANIZATIONS ARE DIFFERENT—A NEW TYPOLOGY

Healthcare management textbooks list the reasons why healthcare organizations are different (Burns, Bradley, & Weiner, B.J. 2020). Typically, these listings note the less than desired outcome that efforts to change healthcare organizations with traditional business practices have produced.

Other authors note that healthcare organizations are different as well. Peter Drucker (2002), considered by many to be the father of modern management thought, states that "the hospital is the most complex organization ever devised." Mintzberg (2017), who identifies hospitals as a type of "professional organization," says that "to understand the professional organization, simply take every characteristic of the machine organization and turn it upside down: you won't be far off" (p. 156).

If there are different types of organizational forms, when is one type best used versus another? A brief definition of contingency theory offered by Burns, et al. (2020) states:

> This theory posits that the selection of the most appropriate form of organization is dependent upon the particular circumstance of the environment in which the organization operates. Contingency theory does not advocate an either/or approach, but rather views the process as a continuum from mechanistic/bureaucratic to organic forms. (p. 423)

Rather than a smooth flow of organizational types from an organization type that is totally "mechanistic/bureaucratic" to an organization type that is totally organic, Mintzberg (1979) suggests that there are different sustainable species/ phylum of organizations creating a typology that includes professional organizations (hospitals, universities) and traditional organizations (manufacturing) based upon the internal dominance of different internal aspects of the organization.

Presented below is a new typology created from major frameworks found in micro- and macro-organization behavior. Encapsulated within open systems theory, this new typology seeks to clarify when one organizational form should be utilized vs. another. Descriptions of the main dimensions and the created typology are presented below.

The first dimension addresses organizational system theory and flow of inputs, transformation, and outputs from a healthcare organization. However, unlike traditional organizations, in a healthcare organization, all three steps in the flow are non-standardized. The second dimension focuses on the type of workflow interdependencies necessary in healthcare, referring to pooled, sequential, reciprocal, and team (simultaneous) interdependencies as the different types (Thompson, 1967; Van de Ven & Delbecq, 1974). Utilizing Covey's (2013) maturity continuum framework, the third dimension examines the level of maturity of the workforce that becomes a requisite contingency match to the first two conditions for organizational success.

Additional considerations include whether the culture and systems surrounding the transformation is one that based upon "power over" vs. "power with." Although typically associated with over or with the workforce, the workforce is but part of the inputs into a transformation process. Power over or with matter, energy, and information (Miller & Miller, 1991) should also be considered.

On the environmental side, both with the inputs brought into the organization and the outputs sent back to the environment, consideration is also needed on whether those inputs/outputs are associated with stable or unstable environments. Critical in understanding the requirements of a successful transformation process is also whether the needed inputs/outputs are in the form of products, services, or the complex "experiences;" the latter best illustrated in providing the needed experiences/involvement/time for patient and family to actually comply with post-discharge instructions to fulfil the healing process.

The organizational typology now described is based on the state of standardization of organizational inputs, transformation processes, and organizational outputs.

Typology of type of input and output from and to the external environment

Open systems theory suggests organizational success is based upon organizational alignment with the environment. The organizational typology developed in this paper suggests the external environment be considered to be composed of two major types: the input environment and the output environment. The contingency for which the organizational form is selected is based upon matching the organizational design with both the internal and external environment. First, we focus on the external environment.

Traditionally, inputs from the quality improvement perspective, as used with fishbone diagrams, are typically classified as people, methods, machines, materials, measurement, and environment itself (Melton, 1993). Classifications exist of environments from which these inputs are derived, such as being stable or turbulent (Thompson, 1967). General living systems theory focuses upon the inputs and outputs in the forms of matter, energy, or information (Miller, 1991).

A useful further classification of outputs (Lee, 2004) includes the concepts of products, services, and experiences. Experiences as an output is defined below and is essential in understanding why healthcare organizations are different.

In the typology we propose, we focus upon whether the desired inputs and outputs are standardized or non-standardized and whether they are products, services, or experiences. Figure 1 illustrates these classifications.

Figure 1: Classification of Inputs Obtained from and Outputs Produced for External Environment

		Inputs➔	**Organization**	**➔Outputs**	
			Transforms into		
	Standardized	**Non-Standardized**		**Standardized**	**Non-Standardized**
Experiences	Motivational Video Training	Individual Coaching		Lectures	Theater Patient Care
Services	Weather Forecast	Physical Therapy		Airline schedule	Legal Defense
Products	Lumber Medical Supplies Cans of Soup	Trees for lumber		Office Chairs	Individual DNA Based Meds

Opens systems theory and standardization of inputs, transformation, and outputs

Open systems theory, with its concepts of an organization transforming supplier inputs into outputs for customers operating in an environment that determines the goal posts for success, is central to current management education. Responding to feedback from the changing environment is critical to organizational survival as the requirements for success constantly change. Recognition of this relationship between the organization and its environment provides the basis for "contingency" theory that posits that there are no universal actions toward success, no silver bullets, but interventions must be tailored to time specific circumstances. Successful management and leadership ultimately utilize the clinical model of diagnosis before treatment, with the "patient" being the production system that includes individuals but also crosses teams, departments, or organization. Long-term organizational survival requires that the goal for the production system be to create an output of value to the customer. The clinical role of the manager is to assure that production system health is simultaneously created, maintained, improved, and

changed to meet the new demands of the customers. Improvement means that not only must the manager maintain the production to match the customer's targets (which the customer can change), the production outcomes must minimize the variation about that target (Wheeler & Chambers, 1992).

In traditional organizations, the emphasis is to reduce variation in both the inputs and the transformation process itself to reduce the variation in the outputs. W. Edwards Deming (2018) is quoted as saying that "If I had to reduce my message for management to just a few words, I'd say that it all had to do with reducing variation." If one is producing a chair, car, or a burger, then standardization of the inputs and transformation process logically reduces the variation in the outputs.

Healthcare is different. The primary input, the patient, is not standardized. Even in specialty hospitals, like a children's hospital, there is a wide variation in treating a child in the NICU vs. a 16-year-old football star with a broken leg. Moreover, the outputs in healthcare are not standardized. Consider a community hospital where three patients arrive with broken legs. The first is 16 years old and in prime health, the second is 66 years old with multiple comorbidities including severe diabetes that will require amputation of the leg, and the third is 106 years old who is to be removed from the ventilator as soon as family arrives from out of town.

All three "inputs" have broken legs, but they are far from standardized. Nor are the optimal outcomes for these three broken legs the same; there is not a standardized output for these three patients. The outcomes are negotiated with the providers that must consider both inpatient and outpatient care options that vary from patient to patient. Agency theory, where the patient depends upon the clinician for the proper outcome, is at play. The orthopedic surgeon must have the professional freedom to negotiate with and select the "best" output for each of these patients. Clearly, when neither the inputs nor the outputs are standardized, the transformation process is not standardized.

The healthcare "output" is different from traditional organizations that produce products and services. Lee (2004) describes the quality healthcare output to be an "experience" rather than a service, stating healthcare delivery is "not like theater, but it is theater." Consider patient compliance with a drug regimen. One clinician simply states to patients that they are to take a new medication every six hours for ten days. The second clinician takes the time to inform the patient, in a manner that the patient can understand, that the new medication requires a constant blood level concentration to work and must be taken every six hours. Patients of the first clinician take the medication at bedtime and when they get up and remain sick. Patients of the second clinician set double alarms to meet the six-hour requirement. Both patients received the same service, but the "why" presented to the second produced an experience that engaged them with their own care and cure. Providing quality healthcare experiences requires time, with differing times required based upon what is needed to engage one patient vs. another. The provision of appointments and the management of healthcare as if it were a production line reduces the ability to produce the essential patient healthcare experiences of quality and value to both the patient and society.

A major difference between healthcare organizations and traditional organizations is that traditional organizations can emphasize standardization in inputs, transformation processes, and outputs while healthcare organizations cannot. Optimization in a traditional organization reduces freedom while healthcare organizations can only produce high quality with an environment of freedom that allows for professional creation of unique processes to produce unique output experiences. Management and leadership of the former can function with "power over" while healthcare managers must focus on "power with" workers in the production core (Fox & Lyndall, 1973). Obviously, "management" is not "just management" in healthcare organizations.

Workflow interdependencies: Pooled, sequential, reciprocal, and team

Living systems theory (Miller & Miller, 1991) refers to the movement and transformation of matter, energy, and information from the environment as system inputs into the system's transformation processes that produce changes that are reintroduced to the environment as outputs. Organizational workers transform inputs into outputs in a directional process. This directionality is seen in a classification of four types of workflow interdependencies (the

work flow between workers) by increasing complexity: pooled, sequential, reciprocal, and team (Thompson, 1967; Van de Ven, Delbecq, & Koenig, 1976). (Here the attention concerns the work of the workers producing the product, service, or experience for the customer.) Pooled workflow interdependence is where workers individually pick apples or maintain their own designated area. Sequential workflow is the traditional assembly line where one worker cannot work until receiving the output of another worker and each worker works a station that does the same work repeatedly. These two lower levels of workflow interdependence are the typical production processes of "traditional" organizations that utilize "traditional" top-down management methods.

The overarching workflow models for healthcare organizations are reciprocal and team. Unlike the straightforward flow of an assembly line, in healthcare, work moves back-and-forth as with a patient moving from a nursing floor to physical therapy, then to radiology, to occupational therapy, back to nursing, and then to surgery. Each pattern may repeat and have new additional elements each day and differs with each patient. In addition, each of these steps may involve team interdependencies rather than working with one individual. When a group works together, at the same time, such as the clinicians involved in a surgery, this simultaneous workflow is referred to as interdependence at the team level.

To optimize output, the type of organization culture must support the workflow type. With pooled and sequential workflows, the work itself constrains the worker via either direct rewards for production (pooled) or the scope of the work at a station with sequential workflows. Top-down management, and micromanagement, power over the workers, can be successfully utilized in these environments. The overarching culture supports the primary workflow type producing many products and services. This is the realm of traditional management and is one where "single loop" learning of focusing on one quality goal dominates. The goal stays the same and the direction of movement is changed to reflect the output's relationship with one unchangeable goal.

With reciprocal and team workflow, freedom is necessary for the workers to self-adjust to changing requirements to provide not just the product or service, but to convert them into "experiences" for patients and residents. Again, from a contingency theory perspective, the overarching culture would be expected to support the overarching type of workflow. In these healthcare organizations, the culture becomes one of "power with" the workforce rather than "power over" and "double-loop" learning dominates as the final output goal constantly changes. The double-loop is that the final goal changes, if needed, and the direction of movement is changed to reflect the current movement in relationship to the current goal. The standardization of processes is educated into the professionals that select the proper process to address the particular patient's issues. The selected processes change with the growing information gained during the encounter.

Two additional points must be considered. First, the workflow focused upon describes the one associated with the gemba (the work directly valued by the external customer) from external input to external output. Within the whole system, all types of workflows may be required. For example, subsystems (individual departments, work teams, individuals in a particular work role) may utilize other types of workflow and locally required different work environments and culture. The second point we suggest is that, to work well, the overarching organizational culture must reflect the overall organizational workflow type. The overall organizational culture does modify departmental level attempts to create local environments. In traditional organizations, work that is not pooled and sequential is sent out to be "skunkworks," worksites where the reciprocal and team workflows can freely operate outside the restrictive environment of the overall organization.

Workforce maturity: Covey's dependent, independent, and interdependent framework

Interestingly, evidence suggests that all workflow types produce better quality with "power with" rather than "power over," as demonstrated by the likes of Ford and Toyota assembly lines converting to a culture of quality improvement. Even in these sequential workflow settings, sufficient interaction between workers produced increased learning and improvement.

However, to a significant degree, worker freedom to learn, cooperate, and realign is optional with organizations utilizing pooled and sequential workflow types. Quality outcomes are dependent upon this freedom in organizations utilizing reciprocal and team workflow. But to provide the quality "experience" output, workers must constantly evaluate and change processes in response to the current state of the patient and the changing outcome objectives.

Coordination and integration of work with pooled and sequential systems is built-in, either into the work itself or by direct supervision. Common superordinate goals amongst the workforce coordinate the work in reciprocal and team environments. Although "power over" can be used in these advanced workflow settings, and sometimes must be, it is the self-organizing capability found with "power with" coordination that allows the workers to rapidly and correctly adjust work elements to meet production needs. In other words, one might obtain a level of quality with traditional "power over" management in organizations using reciprocal and team workflow types, but it is unlikely the quality level will exceed that of organizations that utilize freedom and "power with" in these settings.

However, the success of allowing worker freedom depends upon more than just the applied organizational culture. Covey (2013) describes the maturity of individuals as being dependent, independent, and interdependent. Workers at the dependent and independent levels must be managed into coordination and work well in pooled and sequential systems that provide this control. However, in an environment of freedom, natural entropy and scattering of efforts occurs with workforces comprised of dependent and independent individuals. As Senge (2006) describes, one does not empower independent workers, but only those selecting to move in the same direction.

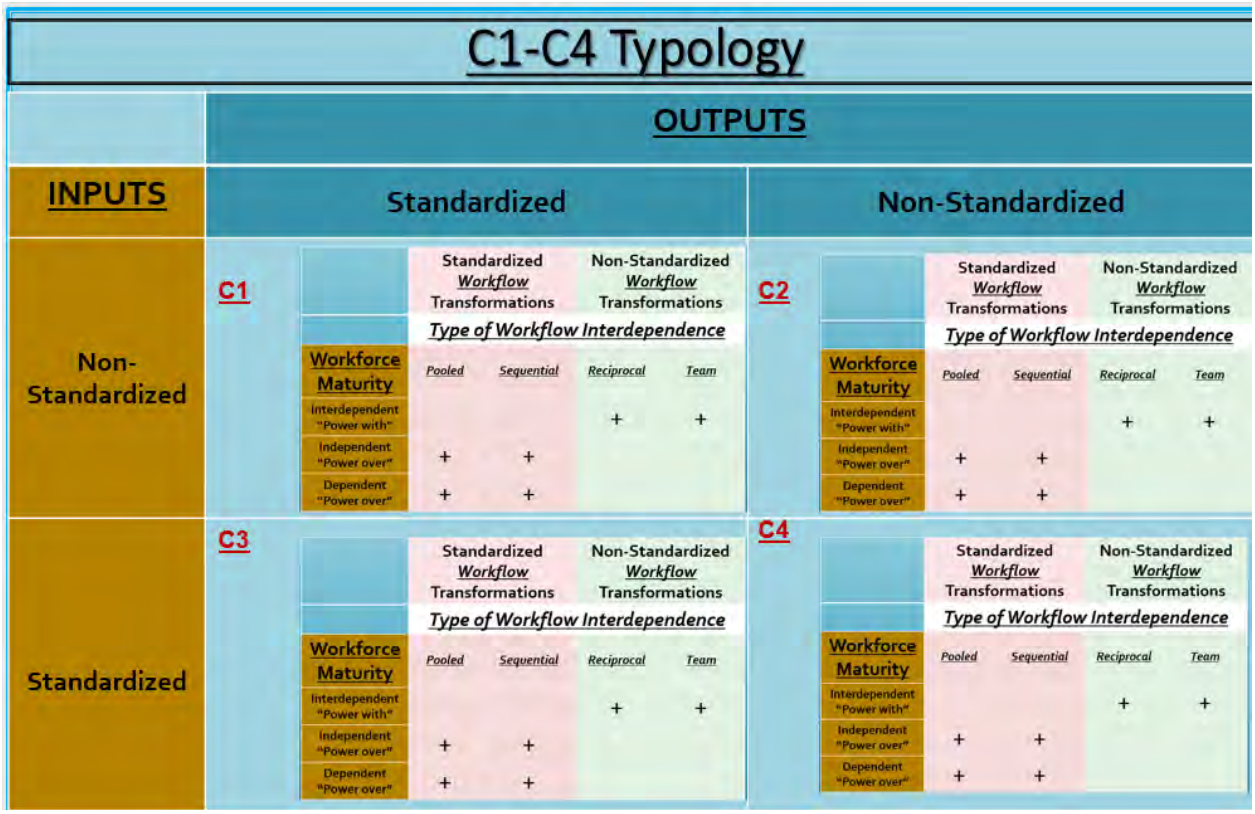
Essential to any organization designed around the more complex workflow types is the development and existence of an interdependent workforce. Covey (2013) describes the interdependent worker as being a formerly independent worker that now selects to move with others to achieve a common goal. We argue here that the highest quality outcomes in complex workflow organizations occur only with cultures of freedom and those can exist only with a responsible interdependent workforce. In other words, activating worker freedom by using a "power with" management environment produces higher quality outcomes in organizations designed with reciprocal and or team workflows only when the workforce is truly interdependent. Contingency theory suggests that lower levels of outcome quality is produced by other combinations of workforce maturity and culture and this condition represents a failure of management.

Typology of organizations

Figure 2 illustrates the typology described above. The focus of the typology is on the organizational types. Internally, one considers whether the transformation process is standardized or non-standardized with the suggested alignment of reciprocal and team workflow interdependencies with non-standardized outcomes and pooled and sequential workflows with standardized outcomes.

But why select standardized or non-standardized workflow to begin with? Again, the two major dimensions to consider are the internal environment, as represented by workforce maturity, and the external environment in terms of inputs and outputs being standardized or non-standardized to optimize value and quality.

Figure 2: New Typology of Organizations.



In Figure 2, we label the two types of organizations that utilize standardized inputs to produce standardized outputs as "C3" and the two types of organizations that utilize non-standardized inputs to produce non-standardized outputs as "C2." Another way of viewing these organizations is that, in the C3 cell, the two types of organizations are S-S-S and S-NS-S organizations. The first letter states whether the primary inputs are standardized or non-standardized, the second the status of the primary transformation process, and the third, of the outputs.

Within the cells is a chart suggesting standardized transformations can work with pooled and sequential workflow interdependencies using "power over" dependent and independent workforces. Also suggested is that non-standardized transformation process needs a "power with" work environment requiring an interdependent workforce. The two extreme types would be the S-S-S type of organization found in C3 and the NS-NS-NS type found in cell C2. The S-S-S is like a machine producing from an assembly line while the NS-NS-NS is represented by a hospital where the healthcare professionals produce individualized healthcare for unique patients. Although the typology ends with the standardization level of inputs and outputs, further consideration of whether these inputs and outputs are products, services, or experiences is clearly a consideration on the design of the transformation process as well as if these are obtained or delivered to a stable or turbulent environment.

SPECIES OF ORGANIZATIONS: MINTZBERG'S PROFESSIONAL BUREAUCRACIES

The organizational configurations described above can be named. Mintzberg (1979) describes different species of organizations based upon configurations. Analogous to biological distinctions of fish, reptiles, birds, and mammals, Mintzberg suggests that organizations can be differentiated as entrepreneurial, machine, professional, project, missionary, and political organizations (2017).

In biology, mammals are further classified into primates and canines and biological distinctions below the primate level includes monkeys and humans. Analogously, Mintzberg (1979) places hospitals and universities in the professional bureaucracy division. Typologies and taxonomies (McKelvey, 1982) of species of hospitals and universities include "species" such as children's hospitals, community hospitals, and tertiary care hospitals while university species include technical colleges, community colleges, and research universities.

Each organization thrives in a particular environment, as recognized by open systems and contingency theory. Not as well recognized is that while all organizations need access to critical resources such as money, the acquisition process is different. We can use another biological analogy to illustrate this. We know that while both fish and primates need oxygen to survive, one acquires it by gills and the other by lungs. They both move oxygen to the cell via blood, but the initial acquisition is radically different. When different organizational types are recognized, the fallacy of saying "management is management" becomes apparent. Simply consider submerging a non-breathing human into water to help restore breathing to understand the dangers of this fallacy.

Alternately, think of system states (Merton, 1968). Consider an organization to consist of molecules of water just as our human organizations are made-up of molecules of people. The management, operations, and output of an organization of water is radically different based upon whether the water structure/systems state is solid, liquid, or a vapor.

WHY MANAGEMENT OF HEALTHCARE ORGANIZATIONS IS DIFFERENT FROM TRADITIONAL MANAGEMENT

Mintzberg (1979) places traditional organizations, those formally structured with high levels of control and producing products and services with simple repetitive tasks, into the category of "machine" organizations. This is our S-S-S type of organization. Hospitals (NS-NS-NS type) are considered "professional" organizations with outputs produced by professionals operating mainly on their own with management in place to support and protect these professionals.

Hospitals differ from traditional organizations along several dimensions, beginning with the concept of being professional organizations where the core production center is based upon professional freedom. This professionalism is realized through the use of reciprocal and team workflows that require a high level of give and take between workers. These workers produce enhanced products and services in the form of "experiences" for patients and their families that serve as both part customer and part input. Traditionally, the primary production worker, the physician, is not an employee, but an independent businessperson using the hospital as a communal workshop. In the hospital workshop, little work can be completed without the direction of the clinicians whose scope of practice allows for prescription of treatment.

Externally, healthcare organizations exist in a highly regulated environment. An often-cited reference is that there are more pages of regulations associated with the administration of a nursing home than a nuclear power plant.

Even among professional organizations, hospitals are more complex. Mintzberg (1979) classifies universities as professional organizations with the professors being analogous to the physicians in a hospital. However, with the exception of the research functions and doctoral education, the inputs (students meeting standards) and outputs (students with a demonstrated acquisition of a body of knowledge) are predetermined and standardized to a degree unimaginable for a physician working in a community hospital.

Although all organizations within the health sector are not as complex as the hospital, the hospital is the root and source of the education and training required for the original MHA as a Masters in Hospital Administration (Trent,

1986). With hospitals and traditional organizations being polar opposites, the remaining healthcare organizations in the sector are closer to the hospital pole rather the traditional.

This suggests that a distinct profession of healthcare management is required in that the tools, and the philosophy guiding tool use, are radically different, but inclusive of, traditional management. Healthcare managers must be able to utilize contingency theory, particularly as it is associated with the methods (workflow type) and the necessary workforce maturity, in determining the most effective and efficient management philosophy and methods. Whereas most "typical" managers face simpler workflow interdependences and can successfully compete with lower workforce maturities, healthcare managers utilize personnel not only in those simpler workflows, but also the most complex. Additionally, they must be cognizant of creating effectiveness and efficiency in an organization in which the inputs, transformational processes, and outputs are not standardized and, to a degree, negotiated with each individual patient. The resulting internal control chaos/self-organization also occurs in a dynamic external environment that frequently requires changes to all three…inputs, transformation, and outputs.

Within this framework, self-organization provides both philosophy and methods for continuous alignment of the organization with its environment. In short, the need for an organization capable of self-organization provides the reason healthcare managers must be skilled in creating and maintaining an environment in which "power with" dominates over "power over" in producing integration of work processes.

CONCLUSION

Successful organizations will produce quality/value to an external customer, but contingency theory suggests that to produce the highest quality/value, leadership must select the best organizational configuration. The abbreviated version of answering a question based upon contingency theory is the correct, but of limited practical value, of "It depends." The typology presented above can help leadership better answer the question in that the typology:

1. Recognizes the best input/transformation/output standardization model for output type (product/service/experience)
2. Suggests design based on best workflow interdependency model for transformation of selected output type
3. Suggests selection and development of best workforce maturity level for matching workflow
4. Suggests correct organization/job structure and management/leadership model matching all above

Paul Batalden is quoted as saying "Every system is perfectly designed to get the results it gets" (Johnson & Sollecitos, 2020). This typology shows why misalignment with both internal and external environments leads to lower quality outcomes. In other words, there are different types (configurations/species) of organizations. Those responsible for creating, maintaining, and enhancing the production system must match configurations with both the internal and external environment!

The typology suggests that successful leadership/management styles differ for different configurations/types/species of organizations. It is this understanding and classifying organizations and their subsystems that leads to differential treatment and success. Clearly, to say "management is management" is as useful as saying every infection is bacterial and treat it with an antibiotic.

Finally, this typology illustrates the tremendous differences from traditional organizations and management of S-S-S type organization and the NS-NS-NS healthcare organizations inclusive of the most complex hospital that is producing non-standardized experiences for patients on a daily basis. This reality lays the foundation for a specific profession of healthcare administration and a specific educational curriculum for that profession that differs from traditional management education.

REFERENCES

1. Burns, L.R., Bradley, E.H., & Weiner, B.J. (2020). *Shortell & Kaluzny's Health care management: Organization, design, and behavior, 7th edition.* Cengage.

2. Covey, Stephen R. (2013). *The 7 habits of highly effective people: Powerful lessons in personal change, anniversary edition.* Simon & Schuster.

3. Deming, W.E. (2018). *The new economics for industry, government, education, 3rd edition.* MIT Press.

4. Drucker, P. (2002). Drucker, P. (2002). *Managing in the next society*. St. Martin's Press.

5. Fox, E.M. & Lyndall, U. (Eds.) (1973) *Dynamic administration: The collected papers of Mary Parker Follett*. Pitman.

6. Johnson, J.K. & Sollecito, W.A. (2020). *McLaughlin and Kaluzny's continuous quality improvement in health care: Theory, implementations, and applications. 5th edition.* Jones and Bartlett Learning

7. Lee, F. (2004). *If Disney Ran Your Hospital: 9 ½ things you would do differently.* Bozeman, MT: Second River Healthcare Press.

8. McKelvey, B. (1982). *Organizational systematics-taxonomy, evolution, classification.* University of California Press.

9. Melton, K.I. (1993). *Introduction to statistics for process studies, second edition.* New York, NY: McGraw-Hill College Custom Series.

10. Merton, R. K. (1968). *Social Theory and Social Structure.* Free Press.

11. Miller, J. G., & Miller, J. L. (1991). A living systems analysis of organizational pathology. *Behavioral Science, 36(4),* 239. https://doi.org/10.1002/bs.3830360402

12. Mintzberg, H. (1979). *The structuring of organizations.* Prentice Hall.

13. Mintzberg, H. (2017). *Managing the myths of health care*. Berrett-Koehler Publishers, Inc.

14. Thompson, J.D. (1967). *Organizations in action*. New York.

15. Trent, W.C. (1986). Some unique aspects of healthcare management. *Hospital & Health Services Administration.* 31(1), 122-132.

16. Van de Ven, A.H. & Delbecq, A.L. (1974). A task contingent model of work-unit structure. *Administrative Science Quarterly*, 19(2), 183-197.

17. Van de Ven, Delbecq, & Koenig. (1976). Determinants of coordination modes within organizations. *American Sociological Review*, 41, 322-338.

18. Wheeler, D.J. & Chambers, D.S. (1992). *Understanding statistical process control, 2nd edition*. SPC Press.

PUBLIC POLICY AND THE UNION ADVANTAGE IN ACCESS TO CARE

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ABSTRACT

We describe a "union advantage" in access to healthcare. Medical Expenditure Panel Survey (MEPS) data for 1996-2019 show that union workers were more likely to have access to healthcare than non-union workers, Controlling for demographic variables, the differences almost always remain statistical significant. Also, the union advantage is greater for low-income workers. Second, the Affordable Care Act appears to have reduced the union advantage by increasing coverage rates among non-union workers, but a substantial union advantage remains. Finally, we show that insured union workers appear to be less subject to public program crowd-out of private health insurance coverage.

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NURSING, COVID AND UNIONS, RENEWED INTEREST?

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ABSTRACT

Throughout the U.S. union representation of workers from many areas of employment experienced a decline over the last decade. Unions are under sustained opposition from political and employer viewpoints, and much can be read into the pros and cons of union representation for workers. Union representation of health care workers is shown to link to a promotion of health and prosperity for workers and their families. This representation for healthcare workers is demonstrated by the health care worker charged with caring for COVID-19 patients. Research demonstrates that hospitals, where nursing unions are active, have better patient outcomes on 12 of 13 nurse-sensitive patient outcomes. Further studies show health facilities with union representation have better overall outcomes due to the increased rigor from inspections, workplace hazards are discovered and corrected. As the pandemic continues the voice of nursing unions becomes more prevalent in the health care arena. COVID-19 provides renewed interest in labor organizations within other industries where essential workers are at risk of COVID-19 infection.

Unions represent nurses within multiple areas of direct care provision, from nursing homes to hospitals to skilled care facilities. COVID-19 places frontline health care workers at risk, which now has nurses and other health care workers turning to unions for help. With COVID-19, nurses and other health care workers are disappointed by the efforts of employers' and government agencies' responses for aiding during the pandemic. Nurses cite staffing shortages, inadequate number of supplies of protective equipment, pressure to continue working even if that meant working while physically or mentally exhausted or ill.

As the COVID-19 pandemic increasingly gained momentum nurses represented by various unions across the U.S. have shown their disdain for the ways hospital administrators have handled the COVID-19 pandemic. As the pandemic moved forward multiple informational strikes and protests occurred, aimed at both profit and not-for-profit hospitals and health care facilities, administrators, and larger corporations owning multiple hospitals and health care systems. It was thought the passage of the Coronavirus Aid, Relief, and Economic Security (CARES) Act would assist in alleviating some of the hardships of nurses taking care of those patients ill from the COVID-19 viral infection. At the outset the American Nurses Association (ANA) was in favor of the passage of the nursing unions began making claims of hospital misuse of the funds appropriated by the act to hospitals. This support for the passage of the act soon became a point of contention for nursing unions as these began to make claims that hospital administrators and corporately owned health care facilities were misusing the funds intended for nursing and patient care support.

This paper seeks to examine the nursing industry and how COVID-19 has created a resurgence of union representation. Additionally, the CARES Act and the claims of the nursing industry against those organizations who may have abused the intent of the CARES Act funding will be examined.

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TRACK:

HEALTHCARE ECONOMICS & FINANCE

THE ECONOMIC AND HEALTH IMPACT OF COVID-19 IN EUROPE AND THE UNITED STATES

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THE ECONOMIC AND HEALTH IMPACT OF COVID-19 IN EUROPE AND THE UNITED STATES

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ABSTRACT

COVID 19 has become a global epidemic with increased uncertainties and had significant consequences in many areas. The highest number of cases has been observed in the United States, followed by Europe and Southeast Asia. Many sectors have downsized or have otherwise been hit hard by the pandemic. Currently, governments are focusing on fighting the disease and mitigating its effect on their economies and health systems. This study examined how countries in the European region and the US are prepared to cope with COVID-19 and the effects of the pandemic on the economies and health systems of these countries. When the economic growth, Global Health Security Index, Stringency Index, and health inputs of these countries were compared, it was found that many European countries and the US are not fully prepared for global epidemics such as COVID-19. The study results show that the sharpest contraction in the national economies occurred in the second quarter of 2020. Economic and health policy recommendations have been made at the end of the study in light of the findings.

INTRODUCTION

COVID-19 first appeared in Wuhan, China in December 2019 (Kisa, 2021). Within a short time, it spread worldwide and became a pandemic. As of December 30, 2021, there have been 285,000,000 confirmed cases and 5,400,000 deaths (Our World in Data, 2021). All countries have taken many measures to combat the epidemic at different levels. National borders have been closed, education has been curtailed, curfews have been imposed, tourism has been restricted or halted altogether, social distancing rules have been applied, and quarantines have been enacted (Bayerlein et al., 2021). These and other efforts have led to an increase in COVID-19 related costs such as virus-related illnesses and deaths and the opportunity costs of closing restaurants and cancelling collective activities. COVID-19 has also caused contractions in many sectors (Kisa & Kisa, 2020). In lockstep with the epidemic, unemployment, inflation, and lost income have become all-too-common in many countries (Ma et al., 2021).

The worldwide spread of COVID-19 has affected supply chains and their concomitant production and consumption (Dreger & Gros, 2021). Thus, there has been a significant reduction in economic activity throughout the world. These negativities have brought some sectors to a standstill. Uncertainties about the outbreak have made the problem even worse. Losses in household income, tightening financial conditions, and reductions in business cash flow have led to a further decrease in demand (Hofmeyer, 2021). These financial difficulties have hurt almost every economy in the world (Dostal, 2021).

Currently, governments are focusing on fighting the disease and mitigating its effect on their economies (Hashim, 2020). However, the lack of timeline for conquering the pandemic has increased uncertainties, so the risks and costs to the economy are increasing every day. Different numbers have been calculated on the cost of the epidemic to the global economy. This study examined how countries in the European region and the US are prepared to cope with COVID-19 and the effects of the pandemic on the economies and health systems of these countries.

THE EFFECTS OF THE PANDEMIC ON THE HEALTH SYSTEMS

The Global Health Security (GHS) index was designed to provide a framework to assess the ability of countries to prevent and mitigate emerging outbreaks, such as COVID-19 (Bell & Nuzzo, 2021). GHS is based on 34 indicators, 85 sub-indicators, and six categories related to prevention, detection, rapid response, health system, risk environment, and international norms compliance (highest = 100) (Rose et al., 2021). According to the GHS 2019, the United States (US), Finland, and Slovenia were ranked as the top three countries in preparedness for a major infectious disease outbreak before COVID-19 outbreak. These three countries are still among the countries with the highest ranking among the countries included in this study, according to the 2021 GHS results.

The EU country with the most cases was France (2,660,676 cases), followed by Italy (2,107,166 cases), Spain (1,928,265 cases), and Germany (1,746,929 cases) in 2020. The country with the fewest cases was Cyprus in 2020 (22,346 cases). The loss of life was greatest in Italy (74,159 deaths), followed by France (64,644 deaths). Cyprus had the smallest loss of life (120 deaths). There have been several waves of the pandemic, with some of them more severe than the previous. The first case of COVID 19 was reported in the US on January 22, 2020. But as seen in other Western countries, including the EU, the US remained unaffected until the second half of March 2020. The US had 20,163,970 COVID-19 cases in 2020 and 54,742,382 COVID-19 cases in 2021.

The Stringency Index (SI) measures school closures, workplace closures, cancellation of public events, restrictions on public gatherings, public transport closures, stay-at-home requirements, public information campaigns, internal movements, and international travel controls (100 = strictest) (Ma et al., 2021). At the beginning of the COVID-19 outbreak, few EU governments and the US government took a wide range of measures to respond to the pandemic. When the government's responses policy responses were compared in February 2020, Italy (64.4%), France (34.7%), and Germany (25%) had the highest SI values. The SI values were zero for Cyprus, Estonia, Luxembourg, and Slovenia in February 2020. At the end of December 2020, Germany and Italy were the countries with the highest SI (more than 80%) among the EU countries. The US's score was 71.8 during this period, and Denmark, Finland, Malta, and Bulgaria had the lowest SI values (55% or less).

The Universal Health Coverage (UHC) index is a metric measurement based on the average coverage of essential services (worst = 0; best =100), including reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity access (Lal et al., 2021). UHC depends on access to comprehensive, appropriate, timely, and quality health services without financial burden. Sweden (87%) had the highest UHC values, followed by Germany (86%), Luxembourg (86%), Netherlands (86%), and Spain (86%). The UHC index value of the USA was 83%.

The Czech Republic, Hungary, Poland, Slovakia, and the US were shown among the populist countries. It is reported that they were less likely to implement long-term and unpopular policies against the spread of the pandemic, such as contact restrictions (Bayerlein et al., 2021). These populist countries' leaders' communication strategies were designed to downplay the pandemic's severity and discredit scientific findings. In addition, the citizens of these populist administrations are less likely to take the virus seriously and restrict their movement activity on their initiative (Mheidly & Fares, 2020; Bayerleien et al., 2021; Kisa, 2021).

When examining the responses of the EU states to the pandemic, the most successful country was shown Germany. One reason for this rating is the recommendations of the Robert Koch Institute, a government research institute responsible for disease control and prevention, was carefully followed by the German government (Dostal, 2020). For example, the Merkel government early on conducted a large number of tests to slow the spread of the disease. As a result, infected Germans were identified, and appropriate measures (hospitalization, self-isolation, quarantining etc.) were applied. During the pandemic, there were significant differences between the achievements of France and Germany in their health policies and the competencies they showed in crisis management (Kisa & Kisa, 2020; OECD/European Union, 2020).

During the pandemic, there was a stark difference in disease severity between the southern and northern regions of the EU and the US (Chen et al., 2021). In particular, Italy and Spain failed with their health policies and accused their northern counterparts, such as Germany and the Netherlands, of abandoning them. The failure of these Mediterranean states to reign in the disease was due to their inability to avoid crowded conditions or practice social distancing (OECD/European Union (2020).

Table 1. Health inputs and health status

	Population	2019 Life expectancy at birth, total (years)	% of Population aged 65+	2019 Mortality rate, infant (per 1,000 live births)	2019 Suicide mortality rate (per 100,000 population)	2019 Unemployment, total (% of total labor force)	2020 Unemployment, total (% of total labor force)	2019 UHC service coverage index	Intensive Care Unit Beds per 1000 people	Hospital beds per 1000 people
Austria	9,043,072	81.8	19.2	2.8	14.6	4.5	5.8	82	5.3	7.4
Belgium	11,632,334	81.7	18.6	2.7	18.3	5.4	6.0	85	4.9	5.6
Bulgaria	6,896,655	74.9	20.8	5.6	9.7	4.2	5.7	70	5.9	7.5
Croatia	4,081,657	78.4	19.7	4.1	16.4	6.6	7.2	73	3.9	5.5
Cyprus	896,005	81.0	13.4	1.8	3.6	7.1	7.2	79	3.4	3.4
Czechia	10,724,553	79.1	19.0	2.5	12.2	2.0	2.9	78	4.0	6.6
Denmark	5,813,302	81.2	19.7	3.2	10.7	5.0	5.7	85	2.5	2.5
Estonia	1,325,188	78.5	19.5	1.9	14.9	4.5	6.5	78	3.3	4.7
Finland	5,548,361	81.8	21.2	1.9	15.3	6.7	7.8	83	2.6	3.3
France	67,422,000	82.6	19.7	3.8	13.8	8.4	8.6	84	3.0	6.0
Germany	83,900,471	80.9	21.5	3.2	12.3	3.1	4.3	86	5.9	8.0
Greece	10,370,747	81.9	20.4	3.3	5.1	17.3	16.9	78	3.6	4.2
Hungary	9,634,162	76.0	18.6	3.0	16.6	3.4	4.4	73	4.2	7.0
Ireland	4,982,904	82.3	13.9	2.8	9.6	5.0	5.9	83	2.7	3.0
Italy	60,367,471	83.2	23.0	2.7	6.7	10.0	9.3	83	2.6	3.2
Latvia	1,866,934	75.2	19.8	3.1	20.1	6.3	8.2	72	3.0	5.6
Lithuania	2,689,862	76.1	19.0	3.0	26.1	6.3	8.4	70	5.2	6.6
Luxembourg	634,814	82.4	14.3	2.2	11.3	5.6	7.0	86	3.2	4.5
Malta	516,100	82.6	19.4	6.1	6.1	3.4	4.1	81	3.3	4.5
Netherlands	17,173,094	82.0	18.8	3.5	11.8	3.4	4.1	86	2.6	3.3
Poland	37,797,000	77.9	16.8	3.8	11.3	3.3	3.6	74	4.3	6.6
Portugal	10,167,923	80.7	21.5	3.1	11.5	6.5	7.2	84	3.3	3.4
Romania	19,127,772	75.5	17.9	5.7	9.7	3.9	4.8	71	4.0	6.9
Slovakia	5,460,726	77.5	15.1	4.7	12.1	5.8	6.8	77	4.8	5.8
Slovenia	2,078,723	81.3	19.1	1.7	19.8	4.5	5.2	80	4.8	4.5
Spain	46,745,211	83.5	19.4	2.6	7.7	14.1	15.7	86	2.5	3.0
Sweden	10,160,159	83.0	20.0	2.1	14.7	6.8	8.5	87	1.9	2.2
United States	332,915,074	78.8	15.4	5.6	16.1	3.7	8.3	83	0.3	2.8

Sources: https://ourworldindata.org/

https://databank.worldbank.org/source/world-development-indicators
https://ec.europa.eu/eurostat/

In the early days of COVID-19, the most devastating blow fell on Italy, which caused that country to seek help from EU member states. But after its requests were not met, Italy declared that there was no solidarity in the EU. Germany and France banned the export of medical supplies, and other EU countries ignored Italy. China was the first country to help Italy (Deutsche Welle, 2020).

Of all the hardship caused by the global pandemic, there is little doubt that the health care systems of the EU and the US felt the worst (OECD/European Union, 2020). COVID-19 has put immense pressure on doctors, nurses, and caregivers worldwide (Jakovljevic et al., 2021). There were fears that the entire national health systems of the EU and the US would collapse from overwork. This fear was especially prevalent in Italy, one of the countries most affected by the pandemic. Doctors compared the situation to a war zone, in which they were forced to decide who would live, prioritizing young people over the elderly and sick (Kisa, 2020; Wu et al., 2020). This situation was not limited to Italy; the medical authorities of Spain and Belgium warned that their health systems were on the verge of breaking down due to the number of infections (Pons-Òdena et al., 2020). There are many ways to measure the strain on the health systems, but two indicators have received the most attention during the early days of COVID-19, the number of hospital beds and intensive care unit beds (ICU) and burnout frequency among health workers.

Lack of hospital intensive care beds and ventilators

With the rapid spread of COVID-19, hospitals were soon overflowing with infected people, but there was a critical lack of hospital beds (Kisa & Kisa, 2020). In addition, because the virus attacked the lungs, additional ventilators and ICUs were needed (OECD/European Union, 2020). A lack of beds and medical equipment was one of the main reasons for the initial high mortality rate in many countries (Kisa, 2021).

If the hospitals are overcrowded, doctors will face a difficult choice: who will receive medical intervention and who will not (Kisa, 2020). That is, they must decide between life and death. Hospitals are not limited to COVID-19 patients; there is a good chance that patients who need urgent medical attention and those with a higher chance of survival will be triaged over those infected with COVID-19. Also, the shortage of hospital beds means that patients with other diseases may be discharged early to make room for COVID-19 patients, leading some doctors to lie about the condition to receive help. The situation in the US is especially dire for a different reason. Even if the COVID-19 patient was admitted to the hospital, regardless of whether he lives or dies, he or his family will have to pay medical bills that could reach hundreds of thousands of dollars (Kisa, 2020).

The shortage of ventilators has hit hospitals in the EU countries and the US. In March 2020, the US hospitals reported that they could not find a company that could sell them ventilators, and manufacturers could not increase production to meet the sudden demand. Health professionals had to make critical and life-saving decisions on which patients to put on ventilators and which ones to abandon. As a result of this shortage, auto companies such as Ford and General Motors began to manufacture ventilators. But this took time, during which people died.

Problems faced by health workers

Although health workers provided the first line of defence against the epidemic, they were exposed to many dangers. The first danger was in dealing with COVID-19 patients. It was found that health workers were twelve times more likely than the general public to test positive for the disease. One of the reasons for these high death rates was the lack of personal protective equipment (PPE). During March 2020, production of PPE increased by 40%, but this was not enough to keep up with demand. The absence of PPE imperiled medical personnel and COVID patients because doctors could refuse to give help if their PPE was insufficient. Medical associations in many EU countries have stated that doctors “are not obliged to provide high-risk services without proper safety and protection.”

During the pandemic, health professionals have had to deal with the risk of infection, insufficient PPE, overwhelming numbers of sick and dying patients, and the stress of breaking the bad news to their families. This situation can cause mental health problems such as stress, anxiety, insomnia, depression, and paranoia. These problems impair health professionals' concentration, empathy, decision-making, and general and long-term well-being. It has been reported that health workers who fought on the front lines against COVID accounted for 4% to 11% of total COVID-19 cases. In addition, health workers had to endure quarantine-related restrictions against meeting families or going outside, among other difficulties.

Research has shown that the reasons why so many health workers suffered from problems associated with COVID-19 were excessive workload, an ineffective infection control system, inadequate protective equipment, and violence from patients (Wu et al., 2020). Attacks on doctors and other medical personnel have occurred in many parts of the world (Greenberg et al. 2020). Health workers have been screamed at, stoned, spat upon, splashed with bleach, blocked from providing services, threatened with death, and insulted their integrity (Kisa, 2020). Some believe that doctors spread the virus through their contact with infected patients, and so they attempt to "clean" the doctors by spraying them with bleach (Jakovljevic et al., 2021).

The latest type of attack is the targeting of health professionals who criticize their government (Kisa, 2021). Some governments have condemned doctors who warn against the virus and have accused them of making "false comments" that "seriously disrupt social order." These attacks come when healthcare workers become scarce (Kisa & Kisa, 2020). Some countries have had to call medical students in their final year to help plug this gap (OECD/European Union, 2020).

Infodemic

During a disease outbreak, false or misleading information in digital and physical environments is defined as infodemic (Mheidly & Fares, 2020). The research shows that it is difficult for people to find reliable sources and guides when they need them (Solomon et al., 2020). Infodemic can arise from articles on social media. Many health professionals circulate articles in prepress that give early medical assessments. Some of these assessments may be based on incomplete findings or premature data (Mheidly & Fares, 2020). Later, these articles are often withdrawn when new and complete information is available. Moreover, some people cite these preliminary articles as "proof" and the subsequent withdrawing as "suppression" (Solomon et al., 2020). As a result, in the first months of the epidemic, many people believed in miracle cures such as drinking bleach or eating hydroxychloroquine, sometimes with fatal consequences.

Use of the health services

Since COVID-19 appeared on the scene, chronic diseases have received less attention (Chen et al., 2021). However, chronic diseases have an important share in the disease burden of countries. For example, those with cardiovascular disease or cancer must wait longer to access health care due to the virus. To give another example, a person's cancer may be diagnosed at a later stage and treatment started later, making the chances for a successful recovery less likely than if started earlier (Solomon et al., 2020). For this reason, failing to undergo regular medical checkups can have both health and economic consequences (Czeisler et al., 2020). COVID-19 has overwhelmingly impacted long-term care facilities in many countries because more than 40% of the total deaths related to the pandemic are residents or staff of these long-term facilities (Kaye et al., 2021).

THE IMPACT OF THE PANDEMIC ON THE ECONOMY OF THE EU

When the coronavirus was first announced, the EU had difficulty creating a common policy and undermined the principle of solidarity by its tardiness to help its members. This led to questions about the EU's rationale. Due to the fact that members of the EU's health services are at risk and do not have a common health policy, they have remained passive in the fight against the epidemic. The member states where COVID-19 suddenly appeared have put their national interests ahead of the EU and thought only about themselves (European Parliament, 2020). As a result,

the EU member states failed to provide an early and robust response to the crisis. Negative opinions about the future of the EU were aired. Too late, the member states realized the magnitude of the crisis, but the damage was done. The fact that countries have implemented different isolation policies, closed their borders and inspected borders in the Schengen Area shows that the principle of "acting jointly in the Union" has been undermined.

Table 2. Preparedness for the COVID-19 pandemic

Country	Total COVID-19 Cases 2020	2020 total deaths per million	Total COVID-19 Cases 2021	2021 total deaths Per million	2019 GHS Index	2021 GHS Index	February 2020 SI	December 2020 SI	January 2021 SI	December 2021 SI
Austria	360,815	688.0	1,278,619	1518.6	57.4	56.9	11.1	82.4	82.4	60.2
Belgium	646,496	1678.8	2,105,343	2435.5	61.9	59.3	11.1	60.2	60.2	48.2
Bulgaria	202,266	1098.5	747,108	4488.4	61.4	59.9	13.9	53.7	53.7	50.0
Croatia	210,837	960.4	715,245	3071.8	49.8	48.8	13.9	67.6	67.6	40.7
Cyprus	22,346	133.9	166,827	712.1	42.3	41.9	0.0	74.1	74.1	46.3
Czechia	718,661	1079.8	2,475,729	3368.8	55.0	52.8	19.4	73.2	73.2	38.0
Denmark	163,479	223.3	802,397	562.0	67.3	64.4	11.1	51.9	51.9	38.9
Estonia	27,990	172.8	241,408	1457.9	55.6	55.5	0.0	55.6	55.6	34.3
Finland	36,107	101.1	260,292	281.9	72.0	70.9	19.4	52.3	52.3	34.7
France	2,660,676	956.8	10,018,021	1832.4	62.6	61.9	34.7	63.9	63.9	72.2
Germany	1,746,929	402.8	7,193,186	1336.2	65.7	65.5	25.0	82.4	82.4	84.3
Greece	138,850	466.5	1,210,853	2004.7	50.6	51.5	19.4	84.3	84.3	80.1
Hungary	322,514	989.9	1,256,415	4067.4	55.0	54.4	5.6	72.2	72.2	25.0
Ireland	91,779	448.9	788,559	1186.5	55.1	55.3	11.1	84.3	88.0	52.8
Italy	2,107,166	1228.5	6,125,683	2276.1	51.9	51.9	64.4	82.4	82.4	76.9
Latvia	40,904	340.1	276,674	2447.9	59.8	61.9	8.3	63.9	63.9	35.2
Lithuania	141,955	667.7	519,597	2746.2	54.9	59.5	11.1	76.9	74.1	46.3
Luxembourg	46,415	779.8	103,766	1441.4	48.6	48.4	0.0	67.6	67.6	46.3
Malta	12,774	424.3	52,473	922.3	39.3	40.2	11.1	52.8	52.8	43.5
Netherlands	798,437	667.3	3,137,942	1222.8	67.7	64.7	5.6	78.7	78.7	63.9
Poland	1,294,878	755.5	4,108,215	2567.8	54.3	55.7	11.1	80.6	80.6	39.8
Portugal	413,678	679.2	1,389,646	1864.2	58.7	54.7	5.6	76.9	76.9	46.3
Romania	632,263	824.3	1,808,891	3071.6	45.5	45.7	16.7	76.9	76.9	52.8
Slovakia	274,603	391.5	1,371,082	3046.3	52.0	54.4	2.8	73.2	73.2	68.5
Slovenia	122,152	1297.4	464,048	2688.7	68.6	67.8	0.0	81.5	81.5	59.3
Spain	1,928,265	1087.5	6,294,745	1912.6	60.4	60.9	11.1	78.7	78.7	56.0
Sweden	437,379	858.9	1,314,784	1506.9	66.4	64.9	5.6	69.4	69.4	49.1
United States	20,163,970	1078.6	54,742,382	2180.7	76.2	75.9	5.6	71.8	71.8	53.2

Sources: https://ourworldindata.org/; https://databank.worldbank.org/source/world-development-indicators; https://www.GHSIndex.org

In the last quarter of 2019, the EU economy grew by less than 1% over the previous year, while in the first quarter of 2020, when the pandemic began to take hold, the Union's economy shrank by 3.1% against the first quarter of the previous year. The most affected period was the second quarter of 2020, during which GDP shrank by 11.3% compared to the second quarter of 2019. EU countries began to gradually collect themselves in the third quarter of 2020 (11.7%). In the second quarter of 2020, the annual change in GDP was -11.3%. In the last quarter of 2020, the EU experienced a relative decrease in its GDP (0.2%).

Table 3. The economic impact of COVID-19

	GDP 2019-Q4	GDP 2020-Q1	GDP 2020-Q2	GDP 2020-Q3	GDP 2020-Q4	2019 GDP growth (annual %)	2020 GDP growth (annual %)	2019 GDP per capita (current US	2020 GDP per capita (current US$)	2020 GDP per capita growth (annual %)
Austria	-0.3	-2.5	-11.4	10.9	-2	1.5	-6.7	50,114	48,587	-7.1
Belgium	0.7	-3.1	-11.6	11.9	-0.1	2.1	-5.7	46,591	45,159	-6.2
Bulgaria	0	-0.1	-7.2	2.9	1.8	4.0	-4.4	9,879	10,079	-3.8
Croatia	0.5	-0.1	-14.2	3.9	4	3.5	-8.1	15,312	14,134	-7.7
Cyprus	0.3	-0.8	-12.3	8.9	1	5.3	-5.2	28,288	26,624	-6.4
Czechia	0.6	-3.4	-8.9	6.7	0.8	3.0	-5.8	23,660	22,932	-6.0
Denmark	0.1	-0.7	-6.2	6	0.9	2.1	-2.1	59,776	61,063	-2.3
Estonia	0.4	-1.2	-6	3.7	2.5	4.1	-3.0	23,397	23,027	-3.3
Finland	-0.3	-0.4	-6.4	4.7	0.8	1.3	-2.9	48,678	48,773	-3.0
France	-0.3	-5.7	-13.5	18.5	-1.1	1.8	-7.9	40,579	39,030	-8.1
Germany	-0.1	-1.8	-10	9	0.7	1.1	-4.6	46,795	46,208	-4.7
Greece	-0.2	-1.6	-14.2	5.6	3.9	1.8	-9.0	19,134	17,623	-9.0
Hungary	0.7	-0.5	-14.4	11.4	1.8	4.6	-4.7	16,736	15,981	-4.5
Ireland	1.2	3.7	-3.3	9.5	-4.7	4.9	5.9	80,887	85,268	4.6
Italy	-0.4	-5.7	-12.9	15.6	-1.6	0.4	-8.9	33,642	31,714	-8.7
Latvia	0.4	-1.1	-7.3	5.7	1.4	2.5	-3.6	17,927	17,726	-3.0
Lithuania	1.3	1.1	-5.5	2.8	1.8	4.6	-0.1	19,576	20,234	-0.2
Luxembourg	-0.1	-1.1	-6.2	7.8	0.6	3.3	-1.8	113,219	116,015	-3.7
Malta	1.1	-3.9	-13.3	6.2	4.1	5.5	-7.0	30,186	27,885	-10.8
Netherlands	0.5	-1.6	-8.4	7.5	0	2.0	-3.8	52,476	52,397	-4.3
Poland	0.4	0.1	-9.2	7.5	-0.2	4.7	-2.5	15,732	15,721	-2.5
Portugal	0.8	-4.4	-15.2	14.7	0.3	2.7	-8.4	23,331	22,176	-8.6
Romania	0.7	0.4	-11.2	5.7	3.8	4.2	-3.9	12,899	12,896	-3.5
Slovakia	0.5	-3.9	-7.2	9.1	0.4	2.6	-4.4	19,304	19,267	-4.4
Slovenia	1.4	-4.6	-9.4	11.9	-0.2	3.3	-4.2	25,943	25,517	-4.8
Spain	0.4	-5.4	-17.7	16.8	0.2	2.1	-10.8	29,555	27,063	-11.2
Sweden	0.3	-8	-7.9	6.9	0.3	2.0	-2.9	51,939	52,274	-3.6
United States	1.9	-5.1	-31.2	33.8	4.5	2.2	-3.6	65,280	63,414	-4.0

Sources: https://ourworldindata.org/
https://databank.worldbank.org/source/world-development-indicators; https://ec.europa.eu/eurostat /

In the fourth quarter of 2020, the most significant GDP increase among EU member states was seen in Malta with 4.1%, Croatia with 4%, Greece with 3.9%, and Romania with 3.8%. The greatest contractions occurred in Ireland with -4.7%, Austria with -2% and Italy with -1.6%. In 2020, GDP annual growth and GDP per capita growth in the EU decreased by 6%. and 6.1%, respectively. The unemployment rate was 7.4% in the EU. The largest increase in unemployment in 2020 compared to 2019 was observed in Czechia (45% increase), Estonia (44.4% increase), Germany (38.7%) and Bulgaria (35.7% increase). The decrease in unemployment in 2020 was observed in Italy (a 7% decrease, and Greece (a 2.3% decrease).

THE IMPACT OF THE PANDEMIC ON THE ECONOMY OF THE US.

After mid-March 2020, the pandemic became an external shock to the labor market, with consequences that would affect most of the economy, including the financial markets. On Wall Street, panic sales occurred due to sharp declines in the US stock prices, and “circuit breakers” had to be tripped to prevent disaster (Altig et al., 2020).

The pandemic continued to disrupt economic activities in many sectors. When the epidemic began to appear in the fourth quarter of 2019, US GDP had increased by 1.9% over the same quarter of 2018. As the epidemic began to take hold, the positive change in GDP began to decrease. In the first quarter of 2020, GDP fell 5.1%. As in other countries, the devastation of the pandemic was most felt in the second quarter of 2020. During this time, GDP decreased by 31.2% compared to the same quarter of 2019. In the third quarter of 2020, there was a contraction of 33.8% compared to the same quarter of the previous year, but the US economy began to recover. In the last quarter of 2020 there was a contraction, with GDP decreasing by 4.5%. The annual GDP growth rate was 2.2% in 2019 and was -3.6% in 2020.

Along with death and sickness, the pandemic also brought unemployment. The unemployment rate was 3.7% in 2019 and was 8.3% in 2020 (124.3% increase). The $1.9 trillion White House epidemic assistance package has caused an explosion in consumer demand, outstripping the market’s ability to meet it. The Central Bank’s ultra-loose monetary policy has supported the economy's recovery. Demand has shifted from services to goods as many Americans stayed home during the pandemic. After this new demand could not be met with shrunken inventories, companies were forced to import goods.

CONCLUSION

COVID-19 has had significant consequences in many areas in the EU countries and the US in 2020 and 2021. It has become a global epidemic. As of December 2021, the highest number of cases has been observed in the US, followed by the EU and Southeast Asia. All countries in the EU zone and the US have taken measures to control the pandemic. These measures have led to the stagnation of the economy. Many sectors have downsized or have otherwise been hit hard by the pandemic. The service sector has been especially hurt (leisure and hospitality, education and health services, professional and business services, retail trade). Many countries have implemented costly support programs. As a result, inflation, as well as unemployment, have been experienced. Although COVID-19 has hurt many sectors, some businesses have benefited, such as masks, cleaning products, and ventilator production.

The sharpest contraction in the national economies occurred in the second quarter of 2020. Since then, countries have begun to recover. The US and the EU economies are recovering at a rapid pace. The EU and the US have entered a new normal with the pandemic. In some countries, production has stopped outside of basic food needs, and in others, it has come to a standstill. The closing of borders, the suspension of international flights, and export bans disrupt global supply chains. The decline in national and international demand has also caused severe unemployment in the EU and the US. The resulting loss of income brings further social, economic and health problems.

There are reactions of those people in countries with insufficient health infrastructure and inclusivity problems in social security systems. The fight against the epidemic makes global cooperation more critical than ever. Yet, the instinct to maintain post-epidemic competitiveness threatens a new "balance of horrors" for the global system. This unique situation can be due to the idea that economic security will take first place in the security paradigm.

REFERENCES

1. Altig, D., Baker, S., Barrero, J. M., Bloom, N., Bunn, P., Chen, S., Davis, S., Leather, J., Meyer, B., Mihaylov, E., Mizen, P., Parker, N., Renault, T., Smietanka, P., & Thwaites, G. (2020). Economic uncertainty before and during the COVID-19 pandemic. https://doi.org/10.3386/w27418,

2. Bayerlein, M., Boese, V. A., Gates, S., Kamin, K., & Murshed, S. M. (2021). Populism and COVID-19: How populist governments (Mis)Handle the pandemic. Journal of Political Institutions and Political Economy, 2(3), 389-428. https://doi.org/10.1561/113.00000043.

3. Bell, AJ, & Nuzzo, J.B. (2021). Global Health Security Index: Advancing Collective Action and Accountability Amid Global Crisis, 2021. Available: www.GHSIndex.org.

4. Czeisler, M. É., Marynak, K., Clarke, K., Salah, Z., Shakya, I., Thierry, J. M., Ali, N., McMillan, H., Wiley, J. F., Weaver, M. D., Czeisler, C. A., Rajaratnam, S., & Howard, M. E. (2020). Delay or Avoidance of Medical Care Because of COVID-19-Related Concerns - United States, June 2020. MMWR. Morbidity and mortality weekly report, 69(36), 1250–1257. https://doi.org/10.15585/mmwr.mm6936a4.

5. Chen, R. C., Haynes, K., Du, S., Barron, J., & Katz, A. J. (2021). Association of cancer screening deficit in the United States with the COVID-19 pandemic. JAMA Oncology, 7(6), 878. https://doi.org/10.1001/jamaoncol.2021.0884.

6. Deutsche Welle (www.dw.com). (n.d.). COVID-19: China steps in to help Italy battle the virus. DW.COM. https://www.dw.com/en/covid-19-china-steps-in-to-help-italy-battle-the-virus/a-52901560

7. Dostal, J. M. (2020). Governing under pressure: German policy making during the coronavirus crisis. The Political Quarterly, 91(3), 542-552. https://doi.org/10.1111/1467-923x.12865

8. Dreger, C., & Gros, D. (2021). Lockdowns and the US unemployment crisis. Economics of Disasters and Climate Change, 5(3), 449-463. https://doi.org/10.1007/s41885-021-00092-5.

9. European Parliament, Directorate-General for Communication, Zalc, J., Maillard, R.. (2020) Uncertainty/EU/hope : public opinion in times of Covid-19, European Parliament, https://data.europa.eu/doi/10.2861/087976.

10. Greenberg, N., Docherty, M., Gnanapragasam, S., & Wessely, S. (2020). Managing mental health challenges faced by healthcare workers during COVID-19 pandemic. BMJ, m1211. https://doi.org/10.1136/bmj.m1211.

11. Jakovljevic, B., Stojanovic, K., Nikolic Turnic, T., & Jakovljevic, V. L. (2021). Burnout of physicians, pharmacists and nurses in the course of the COVID-19 pandemic: A Serbian cross-sectional questionnaire study. International Journal of Environmental Research and Public Health, 18(16), 8728. https://doi.org/10.3390/ijerph18168728.

12. Hashim, M. J., Alsuwaidi, A. R., & Khan, G. (2020). Population risk factors for COVID-19 mortality in 93 countries. Journal of Epidemiology and Global Health, 10(3), 204. https://doi.org/10.2991/jegh.k.200721.001.

13. Hofmeyer, A., Taylor, R., & Kennedy, K. (2020). Fostering compassion and reducing burnout: How can health system leaders respond in the COVID-19 pandemic and beyond? Nurse Education Today, 94, 104502. https://doi.org/10.1016/j.nedt.2020.104502.

14. Kaye, A. D., Okeagu, C. N., Pham, A. D., Silva, R. A., Hurley, J. J., Arron, B. L., Sarfraz, N., Lee, H. N., Ghali, G., Gamble, J. W., Liu, H., Urman, R. D., & Cornett, E. M. (2021). Economic impact of COVID-19 pandemic on healthcare facilities and systems: International perspectives. Best Practice & Research Clinical Anaesthesiology, 35(3), 293-306. https://doi.org/10.1016/j.bpa.2020.11.009.

15. Kisa, A. (2021). Turkey's COVID-19 strategy: "the west is jealous of us". Journal of Public Health Policy, 42(4), 612-621. https://doi.org/10.1057/s41271-021-00314-w.

16. Kisa, S., & Kisa, A. (2020). Under-reporting of COVID -19 cases in Turkey. The International Journal of Health Planning and Management, 35(5), 1009-1013. https://doi.org/10.1002/hpm.3031.

17. Kisa, S. (2020). Burnout among physicians and nurses during COVID-19 pandemic. European Journal of Environment and Public Health, 4(2), em0055. https://doi.org/10.29333/ejeph/8447.

18. Lal, A., Erondu, N. A., Heymann, D. L., Gitahi, G., & Yates, R. (2021). Fragmented health systems in COVID-19: Rectifying the misalignment between global health security and universal health coverage. The Lancet, 397(10268), 61-67. https://doi.org/10.1016/s0140-6736(20)32228-5.

19. Ma, Y., Mishra, S. R., Han, X., & Zhu, D. (2021). The relationship between time to a high COVID-19 response level and timing of peak daily incidence: An analysis of governments' stringency index from 148 countries. Infectious Diseases of Poverty, 10(1). https://doi.org/10.1186/s40249-021-00880-x.

20. Mheidly, N., & Fares, J. (2020). Leveraging media and health communication strategies to overcome the COVID-19 infodemic. Journal of Public Health Policy, 41(4), 410-420. https://doi.org/10.1057/s41271-020-00247-w.

21. OECD/European Union (2020), Health at a Glance: Europe 2020: State of Health in the EU Cycle, OECD Publishing, Paris, https://doi.org/10.1787/82129230-en.

22. (n.d.). Our World in Data 2021. https://ourworldindata.org/.

23. Pons-Òdena, M., Valls, A., Grifols, J., Farré, R., Cambra Lasosa, F. J., & Rubin, B. K. (2020). COVID-19 and respiratory support devices. Paediatric Respiratory Reviews, 35, 61-63. https://doi.org/10.1016/j.prrv.2020.06.015.

24. Rose, S. M., Paterra, M., Isaac, C., Bell, J., Stucke, A., Hagens, A., Tyrrell, S., Guterbock, M., & Nuzzo, J. B. (2021). Analyzing COVID-19 outcomes in the context of the 2019 global health security (GHS) index. BMJ Global Health, 6(12), e007581. https://doi.org/10.1136/bmjgh-2021-007581.

25. Solomon, D. H., Bucala, R., Kaplan, M. J., & Nigrovic, P. A. (2020). The "Infodemic" of COVID-19. Arthritis & Rheumatology, 72(11), 1806-1808. https://doi.org/10.1002/art.41468.

26. Wu, Y., Wang, J., Luo, C., Hu, S., Lin, X., Anderson, A. E., Bruera, E., Yang, X., Wei, S., & Qian, Y. (2020). A comparison of burnout frequency among oncology physicians and nurses working on the frontline and usual wards during the COVID-19 epidemic in Wuhan, China. Journal of Pain and Symptom Management, 60(1), e60-e65. https://doi.org/10.1016/j.jpainsymman.2020.04.008.

ASSESSING SIMILARITY IN PRODUCTION FROM FINANCIAL ACCOUNTING STATEMENTS USING COMPARABILITY ANALYSIS

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ABSTRACT

The fundamental goal of accounting is to identify, record, and communicate the economic activities of an organization to other interested parties (Weygandt, Kieso, and Kimmel, 1998; p. 2). In doing so, every effort must be made to ensure that financial accounting statements reflect, at least in aggregate, the productive decisions of the organization.

As organizations become larger and more complex, it becomes more challenging for those interested individuals who use financial accounting statements to make inferences about the productive choices made by managers within the firm. As an illustrative example, consider a hospital, which is comprised of dozens of departments (intensive care, pharmacy, the operating room, the emergency department, etc.), each of which provides a unique set of services to each patient who receives care at the hospital. Financial statements provide a broad overview of resources (whether measured as a stock or a flow) and the productive use of those resources, within an organization. But as hospital production becomes more complex, it is increasingly difficult for interested parties to understand how changes in the hospital's financial statements reflect i) changes in resource use at the level of the department and ii) changes in coordinated production across departments (i.e., changes in the coordination of patient care across departments). This is vitally important to interested parties (accreditors, policy makers, insurers, researchers, etc.) who are concerned with assessing the quality and effectiveness of the organization as a whole, and how specific departments within the organization contribute to the overall quality and effectiveness of the organization.

While it is impossible to use financial statements to reveal specific managerial decisions at the level of the transaction, it may be possible to use financial statements to identify similar productive systems (both overall and at the level of the department) and decisions across comparable organizations. For example, it may possible to use financial information to identify whether and how otherwise comparable hospitals utilize integrate specific types of personnel (therapists, pharmacists, laboratory staff, dieticians, etc.) into the overall provision of patient care. This knowledge may facilitate additional inferences related to how these types of personnel influence quality and overall organization effectiveness. To date, few studies have been published in the financial accounting literature which attempt to use financial accounting statements to infer which hospitals utilize specific personnel in similar ways.

A recent study by Brajcich and Friesner (Journal of Theoretical Accounting, 2021) uses information entropy theory to develop a simple methodology to assess financial statement comparability across organizations. The methodology was applied to critical access hospitals in Washington State in 2017 in an effort to identify groups of hospitals who make similar accounting and productive decisions. This manuscript extends Brajcich and Friesner's methodology by simultaneously applying it at the level of the department and the level of the organization as a whole. Firms who are deemed comparable at both the level of the overall organization and at the department level likely utilize department resources in similar ways, and thus employ similar productive systems as they relate to this particular department. The analysis is conducted using data drawn from the financial statements of Washington State critical access hospitals in the fiscal year 2019. The data contain financial statements for these hospitals overall, as well as for various departments (as measured by cost centers) within the hospital. This analysis specifically examines the pharmacy and medical laboratory cost centers within these hospitals. These departments are particularly interesting to study because i) their services are utilized by virtually every other productive unit in the hospital, and thus impact the hospital overall; ii) critical access hospitals face significant financial and human resource-related challenges in recruiting and retaining these personnel; and iii) hospitals have (often out of necessity) found unique and creative ways of organizing these departments' workflows in light of i) and ii). The ability to use financial statements to identify which hospitals utilize these personnel in similar ways can be useful to a variety of external stakeholders in understanding operations within these firms.

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TRACK:

HEALTHCARE EDUCATION

FORMAL EDUCATION OF HEALTHCARE ADMINISTRATORS: A PROPOSAL BASED UPON ORGANIZATIONAL THEORY

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FORMAL EDUCATION OF HEALTHCARE ADMINISTRATORS: A PROPOSAL BASED UPON ORGANIZATIONAL THEORY

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ABSTRACT

Healthcare management "professional" education, unlike and compared to medicine, is not well-defined. Briefly reviewed in this paper is an organizational typology showing how healthcare organizations are significantly different from most human organizations and why there is need and ability to create the "profession" of healthcare management. Utilizing living systems theory, in conjunction with this organizational typology, unique aspects of both undergraduate and graduate education are identified. The paper concludes with recommendations of a model to consider for the professionalization of healthcare administration education at both the undergraduate and graduate levels.

INTRODUCTION

Academic preparation for healthcare managers, at the master's level, became more widely available in the 1940s when the prominent healthcare organization was the hospital. Early academic instruction, often taught by practitioners, focused upon hospitals. Over the next forty years, with reimbursement for services becoming available for healthcare services outside the hospital, the healthcare sector diversified, introducing many other types of complex organizations. By the 1990s, movement toward certification and accreditation of academic programs widened the focus on healthcare beyond hospitals to allow academic programs to select competencies addressing a wider array of organizational settings and become accredited. Concurrently, the number of undergraduate degree programs in healthcare management also rapidly expanded.

Over time, agreement between and among practitioners and educators upon the composition of the healthcare management core body of knowledge has diminished. This process accelerated due to two major trends. The first was the reduction of the number of former practitioners educating and controlling the curriculum of future administrators and their replacement with discipline-based academically trained instructors. (The issue is analogous to the problem in medical schools with the curricular conflict between individuals trained in the profession (physicians) and disciplined-based Ph.D. instructors.) The second trend was the growth of the undergraduate degree in health administration. Traditionally, the entry-level degree was the Masters in Health/Hospital Administration (MHA) or some variant. Typically, the MHA curriculum focuses upon the organization as a whole. With the growth of programs offering the undergraduate degree, the curricular focus becomes unclear and scope of practice issues arise analogous to the debates surrounding LPN vs. RN and physician assistant vs. physician. The critical difference between these analogous educational paths is that the "profession" of health administration, as defined by the MHA, is less well defined and recognized as an authority on a particular knowledge base.

General systems theory and organizational behavior and theory are used to frame the following discussion of two key considerations in the development of a knowledge base for the education of healthcare administrators. The first concerns the uniqueness of healthcare organizations and the corollary uniqueness/need for professionally educated and trained healthcare managers. The second consideration, which follows from the first, distinguishes the

"scope of practice" of practitioners educated at the undergraduate and graduate levels. The intent of this paper is to provide a sound theoretical foundation for the science-based education of professional of healthcare managers.

DOMAIN OF EDUCATION OF PROFESSIONAL HEALTHCARE MANAGERS

Although there is domain of knowledge necessary for all managers of all types of organizations, analogous to grand or high-level theory as discussed by Merton (1968), the division of organizations into different types implies a basis for the development of mid-range theory for the general successful diagnosis and treatment of organizational "diseases" and further organizational development in specific environments. Successful interventions/treatments require knowledge of the specific organizational species and the individual organization in its own particular environment. Consider that while the veterinarian treats a variety of species of organisms, physicians treat the most complex, humans. The profession of healthcare management is based upon the special need to diagnose and holistically treat the most complex species of organizations, those that make up the healthcare sector.

High-level theory may recommend the use of crude "rules of thumb" or the "best way to run a meeting." However, from the science-based professional perspective, we move to use of contingency theory, which requires that full understanding of a "rule" or "best way" must be balanced with understanding of the type(s) of environment in which the rule or way works and when/where it does not. If the practitioner cannot say when the rule or way does not work, this becomes the equivalent of a manager equipped with one problem-solving hammer and all problems are nails. Both for-profit automobile manufacturers and non-profit children's hospitals require a margin of more revenues over expenses to continue existence into the future. A rule of thumb of decreasing the variation of primary inputs makes sense for decreasing costs in building a car, but is not so practical for the major inputs to the only children's hospital in a state.

To determine the science of a profession, the domain of the profession must be clearly established. For medicine and nursing, the use of science primarily focuses upon a particular type of animal, the individual human. At times, the focus narrows on a few cancer cells or an organ to benefit the whole. But what is the scientific focus of the profession of healthcare administrators, particularly if it is a different profession from management in general?

Living systems and social sciences

Living systems theory clearly identifies levels of systems. Miller (1973, p. 72) states that "The subset of living systems includes cells, organs, organisms, groups, organizations, societies, and supranational systems." From this perspective, we can see the medical clinician professional focus upon the human organism with diagnosis and treatment derived from key knowledge of cells and organs in addition to the individual and the individual's environment. Miller and Miller (1991) identify 20 subsystems that exist with entities within each level that process the matter, energy, and information that allow the entity to exist. These generic subsystems are explicitly named for different types of entities occupying a level. For example, physicians focus on maintaining and treating skeletal, neural, and digestive systems while professional managers work with organization structure, information management, and production. Miller and Miller (1991) provide a detailed example of this process using living systems theory to speak to the analysis of "organizational pathology" (p. 239).

We suggest that one dimension of identifying a scientific basis for healthcare management profession education is that knowledge, skills, attitude development, and experiences will align with organizations, groups and teams, and individual workers (Stegall, Stegall, & McIlwain, 2022a). This assumes that the work of the professional healthcare manager is to maintain, treat, create, and improve production systems by focusing on both system productivity and productive capacity (Covey, 2013), thus creating outputs the external environment values and continuous quality improvement by designing systems that produce value.

An important aspect of the education of healthcare managers, distinct from other types of professions, is the role that healthcare managers play in the system that they are being trained to treat. Consider two types of professionals in the dimension of being separate from the entity diagnosed and treated. Physicians and other clinicians stand apart from their entity, the patient. Most professional managers are part of the system being diagnosed and treated. The difference is analogous to being a coach on the bench vs. a player-coach.

Each level of the organization, individual workers, teams/groups/department/divisions, and the organization itself, are viewed as having both internal and external environments that must be considered when diagnosing and treating at the various levels. For example, for a group/department, the internal environment includes the culture generated by individuals and teams. For the department, the immediate external environment is that of the organization. At any level, the professional manager must use both synthesis and analysis as consideration for treatment. Synthesis sees the system problem being generated by a reaction with the environment whereas analysis seeks to find the issue as a subsystem of the system.

Knowing the living system level(s) of a professional domain is one key dimension and leads to the broad understanding that the domain of professional healthcare administration resides within organizations, with an understanding of both internal and external environments. The second dimension is to identify what types of organizations are within the scope of practice of the profession in order to create the appropriate educational knowledge bases to prepare healthcare managers to serve in those environments.

Typology of organizations based upon standardization

Consider that the major components of open systems theory are inputs from the environment, an internal organizational transformation process, and the results of the transformation being outputs to an external environment that rewards the organization with access to more inputs. Contingency theory reminds us that what works well in one environment cannot be expected to work well in another. This is the basis for open systems theory to suggest organizations must fit with their different environments in order to survive.

Figure 1 contains a basic typology of organizations, created using the status of standardization of inputs, transformation process, and outputs (Stegall, Stegall, McIlwain, 2022a). Organizations can be classified by their degree of standardization of inputs, transformation process, and output to the environment. Eight cells of the typology range from an S-S-S combination associated with manufacturing of cars to the NS-NS-NS of hospitals. For example, an organization that uses paper to produce a run of textbooks works best with paper with little variation in size, shape, texture (standardized input). To produce a standardized output, identical cases of the same textbook, a standardized transformation process with little variation is required. Consider this an S-S-S organization as labeled for an organization designed around standardized inputs, standardized primary transformation process, producing a standardized output.

Figure 1. Typology based upon standardization of inputs, transformation and outputs

	TRANSFORMATION PRIMARY PROCESSES			
INPUTS	Standardized	Non-Standardized	**OUTPUTS**	**ORGANIZATION TYPE CODE**
Non-Standardized		NS	**Non-Standardized**	**NS-NS-NS**
Non-Standardized		NS	**Standardized**	**NS-NS-S**
Non-Standardized	S		**Non-Standardized**	**NS-S-NS**
Non-Standardized	S		**Standardized**	**NS-S-S**

Standardized		NS	**Non-Standardized**	**S-NS-NS**
Standardized		NS	**Standardized**	**S-NS-S**
Standardized	S		**Non-Standardized**	**S-S-NS**
Standardized	S		**Standardized**	**S-S-S**

Now consider an organization that is designed to take non-standardized inputs and utilizes non-standardized transformation processes to produce non-standardized outputs. An example of this type of organization and external environment is the hospital. The inputs into an emergency room clearly represent non-standardized inputs. The final outcome, output, for each patient is non-standardized in that it is via the use of agency theory that clinicians, patient, and family members negotiate the output specific to particular needs associated with the individual patient. Non-standardized transformation is now utilized to attempt to create the agreed upon status of the discharged patient. This is an example of the NS-NS-NS type of organization.

The nature of the transformation process is critical. With standardized transformation processes, control is essential. Whether by job design (working a specific station on an assembly line) or effective power over top-down management, workers in this system must minimize their variation in work. The opposite is necessary when non-standardized work is required as in hospitals. In this case freedom, not direct control, is necessary to achieve agreed upon non-standardized outputs. In this case, clearly effective management/leadership is based more upon power with the workforce rather than power over. Covey (2013) speaks of the maturity of an individual worker on a continuum of dependent, independent and interdependent, with interdependent workers being capable individuals who choose to work together for a common goal. We suggest the power with approach is possible because NS-NS-NS types of organization require the higher level of workforce maturity, the interdependent worker, to be successful. On the other hand, organizations based upon standardized transformation can utilize dependent and independent workers when top-down power over management forces these less mature workers to work in a standardized manner. Whereas power over the workforce is viable for standardized transformation process organizations, excessive power over destroys the freedom necessary in non-standardized transformation processes to allow for the production of high quality non-standardized outputs.

Inputs and outputs can be further classified as products (cars and books), services (providing training or a consultation), and experiences (theater and patient care). Lee (2004) explores the concept that quality healthcare is beyond a service in that a unique “experience” is required for most patients to take an active part in their own care. The “experience” being a major part of the hospital NS transformation process represents an even greater need of freedom for the workforce to produce what is uniquely needed by each patient. In addition, the requirement for the unique “experience” type of non-standardized output for quality healthcare increases the variation of transformation processes needed within the hospital. This contrasts starkly with the S-S-S requirement of less and less variation demanded of an assembly line.

Finally, complex organizations are built using sub-systems. Described above is an organization level of classification. However, the same classification can be used within the organization for sub-systems like the mailroom and for a child life program. The mailroom could be an S-S-S configuration while the hospital, as a whole, is a NS-NS-NS. The overarching culture/environment is one that supports the hospital, but, within the confines of the mailroom department, aspects of a culture/environment could reflect the S-S-S configurations. Sometimes these counter-environments to organizational environment means these sub-systems must be isolated. Examples include the acidic stomach in the human body and top-down culture organizations setting up “skunk works” to house off-campus NS-NS-NS work away from the primary workforce.

Theoretical domain of professional healthcare managers

We can now delineate, based upon social science theories, the proposed educational domain for programs producing professional healthcare managers/leaders. Professional healthcare leaders should be expected to be able to diagnose and treat organizational issues associated with NS-NS-NS types of organizations producing those NS outputs in the form of unique patient experiences as well as develop them (Stegall, Stegall, McIlwain, 2022b). At the highest level of professional development, the ability to diagnose and treat should extend from the organization level, through the group level, and down to the individual employee working in this organizational form.

In addition, the professional healthcare manager/leader must be able to diagnose and treat other combinations of workflow ranging from the S-S-S to the NS-NS-NS type while never forgetting that the primary culture is for the latter. Typically, traditional managers in S-S-S organizations need not be as aware and capable of working across systems since the top-down power over methods used at the organization level overpower the lower sub-system types to varying degrees of success. However, as NS-NS-NS is based upon power with and freedom, healthcare managers need all the tools to successfully work in the most complex of organizations. The body of knowledge for professional healthcare administrators focuses upon the NS-NS-NS, but must also be inclusive of the other forms. The organizational typology depicted in Figure 1 illustrates why Drucker (2002) considered the hospital the most complex human organization devised.

Body of knowledge of professional healthcare managers

We can now prepare to propose a social science based body of knowledge for the educational requirements for professional healthcare managers who specialize in NS-NS-NS organizations at the organization, group, and individual worker levels. A professional body of knowledge represents cumulative science, experiences, and the art of maintaining and developing a specific type of entity. The profession, through its accrediting power, defines the body of knowledge required of individuals. In mature professions, sufficient acquisition of the body of knowledge is a requirement for granting professional degrees. In the early 1900s, the profession of medicine required a science-based body of knowledge as the curriculum for accredited medical schools (Flexner, 1910). Only students graduating from these accredited medical schools could be licensed to practice. In a profession, the body of knowledge of the profession is constantly evaluated and only those individuals in possession of this professional knowledge are licensed to practice. Licensure, such as that required for long-term care administrators, should be expected to become a requirement for the practice of management in other healthcare organizations in the healthcare sector as the field professionalizes.

Begun and Kaissi (2004) speak to having a "broad body of knowledge" that should be expected of professional healthcare managers working across a wide range of organization types. Mick (2004) argues for a more narrow organizational focus in order for curricula to adequately meet the changing demands of the profession (p. 174). The typology introduced above indicates that both views are needed. First, aligned with Mick (2004), the profession of healthcare management focuses upon the diagnosis and treatment of NS-NS-NS organizations producing unique patient experiences. This is the overarching unique professional aspect of healthcare administration. Second, given the complexity of healthcare NS-NS-NS organizations, the ability to embrace and to diagnose and treat other sub-systems (e.g., departments) including the S-S-S configuration, is essential. This ability supports the Begun and Kaissi (2004) broad view, but it becomes a by-product of the need for professional healthcare manager/leaders to carry two toolboxes, rather than the single one needed by traditional managers focused upon the S-S-S organizational configuration.

Scope of practice

Ackoff (1999) differentiates between knowing how to do something vs. understanding why the action works vs. having the wisdom do determine whether something should be done. Again, using an example from medicine, physician assistants know of the whole entity, but not to the level of detail of understood by physicians. Physicians, who supervise the practice of physician assistants, are more highly educated in all the levels (human, organ, and cell). We apply this same principle in determining the scope of practice of the professional undergraduate vs. graduate healthcare manager. Bloom's taxonomies (Anderson, et al., 2001) of cognitive, emotional, and motor level of learning provide the framework for educational entities, in conjunction with professional guidance, to determine and articulate

the level of learning that must be obtained by students in a field. This framework is useful in defining the depth of the scope of practice.

All levels of professional practitioners must know the entity, its subsystems, capabilities, and internal and external environments. Lower-level practitioners also obtain the knowledge and skills to treat lower levels of the system (individuals and teams) and to work under the guidance of higher-level practitioners who are also educated and trained to diagnose and treat organizations as a whole. Higher-level professional practitioners have the knowledge and skills to treat, the understanding to know when and how to treat (contingency theory), and the wisdom to know when to treat the entity and its subsystems.

Here is where the medical analogy breaks down, but also suggests why healthcare management undergraduates are also professionals. Physicians and physician assistants treat the human and the human subsystems. In the case of professional managers, one may become professional in maintaining, treating, and developing the individual worker, groups/teams, and the organization as a whole. While all managers, at all levels, would be expected to know the organization, groups/teams, and individual worker systems, only the MHA graduate would be required to know, understand, and use wisdom to treat at all levels.

Consider that the cells are interdependent in a human. In an organization, the humans are the cells. When cells become independent in a human, this is referred to as cancer, which often must be removed. The same is true in teams and organizations when independence overcomes the push/pull to interdependence. In the organization's case, the individuals, as well as the teams, have independent aspects that exceed those of a biological cell or organ. Interdependence is either forced or drawn from the individuals, contingent upon the level of workforce maturity at all levels.

The undergraduate would, however, become professional at the human and team/group levels. The broad body of knowledge would encompass all organizational levels for both the undergraduate and graduate, but the level of professional development would be identified and different. Using the revision of the Bloom Taxonomy (Anderson, et al., 2001) as a tool, both the undergraduate and graduate would be at the highest levels of cognitive development for team learning (apply, analyze, evaluate, and create), but the undergraduate would only know about the aspects of organizational structure and restructuring at the lower cognitive levels of recognize and understand. With this background, we can now propose a science-based curriculum for both undergraduate and graduate professional healthcare managers/leaders.

PROPOSED FUTURE OF HEALTHCARE MANAGEMENT PROFESSIONAL EDUCATION

A major element in the current definition of a profession requires that it be science-based. Mintzberg (2017) identifies medicine as both "a craft" and "a practice," and, because it uses science, as a profession (p. 131). However, he states that because management "uses little science, it is not a profession," identifying management as a "practice" and "…a craft, rooted in experience and aided by the insights of art" (p. 220). The above discussions indicate that substantial science exists to guide healthcare managers in the role of diagnosing and treating organizations and the groups and individuals within. The first step is to recognize the clear divisional levels within living systems theory pertinent to management with those being organisms (human workers), groups (teams and departments), and organizations, and the communities that organizations operate in. The second is to identify the type of entity that represents the profession's claimed expertise.

Sciences focus upon a unit of analysis. Organization behavior describes human and group (teams and departments) operations while organization theory focuses on organizations and the communities. The second dimension is analogous to a biological distinction between mammals vs. reptiles with the professional healthcare manager focus upon NS-NS-NS type of organization.

However, organizational clinicians can vary in their scope of practice. Clearly, then it follows that the education at the undergraduate and graduate levels must vary as does education between RNs and LPNs and physicians and physician assistants. We propose that an undergraduate degree prepares individuals to manage and lead workers and teams in NS-NS-NS type organizations as seen in Figure 2 and represented by Mintzberg's (2017) typology as a professional organization. The complexity of professional organizations requires an understanding of all levels of workflow interdependencies (pooled, sequential, reciprocal, and team) in a "power with" culture. Undergraduate education prepares individuals to manage and lead individuals and teams while understanding the environment of the professional organization operating in the complex community found in the healthcare sector.

The educational requirements for a graduate degree in healthcare management becomes analogous to the creation of an organizational physician. Educational objectives for the curriculum for undergraduate programs must be included in graduate education. However, additional development into the understanding of the management and leadership of the professional organization, at the organization level, and an understanding of the community and general health sector environment is expected.

The body of knowledge differs between the levels not so much in breadth, but in depth. The Bloom taxonomy of learning provides a useful tool. Where an undergraduate needs to know about an organizations as a whole as the environment for worker, teams, and departments, the graduate must know how to diagnose, treat, and develop the healthcare organization as whole. The undergraduate must know about the area in order to be able to communicate with graduates and to understand the higher-level interventions that may often make little sense to a local team with the understanding that to optimizing the whole organization often sub-optimizes an internal team (Deming, 2018). Doctoral education then becomes one of specialization or an extension to understanding and operating in the interface of the healthcare sector within the nation state.

Figure 2. Proposal for Healthcare Management Education Redesign

Educational Competency Primary Focus: NS-NS-NS Organizations Producing People-Based Experiences, Services, and Products (Most Complex NS-NS-NS Organizations include All combinations of systems at department levels)				
		Type of Healthcare Administration Program		
Systems Level	**Examples of Possible Primary Sciences for Competency Acquisitions for NS-NS-NS Organization Professional Administration**	**Undergraduate Standalone**	**Graduate Standalone (Traditional)**	**Graduate with Healthcare Administration Undergraduate Inputs**
Supranational systems		Quaternary Environment	Tertiary Environment	Tertiary Environment
Society	Economics Political Science	Tertiary Environment	Secondary Environment	Secondary Environment
Community	Epidemiology Political Science	Secondary Environment	Primary Environment (synthesis understanding)	Primary Environment (synthesis understanding)

Organization	Strategic Planning Marketing Organizational Theory & Design (Macro-OB)	Primary Environment (synthesis understanding)	**Proficient** Diagnosis & Treat (divisions & organizations)	**Proficient** Diagnosis & Treat (divisions & organizations)
Group/Team	Micro-OB Admin Science	**Proficient** Diagnosis & Treat (teams & departments)	**Proficient** Diagnosis & Treat (teams & departments)	**Proficiency** previously acquired in HCMG undergraduate
Individual	Micro-OB (Organizational Behavior)	**Proficient** Diagnosis & Treat (self & others)	**Proficient** Diagnosis & Treat (self & others)	**Proficiency** previously acquired in HCMG undergraduate

CONCLUSIONS & RECOMMENDATIONS

Healthcare organizations represent the most complex organizations ever devised (Drucker, 2002). Just as physicians, as a profession, focus upon the most complex bodily organism, the potential profession of healthcare management focuses upon the most complex human organizations. Chunking, the complexity theory concept, describes how more complex entities are made up of simpler ones. Healthcare organizations are expected to have embedded departments of the simpler organizational types that can be administered using simpler forms of management. The mistake is to apply the simple to the more complex. Professional healthcare administrators need the complete package of administrative tools and philosophies and the knowledge of under which circumstances to best use each. One should not be referred to as a professional healthcare administrator if only knowledgeable of "traditional" management; no more so than a person would be considered a "physician" who only knows first aid.

Professional healthcare administrators must simply know more due to the organizational complexity of healthcare. Traditional MHA programs required nearly twice as many credit hours as MBA programs, but for mixed reasons. Although there is more to learn, the primary reason for the increased hours in the MHA is the acceptance of individuals from all fields of endeavor into the program. In other words, one could not build upon an undergraduate foundation as do MBA programs. MHA programs must provide the knowledge base contained in both the undergraduate and graduate curricula. Two major types of MHA programs may now be in order. The first traditional longer curriculum would be for students without an undergraduate foundation in healthcare management. The second shorter curriculum MHA would become available for graduates of certified undergraduate healthcare management programs.

Noted above, the basic delineation between undergraduate and graduate education is suggested by organization theory itself. First, students at both levels must understand the differences in managing and leading organizations of all levels of workflow complexity, particularly that required for a well-run professional bureaucracy (Mintzberg, 2017). The required part of a certified undergraduate program focuses upon individual and team leadership and with the diagnostic and improvement tools to address issues at this level. At the graduate level, programs accepting only graduates from certified undergraduate programs would focus on knowledge associated with diagnosis and treatment/improvement at the department, organization, community and system levels. Doctoral programs would build upon this background with a focus at system level operations and/or specialization in particular areas included earlier providing the basis for evidence-based leadership and management.

Obviously, accredited MHA programs accepting students without the undergraduate preparation would be expected to be longer in that they would be teaching both the undergraduate and graduate knowledge base in one curriculum. On the other hand, and not unlike the advanced placement model medical schools use to move advanced seniors into the medical curriculum, the MHA programs accepting students with an undergraduate degree in healthcare administration would require fewer courses. The discussion above also provides the potential for "core" curriculum

upon which individual programs could continue to build for specialty graduates. A notable example would be undergraduate programs preparing individuals for long-term care administration.

An interesting and important aspect of this format is the ability to increase the level of a liberal education for undergraduate programs. Traditionally, incoming MHA students bring a high level of diversity of background and experiences into the classroom because there has not been the requirement of an undergraduate degree in healthcare management. The suggested delineation between undergraduate and graduate educational objectives allows undergraduate programs to focus on a core and not try to be "all things to all people." The differentiation between graduate and undergraduate knowledge bases provides a clear rationale for not attempting to teach undergraduates how to be a CEO. The new focus should allow more undergraduate credit returned to general education so that graduates from certified undergraduate healthcare management programs would then bring to admitting accredited MHA programs the diversity of background education that enhances future decision-making processes. The greater clarity of purpose actually allows for a broader liberal education that can be associated with a broader view of the most complex organizations working in very diverse (in multiple dimensions) environments. This diversity is critical as healthcare administration education acknowledges that it produces not a final product but is part of the value chain to the purchasers which are healthcare organizations whose own final purchasers are the patients in their communities.

Healthcare management education should produce professionals with the academic preparation to be licensed to enter the professional field of "healthcare management." The management and leadership of a healthcare organization as if "management is management" is a source of both the lack of quality and value in our field/profession. In the design presented, undergraduates are analogous to LPNs or physician assistants while MHAs are analogous to RNs or physicians and their educational coursework reflects the expected "scope of practice" for each. Doctorally prepared individuals would focus on research in the subspecialties of the field to create knowledge or, continuing with our nursing analogy, are educated to become like a nurse practitioner as illustrated in the LPN, RN, DNP progression. Ultimately, focus on the different knowledge bases required by the various levels of organizational management provides the ability to enhance and assure completeness of the scientific education and art of the profession of healthcare management that provides the foundation for higher quality of healthcare from the organizations professionally managed.

The "Flexner Report" (Flexner, 1910) changed the developing profession of medicine by calling upon medical education to become science-based. Mintzberg (2017) insists that there is no profession without science-based education leading to science-based decision making. Our discussion suggests for consideration of the proper level of systems (worker, teams/departments, organizations, communities) and the recognition of the unique type of organization (NS-NS-NS producing human experiences) lead to a scientific development of the field, and then the profession, of healthcare administration.

REFERENCES

1. Ackoff, R. L. (1999) *Ackoff's Best.* Wiley & Sons.

2. Anderson, L. and Krathwohl, D., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., Raths, J., & Wittrock, M. editors (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives, abridged 2nd edition.* Pearson.

3. Begun, J. W., & Kaissi, A. (2004). Definition and scope of health services administration. *Journal of Health Administration Education, 21*(2), 227-239.

4. Covey, Stephen R. (2013). *The 7 habits of highly effective people: Powerful lessons in personal change, anniversary edition.* Simon & Schuster.

5. Deming, W.E. (2018). *The new economics for industry, government, education, 3rd edition*. MIT Press.

6. Drucker, P. (2002). *Managing in the next society*. St. Martin's Press.

7. Flexner, A. (1910). *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching Bulletin No. 4*. New York City: The Carnegie Foundation for the Advancement of Teaching.

8. Lee, F. (2004). *If Disney Ran Your Hospital: 9 ½ things you would do differently*. Second River Healthcare Press.

9. Merton, R. K. (1968). *Social Theory and Social Structure.* Free Press.

10. Mick, S. S. (2004). Must we broaden the definition of health services administration? A response to the final report of the blue ribbon task force. *Journal of Health Administration Education, 21*(2), 173-177.

11. Miller, J.G. (1973). The nature of living systems. *The Quarterly Review of Biology*, 48(1-2), 63-91.

12. Miller, J. G., & Miller, J. L. (1991). A living systems analysis of organizational pathology. *Behavioral Science, 36(4),* 239. https://doi.org/10.1002/bs.3830360402

13. Mintzberg, H. (1979). *The structuring of organizations.* Prentice Hall.

14. Mintzberg, H. (2017). *Managing the myths of health care*. Berrett-Koehler Publishers, Inc.

15. Stegall, M.S., Stegall, M.H., & McIlwain, T. (2022a). *The uniqueness of the profession of healthcare administration: An organizational theory perspective* [Unpublished manuscript]. Department of Health Care Management, Clayton State University.

16. Stegall, M.S., Stegall, M.H., & McIlwain, T. (2022b). *Why healthcare organizations are different: A new classification of organizations* [Unpublished manuscript]. Department of Health Care Management, Clayton State University.

IMPROVING THE PREPARATION OF HEALTHCARE STEM WORKERS VIA OPEN SYSTEMS AND COLLABORATION

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ABSTRACT

More than half of all workers in STEM fields are employed in healthcare, and there is concern that there may be an insufficient STEM workforce in the future. An adequate supply of STEM workforce is needed to maintain economic growth. While technical skills are important, employers have recognized soft skills as even more critical. This study aimed to examine the current and future state of soft skills competencies of STEM undergraduates entering the healthcare industry and offer guidance on how healthcare managers and academic leaders may collaborate to maintain the future of competition in a globalized America.

INTRODUCTION

Healthcare and STEM workers

The future of competition in a globalized America is dependent upon a strong workforce rooted in science, technology, engineering, and mathematics (STEM). Over the past century and a half, the strength of STEM industries within the United States has helped construct a strong national drive for innovation and technological/scientific advancements, stimulating our economic growth and global competitiveness (National Academies of Sciences, Engineering, and Medicine, 2016). STEM occupations are diverse and vast. They include biological, agricultural, environmental life scientists, computer and mathematics scientists, physical and social scientists, engineers, science and technology managers and technicians (National Science Foundation, 2018). Data from the Pew Research Center on employment trends from 1990 to 2016 reveals that 52% of STEM workers were employed in healthcare fields and that STEM employment gains significantly outpaced that of overall employment (79% vs, 34%) (Funk & Parker, 2018).

While STEM disciplines have played a significant role in the nation's trajectory towards innovation and economic growth (White & Shakibnia, 2019), industry and employment experts have expressed concerned that our nation may not have an adequate supply of skilled technical workers to maintain its global competitiveness (Olson & Riordan, 2012). It is projected that during this decade, the United States will need an additional one million college graduates with STEM education in order to meet employment needs in healthcare and other STEM fields (Cimatti, 2016; White & Shakibnia, 2019).

Technological advancements in digital automation, robotics, and big data are transforming STEM healthcare (Autor & Salomons, 2018; Fujii & Managi, 2018; Manyika, et al., 2017). As time continues, this advancement will only become further cemented with the development of innovations like Robotic Process Automation, that enable medical and surgical artificial intelligence, robot nurses, and the light/sensor technologies of autonomous vehicles (Hamstra, 2018; MIT Technology Review Insights, 2019; Smithsonian Science Education Center, 2018).

Soft skills gap in STEM workforce

As businesses struggle to fill critical and skilled roles in STEM occupations, the STEM workforce throughout the United States is facing a skills gap crisis, with implications for economic competitiveness (Garvin, 2013; Weiss,

2019; White & Shakibnia, 2019). Prior research points to a national misalignment in the workforce and connects it to the outcomes of higher education in its mission to prepare college graduates for the workplace (Association of American Colleges and Universities, 2018a; Francis & Auter, 2017; J. P. Morgan, 2019; Smith & Morris, 2017; White & Shakibnia, 2019). This misalignment has been attributed to a widening imbalance that prioritizes technical skills over soft skills **(**Francis & Auter, 2017; Coy, 2019; Patacsil & Tablatin, 2017).

Soft skills are defined generally as "abilities like teamwork, collaboration, leadership, problem-solving, critical thinking, work ethic, persistence, emotional intelligence, organizational skills, creativity, interpersonal communication, and conflict resolution" (Karimi & Piña, 2021, p. 22). Soft Skills have been recognized as essential to the success of both healthcare workers and healthcare leaders (Abraham, et al., 2021; Ashbaugh 2003; Doley, et al., 2021; Karimi & Piña, 2021; Kroning, 2015; Saiyad, 2018) and to other STEM professions (e.g., Deming, 2017; Livia, et al.2017; McCraw, 2017; Patacsil, & Tablatin, 2017; Wilkie, 2019).

Table 1 below shows results of a 2018 survey by the Association of American Colleges and Universities of 1,000 executives and hiring managers from diverse organizations in private, public, and non-profit sectors. Results indicated notable gaps between soft skills-based learning outcomes seen as important by employers and the preparedness of recent college graduates (Association of American Colleges and Universities, 2018b).

Table 1: Recent College Graduate Preparedness

Key Learning Outcomes (Soft Skills)	**Recent graduate preparedness (%)**	**Considered highly important (%)**	**Preparedness Gap**
Critical thinking	34	78	-44
Real-world application of knowledge	33	76	-43
Effective written communication	33	76	-43
Self-motivation	35	76	-41
Effective oral communication	40	80	-49
Ability to work independently	38	77	-39
Ability to work effectively in teams	42	77	-35

Source: Association of American Colleges and Universities (2018b), p. 12, 14.

Prioritization of technical skills over soft skills

This misalignment has been attributed to a widening imbalance that prioritizes technical skills over soft skills (Francis & Auter, 2017; Coy, 2019; Patacsil & Tablatin, 2017). As a result, according to the U.S. Chamber of Commerce Foundation (2018), somewhere along the path from education to employment, the system is not routinely equipping students with the soft skills they need to succeed. This imbalance is present despite the value that employers across all sectors place on soft skills (Association of American Colleges and Universities, 2018b; Linkedin, 2019).

Meanwhile, Chief Academic Officers and other educational leaders argue that they are providing competent, skilled graduates for the job market (Bidwell, 2014). According to the National Academies of Sciences, Engineering, and Medicine (2016), 96 percent of today's educators believe they are providing students with a STEM education that delivers workforce-ready graduates to the job market. However, only 11 percent of U.S. employers agree with these assertions. Despite the value disparity that academia places on soft and technical skills, employers continue to rate soft skills as highly as technical skills (Linkedin, 2019). According to Weiss (2019), in many cases, soft skills are being considered more important than technical expertise. An example is Google's Project Oxygen, which tracked hiring and firing trend practices, and found that the seven top characteristics of career success were soft skills with technical STEM skills ranked last in terms of importance (Weiss, 2019). Clearly, with the increase in demand for STEM graduates with soft skills, it is noticeable that the US industry cannot accomplish its goals without systemic

reform (American Associations of Colleges and Universities, 2018; Francis & Auter, 2017; J. P. Morgan, 2019; Smith & Morris, 2017; White & Shakibnia, 2019; World Economic Forum, 2018).

Open versus closed systems

A possible explanation for the disconnect between academe and employers is provided by Betts (1992) and Bastedo (2004), who suggest that needed improvements in higher education can be facilitated by adopting an open systems approach. Ludwig Von Bertalanffy, the founder of General Systems Theory, described an "open system" as an entity that receives input from and sends output to its environment. Open systems are able to evolve and self-regulate as they interact with and receive feedback from their environments. Systems can also be "closed" or isolated from their environments (Bertalanffy, 1968). Although originally devised to explain biological systems, the concept of open systems has been adapted to many arenas, including social sciences, business and education (e.g., Banathy, 1992, 2000; Bastedo, 2004; Betts, 1992).

Open systems allow for cycles of input, transformation, and output that continuously flow within organizations. Through the feedback loop cycle, as depicted in Figure 1 below, organizational outputs are connected with renewed organizational inputs, thus feeding change.

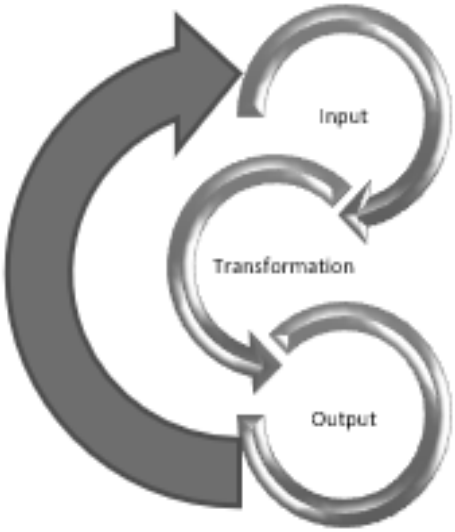

Figure 1: Transforming Feedback from Inputs to Outputs Within Organizations

Purpose of the study

This study focused upon the intersection of STEM and the healthcare industry. The goals of this study were to identify the current state of soft skills competencies of STEM undergraduates, determine conditions that will improve the qualifications of STEM undergraduates, and to provide guidance to healthcare managers and academic leaders for creating an operational strategy between business and academia to enhance the soft skills competencies of future STEM undergraduate students entering the healthcare workforce.

Prior quantitative studies have addressed the STEM soft skills needs and gaps; however, few studies have qualitatively measured the perceptions of employers through in-depth, face-to-face conversations. This study improves our understanding of the essential soft skills that healthcare managers need from entry-level STEM graduates. In an effort to uncover the root of the soft skills gap as well as strategies to ameliorate it, this qualitative research sought to answer the following research questions:

R1: Does a soft skills gap exist among recent healthcare STEM graduates?
R2: Which soft skills will be most in demand for the future of healthcare?
R3: Are healthcare employers currently collaborating with academia?
R4: What can be done to reduce the soft skills gap within the current STEM climate?

METHODOLOGY

Participants

The participants were healthcare executives and managers throughout the state of Kentucky. Criterion sampling (Creswell & Poth, 2018) was utilized to limit participants to those who had recently hired or worked with STEM graduates. The final selection of 27 participants represented a range from small businesses to Fortune 500 organizations. Four of the participants were CEOs, four were Vice Presidents, five were HR managers, six were directors, and eight were department managers. Four participants worked at smaller organizations, twelve at midi-sized organizations, and eleven at larger organizations. Twelve of the participants were women and fifteen were men.

Data collection

Semi-structured interviews provided participants with ample opportunities to reflect on the interview questions and to offer their insights. This qualitative research followed Walker's (2012) guidelines, which suggest the use of saturation to determine when there is adequate data (i.e., when subsequent interviews cease to add new data to a topic). The study used constant comparisons with previous data gathered to confirm information and constructs found across or between data samples, steering the researcher towards the final phase of theoretical saturation. The strength of this method lies in the fact that accumulating data continues until the discovering of any new data confirms findings from previous data (Glaser, 1992).

Data analysis

The data analysis involved open, axial and selective coding procedures, as recommended by Strauss and Corbin (2015) which began soon after the transcriptions from each interview were completed. Using this approach, the researcher sorted, coded, and analyzed the data as it was collected (Wilkin, 2010). Themes and patterns were uncovered during the data interpretation phase in order to make meaning of the raw data. In this phase, the participants' feedback was reduced and broken into themes, clusters, categories, and subcategories based on their characteristics, properties, and dimensions (Strauss & Corbin, 2015).

RESULTS

The purpose of this qualitative study was to hear the voices of 27 STEM managers and executives to better understand the causal conditions that are leading to the growing soft skills gap amongst recent undergraduate STEM students entering the healthcare workforce. The study aimed to identify key soft skills that will be needed from these graduates for the future of healthcare workforce and to provide guidance on how healthcare managers may be able to address the soft skills gap. Results of the interviews and coding yielded four primary themes that address the four research questions of this study:

1. The soft skills gap exists among recent STEM undergraduate students.
2. Key soft skills will be in-demand for the future of healthcare.
3. Employers and academic institutions are not systematically collaborating.
4. Collaborative partnerships aimed at reducing the soft skills gap are heavily dependent on support from organizational leadership.

Theme 1: Soft skills gap amid recent undergraduate STEM new hires

The first research question asked whether a soft skills gap exists among recent healthcare STEM graduates. When employers were asked if they had ever experienced a soft skills deficiency amongst their new STEM

undergraduate hires, 100 percent of the 27 interviewed employers said yes. These responses align with prior research which claims the misalignment of interests at the intersection of the workforce and higher education is generating a national soft skills gap. The most reported soft skills that are lacking amongst recent entry-level STEM hire in healthcare industry are the following:

- Forming a 'human connection' with patients or colleagues
- Critical thinking
- Creativity
- Receiving/giving constructive feedback
- Professionalism
- Communication
- Collaboration

Lastly, employers stressed the importance of specific soft skills that they claim students should master before graduating. Examples of soft skills that employers mentioned are email communication; clear, confident and professional communication in interviews or career fairs; phone communication; active listening; reliability; and timeliness in responding to emails or voicemails; assertiveness; confidence; and ability to accept feedback.

Theme 2: Key soft skills will be in-demand for the future of healthcare

The second research question addressed the future of soft skills. The second theme identified major soft skills that will be in demand as the future unravels. This relates to research done by the World Economic Forum (2018), which stresses that sophisticated new technologies will eventually become capable of overtaking highly technical and repetitive tasks, therefore cultivating a workforce that will require lesser technical skills development. In effect, this means technology will likely force society to value STEM professionals who master soft skills, since these individuals will be able to guide the development and application of data using a human-centered approach. For instance, according to Barr (2019), emerging technologies such as easier-to-use artificial intelligence (AI), virtual reality (VR), will offer incredible opportunities to provide better healthcare to billions of people and help our healthcare systems cope with ever-increasing demands.

The 5G network technology will enable healthcare organizations to transmit larger digital files so STEM professionals can review and advise patient care more efficiently. AI and Internet of Things (IoT) technologies will enhance STEM professionals' abilities to deliver treatments through AR, VR, and mixed reality for remote and reliable patient care (Barr, 2019; Laplante, et al., 2018).

Employers indicated that if they have to select between two candidates, one with strong technical skills and another with comparatively stronger soft than technical skills, they will wholeheartedly choose the candidate with the superior soft skills. Their justification was that they could teach candidates the technical knowledge they need, but it is not as easy to teach them soft skills. While soft skills can be learned regardless of one's educational background, employers indicate that they require repetition and practice that contribute to a comparatively longer learning curve.

The increasing demand for soft skills renders it essential to understand which soft skills in particular will be most necessary in the healthcare industry. In an attempt to uncover this need, the interviewed STEM employers were asked to express their views on the soft skills that they think future STEM undergraduates will need to enter the healthcare industry by 2025. Results are displayed in Table 2 below.

Table 2: Soft Skills Employers Identified as Necessary in 2025 (n=27)

Key Healthcare Soft Skills	Considered Essential by Healthcare Employers
Leadership	93
Human Connection	89
Communication	81
Creativity	70
Collaboration	70
Critical Thinking	63
Empathy	56
Problem Solving	44
Emotional Intelligence	37

Theme 3: Employers and academic institutions are not systematically collaborating

The third research question aimed to understand how employers are working with academia to foster soft skills development. The two avenues that were of specific interest were collaboration between academia and industry and the extent that partnerships were effective. As a result of this inquiry, a third theme emerged: systematic, collaborative synergies do not exist in the relationships between the majority of employers and local educational leaders. Employers claim that the connection between the two entities is so detached it is blocking the opinions of employers from the design and development of STEM undergraduate curricula. This lack of dialogue and engagement was evident amongst the majority of employers. As a result, 78 percent of employers who participated in this study do not partner with local academia to enhance STEM students' soft skills competencies, while only 22 percent do. A key method of improving this cross-pollination is through the industry advisory boards of universities. According to the interview data, 81 percent of employers do not sit on any such advisory boards, meaning their expertise is not being shared in the academic arena. Furthermore, employers identified the following conditions as major influencers of soft skills competencies:

- A relevant curriculum
- A culture of accountability
- Integration of real-world projects
- Post-graduation soft skills training

Theme 4: Lack of internal leadership support to reduce the soft skills gap

The fourth theme that emerged from these results is the lack of organizational support from leadership to initiate collaboration with academic leaders in an effort to address the soft skills gap. Given reasons for this phenomenon include the absence of an established relationship with local academic leaders, insufficient staffing to make these commitments, and lack of familiarity in initiating such a collaborative process. Meanwhile, those employers who did have the necessary leadership support to establish collaborative relationships with academia successfully identified a shared-value vision strategy to achieve mutual goals and objectives.

Open systems and collaboration

The findings of this study indicate that an open system does not exist between the healthcare organizations and local academic institutions. This lack of collaboration therefore stunts the community's ability to address soft skills gap at its core. In an open system, organizations are actively engaged in relationships that allow them exchange information. This lack of open systems is impeding the development of soft skills in undergraduate STEM students. Healthcare employers' views in this study indicate that an open systems approach--including both collaborative engagement and accountability--are needed by healthcare organizations and educational institutions to address the soft skills gap.

DISCUSSION

Healthcare organizations and academic institutions share common interests regarding STEM undergraduates. Healthcare managers wish to hire competent and qualified workers with the technical and soft skills to move their organizations forward. Academic leaders desire to graduate students who are career-ready. Healthcare managers who worked in an environment where their organizations and their local higher education institutions had adopted an open systems approach engaged in collaborative business-education relationships and experienced much higher satisfaction with the quality of new STEM employees who came from these schools.

Establish leadership commitment to initiate engagement

The healthcare industry has a growing need for employees who possess both technical and soft skills. Research indicates that a disconnect exists between academe and employers with regard to the soft skills competencies of STEM undergraduates working in the healthcare industry. Therefore, healthcare managers have a vested interest in pursuing strategies to reduce the soft skills gap of future employees. Employers experienced greater success with the recently hired STEM undergraduate if their organizations had strong internal leadership support to initiate the engagement with the local academic leaders. Leadership is defined as "the sets of activities required to articulate an organization's vision and ensure that all its stakeholders will support the vision" (Stid & Brandach, 2009, p. 36). Similarly, Northouse's (2007) definition of leadership "is a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). Healthcare employers in this study expressed the need to establish leadership support with the goal of collaborating with internal and external stakeholders. This relationship building, starting from the top of the hierarchy, is essential for initiating any external engagement program.

Healthcare managers who have sufficient authority should visit the college and university campuses that provide their greatest pools of potential employees and engage in meetings with academic leaders to discuss the importance of soft skills and ways in which they may partner and collaborate to produce career-ready graduates. For those not having this authority, the soft skills competencies of incoming employees should be a regular topic of meetings with organizational leaders who should be encouraged and reminded that it is in the organization’s best interests to pursue partnerships with higher education institutions.

Serve on advisory boards

Advisory boards can provide guidance to academic programs that are informed by the field and which allows them to align their academic programs to employer and practitioner expectations (Dominguez, et al., 2013; Hardcastle, 2021). Healthcare managers and leaders who served on advisory boards of the academic programs that prepare their future employees expressed satisfaction with their ability to collaborate and influence the training of soft skills and other topics. Some also engaged in other collaborative efforts, such as evaluating student portfolios and judging student capstone projects.

Provide internships, co-ops and externships

Healthcare managers in this study identified multiple benefits in collaborating with academia to establish, promote and maintain internships, co-ops and externships. For healthcare organizations, these programs can provide a “feeder” stream of talented student workers and a viable pool of potential long-term employees. The students benefit from on-the-job experience, the enhancement of resume’s and the possibility of future employment with the organization. Finally, educational institutions can benefit, not only by the enhancement of the curriculum from experiential learning, but also in the identification of whether the curriculum endows students with the soft skills (and technical skills) to be effective on the job.

Collaborate on curriculum

In situations where both healthcare organizations and educational institutions operate as open systems, some have found fruitful opportunities to collaborate on improving the training of future healthcare STEM workers. According to the healthcare managers interviewed for this study, the most effective situations occur when soft skills education was integrated into technical STEM courses—rather than being relegated just a single soft-skills-based course. The goal should be to promote the interconnectedness of technical and soft skills and the essential nature of each, beginning with the first year of undergraduate education and continuing until graduation. Establishing leadership

commitment, serving on advisory boards and providing internships and other experiential opportunities, can lead to true curricular partnerships between employers and the institutions that train their employees.

According to Heckman (2019), the encouraging element of soft skills development is that soft skills can be mastered by all students regardless of their technical disciplines or personal attributes. However, this is only possible when educators invest in a sustainable, systematic approach to teaching that is specifically catered towards soft skills education. There is a return on investment concerning soft skills training and proficiency (Deming, 2017; Heckman, 2019). Given these research outcomes, we may find that targeting soft skills competencies might be beneficial for individuals and organizations to not only survive--but thrive--within the globally competitive 21st Century STEM workforce.

Provide post-graduation soft skills training

The fact that 100 percent of employers interviewed in this study have witnessed the soft skills gap indicates that this problem is ubiquitous. Because the healthcare managers reported that soft skills are valuable for their organizations, they provided several strategies for addressing this industry-wide deficiency. Some employers are taking this educational burden upon themselves and are offering soft skills training workshops to their new hires. This need could present a business opportunity for academic leaders to develop soft skills training service that aims to help organizations develop their internal skills.

CONCLUSION

Findings from this study suggest that healthcare managers operating within an open systems environment, with a high level of engagement and collaboration with academic institutions experience a steady pipeline of competent and talented STEM college graduates. These employers advise other organizations who also seek to accomplish these outcomes to become better informed about what is happening in their communities. To do so, employers should establish a network of academic leaders in their region and industry. Most importantly, employers and educators should pursue working strategies that accommodate open dialogues rooted in strategies for improving local education. This cooperation can help educators understand the elements of their programs that are working and those which require more attention. Furthering this understanding via open dialogue can also create a space for employers to share their opinions on the skill sets and qualifications that they expect from job applicants in order to fulfill the market demand. Once both entities are able to align the supply and demand of skilled students, the extent of the soft skills gap will ultimately diminish.

REFERENCES

1. Abraham, T. H., Stewart, G. L., & Solimeo, S. L The importance of soft skills development in a hard data world: Learning from interviews with healthcare leaders. *BMC Medical Education,* 2021, 21(1), 1-7.

2. Ashbaugh, J. L. (2003). The hard case for soft skills and retention. *Healthcare Executive, 18*(2), 59-59.

3. Association of American Colleges and Universities (2018a). Essential learning outcomes. https://www.aacu.org/leap/essential-learning-outcomes.

4. Association of American Colleges and Universities (2018b). Fulfilling the American dream: Liberal education and the future of work. *Selected Business findings from online surveys of business executives and hiring managers.* https://www.aacu.org/sites/default/files/files/LEAP/2018EmployerResearchReport.pdf.

5. Autor, D., & Salomons, A. (2018, March). Is automation labor-displacing? *Productivity growth, employment, and the labor share.* BPEA Conference Drafts.

6. Banathy, B. H. (1992). *A systems view of education: Concepts and principles for effective practice*. Educational Technology Publications.

7. Banathy, B. H. (2000). *Guided evolution of society: A systems view*. Springer.

8. Barr, B. (2019, November 1). The 9 biggest technology trends that will transform medicine and healthcare in 2020. *Forbes.* https://www.forbes.com/sites/bernardmarr/2019/11/01/the-9-biggest-technology-trends-that-will-transform-medicine-and-healthcare-in-2020/#39b14d5672cd.

9. Bastedo, M., (2004). Open systems theory. In F. W. English, (Ed.), *Encyclopedia of Educational Leadership and Administration* (pp. 20-24). doi:10.4135/9781412939584.

10. Bertalanffy, L. von. (1968). *General system theory: Foundation, development, application*. George Braziller.

11. Betts, F. (1992). How systems thinking applies to education. *Educational Leadership*, *50*(3), 38-41.

12. Bidwell, A. (2014, February 25). Education leaders: Time to rethink what a college degree promises. *U.S. News*. https://www.usnews.com/news/articles/2014/02/25/education-leaders-say-its-time-to-rethink-what-a-college-degree-promises.

13. Cimatti, B. (2016). Definitions, development, assessment of soft skills and their role for the quality of organizations and enterprises. *International Journal for Quality Research*, *10(*1), 97-130. doi: 10.18421/ijrq10.01.05.

14. Coy, P. (2019, February 6). Maybe STEM isn't the future after all. Soft skills are coming on strong. *Bloomberg Businessweek*. https://www.bloomberg.com/news/articles/2018-02-06/maybe-stem-isn-t-the-future-after-all-soft-skills-are-coming-on-strong?utm_source=url_link.

15. Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th edition). SAGE Publications.

16. Deming, D. J. (2017). The growing importance of social skills in the labor market. *The Quarterly Journal of Economics, 132(*4), 1593-1640.

17. Dolev, N., Naamati-Schneider, L., & Meirovich, A. (2021). Making soft skills a part of the curriculum of healthcare studies [Online First], *IntechOpen*, https://www.intechopen.com/online-first/77395.

18. Dominguez, D. G., Garcia, C., & LaFrance, K. G. (2013). Developing a new graduate program in healthcare management: Embracing the transformation of healthcare management education on a pathway to success. *Administrative Issues Journal: Education, Practice & Research*, *3*(1), 34–44. https://doi-org.suscorp.idm.oclc.org/10.5929/2013.3.1.1.

19. Francis, J., & Auter, Z. (2017, June 20). Three ways to realign higher education with today's workforce. http://www.gallup.com/opinion/gallup/212522/ways-realign-higher-Aeducation-today-workforce.aspx.

20. Fujii, H., & Managi, S. (2018). Trends and priority shift in artificial intelligence technology invention: A global patent analysis. *Economic Analysis and Policy*, *58*, 60-69. doi: 10.1016/j.eap.2017.12.006.

21. Funk C., & Parker, K. (2018). Diversity in the STEM workforce varies widely across jobs. Pew Research Center. https://www.pewresearch.org/social-trends/2018/01/09/diversity-in-the-stem-workforce-varies-widely-across-jobs/.

22. Garvin, D. A. (2013, December). How Google sold its engineers on management. *Harvard Business Review*, *91*(12), 74-82.

23. Glaser, B. G. (1992). *Basics of grounded theory analysis*. The Sociology Press.

24. Hamstra, B. (2018, February 27). Will these nurse robots take your job? Don't freak out just yet. *Nurse.org*. https://nurse.org.

25. Hardcastle, S. (2021). Business school advisory boards: increasing engagement, adding value. *Global Focus: The EFMD Business Magazine 15*(3), 52-57.

26. Heckman, J. J. (2019). The economics of human potential. *Heckman Equation.* https://heckmanequation.org/.
27. J. P. Morgan (2019). Bridging the skills gap: Higher education's opportunity. Retrieved from https://www.jpmorgan.com/global/cb/bridging-the-skills-gap.

28. Karimi, H. S., & Piña, A. A. (2021). Strategically addressing the soft skills gap in undergraduate STEM education. *Journal of Research in STEM Education 7*(1), 21-46.

29. Kroning, M. (2015). Fostering soft skills is a must for nurse leaders. *American Nurse Today*, *10*(2).

30. Laplante, P. A., Kassab, M., Laplane, N. L., & Voas, J. M. (2018). Building caring healthcare systems in the Internet of Things. *IEEE Syst J. 12*(3). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6506834/.

31. Linkedin. (2019). *Global talent trends*. https://business.linkedin.com/talent-solutions/recruiting-tips/global-talent-trends-2019.

32. Livia, A, Alenxandra, A., Dumitran, M., Crizboi, G., Holmaghi, A., & Roman, M. (2017). How to align the university curricula with the market demands by developing employability skills in the civil engineering sector. *Education Sciences 7*(3).

33. Manyika, J., Chui, M., & Miremadi, M. (2017, January). *A future that works: AI, automation, employment, and productivity* (Report No. 60). McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Digital%20Disruption/Harnessing%20automation%20for%20a%20future%20that%20works/MGI-A-future-that-works-Executive-summary.ashx.

34. McCraw, D. (2017, March 17). 10 critical skills for today's IT workforce. *CompTIA*. https://www.comptia.org/blog/10-critical-skills-for-today-s-it-workforce.

35. MIT Technology Review Insights (2019, February 15). Self-driving cars take the wheel. *MIT Technology Review*. https://www.technologyreview.com/s/612754/self-driving-cars-take-the-wheel/

36. National Academies of Sciences, Engineering, and Medicine. (2016). *Promising practices for strengthening the regional STEM workforce development ecosystem*. The National Academies Press. doi: 10.17226/21894.

37. National Science Foundation (2018). U.S. S&E workforce: Definition, size, and growth. https://www.nsf.gov/statistics/2018/nsb20181/report/sections/science-and-engineering-labor-force/u-s-s-e-workforce-definition-size-and-growth.

38. Northouse, P. (2007). *Leadership theory and practice.* Sage Publications.

39. Olson, S., & Riordan, D. G. (2012). Engage to excel: Producing one million additional college graduates with degrees in science, technology, engineering, and mathematics. Report to the President. *Executive Office of the President*.

40. Patacsil, F., & Tablatin, C. L. S. (2017). Exploring the importance of soft and hard skills as perceived by IT internship students and industry: A gap analysis. *Journal of Technology and Science Education, 7*(3), 347-368.

41. Saiyad, S. (2018). Teaching soft skills-humanities to undergraduate medical students. *Journal of Research in Medical Education and Ethics, 8*, S1-S2. doi: 10.5958/2231-6728.2018.00044.6.

42. Smith, B., & Morris, L. (2017). *Bridging the Gap. (12th ed.)*. Pearson.

43. Smithsonian Science Education Center (2018). *The STEM Imperative*. https://ssec.si.edu/stem-imperative.

44. Stid, D., & Brandach, J. (2009). How visionary nonprofit leaders are learning to enhance management capabilities. *Emerald Group Publishing Limited, 37(*1), 35-40. doi: 10.1108/10878570910926052

45. Strauss, A. L., & Corbin, J. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). Sage Publishing.

46. U.S. Chamber of Commerce Foundation (2018). *Bridging the soft skills gap*. http://www.globalsuccess.org/wp-content/uploads/2018/08/BridgingSoftSkillsGap_US_Chamber_of_Commerce_Foundation.pdf.

47. Walker, J. L. (2012). The use of saturation in qualitative research. *Canadian Journal of Cardiovascular Nursing*, *22*(2), 37-46.

48. Weiss, L. (2019, January 28). Viewpoint: The case for soft skills. *Society for Human Resources Management*. https://www.shrm.org/ResourcesAndTools/hr-topics/organizational-and-employee-development/Pages/Viewpoint-The-Case-for-Soft-Skills-.aspx.

49. White, E., & Shakibnia, A. F. (2019). State of STEM: Defining the landscape to determine high-impact pathways for the future workforce. *Proceedings of the Interdisciplinary STEM Teaching and Learning Conference*, *3*(1), 4-36.

50. Wilkie, D. (2019, October 21). Employers say students aren't learning soft skills in college. *The Society for Human Resources Management.* https://www.shrm.org/resourcesandtools/hr-topics/employee-relations/pages/employers-say-students-arent-learning-soft-skills-in-college.aspx.

51. Wilkin, L. (2010). *Workplace bullying in academe: A Grounded theory study exploring how faculty cope with the experience of being bullied* (Doctoral dissertation). Retrieved from ProQuest Dissertation and Theses database (UMI No. 3447190).

52. World Economic Forum. (2018). *Towards a reskilling revolution: A future of jobs for all.* http://www3.weforum.org/docs/WEF_FOW_Reskilling_Revolution.pdf.

THE UNIQUENESS OF THE PROFESSION OF HEALTHCARE ADMINISTRATION: AN ORGANIZATIONAL THEORY PERSPECTIVE

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THE UNIQUENESS OF THE PROFESSION OF HEALTHCARE ADMINISTRATION: AN ORGANIZATIONAL THEORY PERSPECTIVE

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ABSTRACT

The "profession" of healthcare management is not well defined. Unlike medicine and nursing, two key professions in the healthcare sector, healthcare management does not require the acquisition of a standard scientific body of knowledge of its practitioners. Also, with the exception of nursing home-administrators, licensure is not required to practice. Mintzberg (2017) is a major critic of the concept of management, including healthcare management, being considered a profession claiming the field to be a craft since actions are not science based. We argue that healthcare management can be science based and be considered a profession.

INTRODUCTION

Over the past thirty years, the identity of health care management as a profession lost focus. Without agreement regarding the uniqueness of the profession, business schools began to offer "degrees" in health care management under the mantra that "management is management" or offered programs utilizing business courses supplemented with an overview course of the health care field. Within healthcare management programs, distinctions among undergraduate, graduate, and, later, doctoral levels of competencies and core body of knowledge were not defined. Accreditation at the master's level and certification at the undergraduate level moved to be "inclusive" with the focus upon local degree program specific competencies rather than a professional standard (Mick, 2004).

PROFESSION OF HEALTHCARE MANAGEMENT?

The question of whether or not healthcare management is a profession mirrors the broader debate of whether management, the field in general, is a profession. The debate is not new as documented in the second issue of the first volume of *Harvard Business Review* (Lowell, 1923). Is healthcare management a "profession?" And does it matter, in terms of education, whether the field meets the accepted criteria for being a profession? The second question significantly matters for healthcare management educational programs in that the curriculum for future "professionals" differs greatly in both scope and standards than one required for members of a craft.

What is a profession?

Multiple definitions are available for determining whether a field is a profession (Mintzberg 2017; Starr, 2017). Common components include:

1. A specific body of knowledge
2. A body of knowledge based upon science
3. Authority to determine educational requirements
4. Authority to measure knowledge that determines if licensure requirements are met to enter practice
5. Practice that depends upon individual judgement rather than specific actions
6. An enforceable profession based code of conduct

A profession is built upon a science-based body of knowledge. A professional body of knowledge represents cumulative science, experiences, and the art of maintaining and developing an entity. The profession, through its accrediting power, defines the body of knowledge required of individuals. In mature professions, sufficient acquisition of the defined body of knowledge is a requirement for granting professional degrees. In the early 1900s, after the publication of the 1910 *Flexner Report*, the profession of medicine required a science-based body of knowledge as the curriculum for accredited medical schools. Only students graduating from these accredited medical schools were eligible to be licensed to practice.

Professions constantly evaluate their bodies of knowledge and only those individuals who master this knowledge are licensed to practice. As the field of healthcare management professionalizes, licensure or certification, such as that used for long-term care administrators, should be expected to become a requirement for the practice of management in other organizations in the healthcare sector.

Case against healthcare management being a profession

Mintzberg (2017), a major critic of the concept of a profession of management, both in the general MBA and the specific MHA, writes that "Management, in health care and elsewhere, is also a practice. But since it uses little science, it is not a "profession," but a craft, rooted in experience and aided by the insights of art" (p. 220). A "practice" differs from a "science" in that science seeks truth while, in the case of the profession of medicine, the science is used to treat the ill. Although management and medicine are practices, Mintzberg (2017) does not consider management a profession because of the lack of science used in the field.

Utilizing Etzioni's (1969) framework, Cronin, Schuller, and Bolon (2018) suggest that the healthcare management field is a "semi-profession" because it lacks several of the key characteristics of a true profession with the top being the identification of a specific knowledge base. The question of a specific knowledge base is two-fold. The first part encompasses the debate concerning the scope of health services administration. Begun and Kaissi (2004) make the case for a broad definition of the type of organizations to be included as part of the field. Mick (2004) counters that curricula should remain focused on the administration of healthcare delivery organizations, arguing that such broadening could result in "the watering down" of MHA curricula, with the resulting loss of the "distinctive competence" associated with that degree (p. 175). The second dimension regards the extent of the knowledge base, determining what levels of organization the professional health services administrator should be prepared to diagnose and treat. In other words, is the professional healthcare administrator expected to be able to diagnose and treat teams, department, organizations, systems, or all of the above? The lack of clarity and agreement across the field concerning these two dimensions provides significant fodder to support Mintzberg's claim that management, and specifically healthcare management, is not a profession due to the lack of use of science in decision making.

CREATING A PROFESSION OF HEALTHCARE MANAGEMENT

One may beg to differ with Mintzberg's assessment, not on the reality of the present situation, but with a view to what healthcare management can become. This requires a focus on the entity that the profession claims to manage. Utilizing general systems theory and organizational behavior and theory, two major issues are addressed below. The first focuses on the uniqueness of healthcare organizations and the corollary uniqueness/need for professionally educated and trained health care managers. The second, derived from the first, delineates the "scope of practice" of practitioners educated at the undergraduate and graduate levels.

From a living systems perspective (Miller & Miller, 1991), managers do treat the ill: the ill individual worker, group/team, organization, and community. Whereas the physician primarily focuses on the living systems levels of cell, organ, and organism, managers must diagnose and treat the individual, group/team, and organization levels. Scientific disciplines exist to address issues for each of these levels for the field of healthcare management, most notably organization behavior and organization theory. Utilization of those science-based disciplines by fully trained and licensed individuals to treat the ill organization and its subsystems would be a major step toward healthcare

management becoming a professional field. Further, the training of individuals using science-based disciplines provides them with the knowledge base to go beyond the ability to treat or react to the "ill" organization and creates professionals who are able to both maintain and improve the health of the organizations they serve (Miller & Miller, 1991).

Healthcare management education, skill development, and experiences, from a scientific professional perspective, should align with organizations, groups and teams, and individual workers. Managers work toward creating value and continuous quality improvement by designing systems that produce value. Managers maintain, treat, create, and improve production systems by focusing on both system productivity and productive capacity (Covey, 2013). A special nuance for managers is that managers are often part of the system being treated, which would be analogous to physicians or psychologists treating themselves.

Miller and Miller (1991) identify 20 subsystems within each level of living systems. All living systems deal with matter, energy, and information with subsystems that allow the entity to exist. Their subsystems are by nature generic, but in practice, clinicians name them. Clinicians of humans work to maintain, treat, and develop skeletal, neural, digestive systems while professional clinicians of organizations do the same for subsystems such as organization structure, information management, and production. The key is for a profession to focus upon certain levels.

Organizational level focus of professional healthcare administrators

The above discussions indicate that there is substantial science to lead managers in the role of diagnosing and treating organizations and the groups and individuals within. The first step is to recognize the clear divisional levels within living systems theory pertinent to management with those being organisms (human workers), groups (teams and departments), and organizations, and the communities that organizations operate in. Sciences focus upon a unit of analysis. Organization behavior describes human and group (teams and departments) operations while organization theory focuses on organizations and the communities.

Although necessary, living systems levels are not sufficient for defining a field of study. In the biological study of organisms, major divisions exist (animals vs. plants) followed by further divisions (mammals vs reptiles vs fish) followed by even further divisions (apes, whales, and humans). In utilizing the hierarchical taxonomy, midrange theories are possible as well as species-specific maps of reality. Animals need oxygen, but midrange theory suggests that fish use gills and humans use lungs to obtain this input.

Mintzberg's (1979; 2017) organizational structures (i.e., professional vs machine organizations) are analogous with division of types of animals (mammals, reptiles, fish). Within the division of professional organization, Mintzberg identifies two major examples of hospitals and universities. If hospitals are analogous to the genus level of the taxonomies, then tertiary, community, and children's hospitals become the species. In other words, hospital pediatric and hospital community are species to be studied, diagnosed, and treated by the organizational clinicians referred to as managers.

The following typology graphically illustrates the key differences of healthcare organizations from traditional business operations that suggest why healthcare is a profession. (The complete eight cell typology (Stegall, Stegall, McIlwain, 2022) is discussed elsewhere.) To begin, general open systems theory is itself a form of contingency theory. Inputs from the environment are transformed to provide outputs to the environment. A successful organization aligns itself within its environment to survive.

In this typology the focus is upon standardization. Standardization, as used here, indicates limited variation while non-standardization embraces variation along a key characteristic. In order to use the typology, one must determine whether the organization's inputs and outputs are standardized or non-standardized. As examples, consider

input paper for a printer as an example of a standardized input while patients entering an emergency room would be non-standardized inputs. An example of a standardized output is a run of printed textbooks or the same model car. A non-standardized output would be a series of patients discharged from a hospital after arriving with a broken leg: a child to home with a cast, an adult to a rehab center, and a former hospice patient to the mortuary. The actual transformation processes of inputs to outputs can also be classified as standardized or non-standardized. An assembly line for producing textbooks or automobiles represents a standardized transformation process. Clinicians, considering both comorbidities and available resources within the hospital, with the family and home, and in the community utilize "agency theory" to determine a unique transformation process for each patient. This is based upon determining a unique goal for each patient. This transformation process is clearly non-standardized.

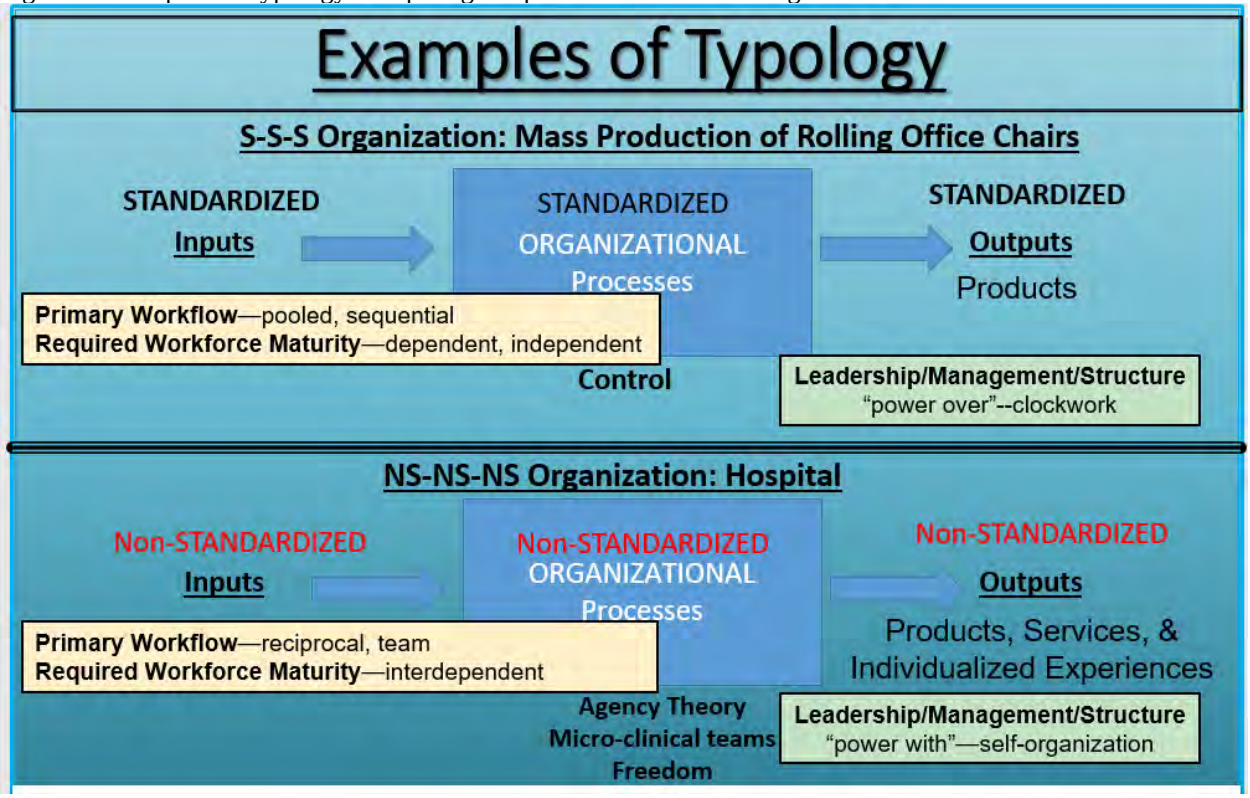
Figure 1 illustrates this typology. Figure 2 provides additional details illustrating the differences between type NS-NS-NS hospitals and type S-S-S manufacturing.

Figure 1. Organizational Typology Based upon Level of Standardization

		TRANSFORMATION PRIMARY PROCESSES				
INPUTS		Standardized	Non-Standardized	**OUTPUTS**	**ORGANIZATION TYPE CODE**	**COMPLEXITY INDEX When Purposeful Outputs (NS=2 & S=1)**
Non-Standardized			NS	**Non-Standardized**	**NS-NS-NS**	6
Non-Standardized			NS	**Standardized**	**NS-NS-S**	5
Non-Standardized		S		**Non-Standardized**	**NS-S-NS**	5
Non-Standardized		S		**Standardized**	**NS-S-S**	4
Standardized			NS	**Non-Standardized**	**S-NS-NS**	5
Standardized			NS	**Standardized**	**S-NS-S**	4
Standardized		S		**Non-Standardized**	**S-S-NS**	4
Standardized		S		**Standardized**	**S-S-S**	3

The "complexity index" is based upon the assumption that non-standardization leads to a higher level of complexity of work than standardization *when* the outputs are purposeful and specific to some standard. The index is created by assigning a one for standardized and two for non-standardized inputs, transformation, and outputs. One could add additional complexity if the internal environment required a culture of freedom vs. one where the culture was simply power over the workforce. Another level of complexity would be if the environmental inputs and outputs were simply products, or services, or the high level experiences that must be created in healthcare organizations (Lee, 2004).

Figure 2. Examples of Typology Comparing Hospitals with Manufacturing



Also, it is important to note that within the hospital there are manufacturing S-S-S departments and teams. This classification is based upon the primary production system, the gemba part of the organization that is specifically producing the product, service, or experience valued by the external customer. This is related to the concept of "chunking" from complexity theory where higher level organizations are created by combining different types of sub-systems into a more complex higher level entity. This is analogous to the development of higher level living systems as described by Miller (1978).

Although there is a domain of knowledge necessary for all managers (analogous to high-level theory) (Merton, 1968), the division of organizations into phylum implies mid-range theory, while successful diagnosis and treatment of organizational "diseases" requires knowledge of the specific organizational species and the individual organization in its own particular environment. Consider that while the veterinarian treats a variety of species of organisms, physicians treat the most complex, humans. The profession of healthcare management is based upon the special need to diagnose and holistically treat the most complex species of organizations, those that make up the healthcare sector.

From a living systems perspective, all professional managers would scientifically create, maintain (diagnose and treat), and develop individual workers, teams and departments, and organizations working in communities. The uniqueness of healthcare professional managers is that they must do the above within the most complex organizations (NS-NS-NS), creating people "experience" outcomes in addition to traditional products and services. This system typically requires a "power with" freedom culture rather than the traditional, and simpler, "power over" control culture found in the simpler S-S-S manufacturing organization.

WHAT DIFFERENCE DOES IT MAKE IF CRAFT OR PROFESSION

Mintzberg (2017) observes that professional training, with the consequent achievement of highly specialized skills and knowledge, allows the standardization of professional work. Noting how this enhances coordination or "mutual adjustment," he provides an illustration of an anesthesiologist and surgeon working alongside each other for five hours without speaking a word (p. 156). Of course, they could have worked together for years.

This level of standardization is possible due to "approved" standards of practice upon human patients and that the "human" entity itself is standardized. In other words, the rapid advancement of medical sciences, the foundation of the professional craft of medical practice, is made possible due to the stability of the subject of study. Today's advanced medical treatments would work on humans hundreds of years ago because the human entity is relatively stable.

The subject for managerial clinicians, managers of healthcare organizations in particular, is not stable and requires constant realignment of treatments to a changing entity. Organizations, and their subsystems, are affected by the sciences that constantly change both the outcome possibilities and the input and production processes. Healthcare organizations are unstable due to the advancement of medical sciences. For example, mass investments in open-heart surgery in the 1980s produced remarkable outcomes that suddenly are not needed with the introduction of a stent. Technological changes from the environment constantly force changes in the healthcare organization's internal transformation processes.

Mintzberg (2017) speaks of medical professionals working in silos in that new ways of doing work (experimentation) is not what patients seek. Excepting, of course, patients requiring treatments that do not yet exist. In this setting, the experience and art aspects of the physician become just as important, or more so, than the science foundation. However, in management education, transferring to students both the understanding of the need for and the ability to produce new changes in operational processes becomes essential as organizations operate in dynamic environments, both internal and external, as discussed above.

Again, healthcare organizations are complex organizations that must constantly respond to technological changes that produce ever-changing outcome possibilities. Management of these complex organizations requires on-going discovery via experimentation. But knowing what to do and how to do a system change is only sufficient. Actual change occurs in environments, internal and external, that allow for the change. We suggest that although implementation science is necessary, it is the experiences and art of the change agent (the professional healthcare manager) that makes the political and human resource development of creating and maintaining such environments capable of change while producing outcomes.

In this manner, healthcare management, while relying more on experiences and art than medicine, can still develop into a profession. The science of possibilities is essential. Science brings the theory of the possibility that highly successful healthcare organizations are professional organizations that require different management techniques than the machine organizations that produce hamburgers. Science brings to the professional mindset the concepts of special vs. common variation and the "treatment" of common variation requires changing the system while "treatment" of special variation requires a focus on the special mixture of inputs associated with a particular outcome.

The enhanced necessity to utilize contingency theory and discovery requires healthcare management to become a science-based profession. Craft rules of thumb are insufficient and inefficient in a changing environment. There are professional and scientific foundations for Peck (1994) to state:

> "The role of manager is the most stressful of all roles, and the profession of management the most complex and demanding of professions. Take it from someone who is on the inside. I can assure you that it is infinitely more difficult to be a good hospital administrator than it is to be a good physician." (p. 225)

Professional healthcare managers are necessary because organizational success is based upon their ability to diagnose and treat the healthcare organization as a whole and its subsystems. The ability to diagnose and treat the complex NS-NS-NS healthcare organization represents a process that requires the ability to think rather than a simple stimulus-response found using "rules of thumb" management practices.

DISCUSSION

Mintzberg (2017) states that health administration is not a profession because it is not based upon science such as is the case with medicine. Presented above is evidence of the potential of healthcare management being based on sound scientific theory associated with the units of analysis of people, teams, organizations, and communities and that the organizational type "hospital" is the most complex. In 2002, management professor, writer, and guru Peter Drucker declared that the hospital is "altogether the most complex human organization ever devised" (p. 119). Practitioners of the field recognized this complexity. However, as healthcare management education became dominated by discipline-based academics rather than by practitioners, the path for the movement toward all management being management strangely became more viable in the evolving curriculum of programs. Whereas the medical profession reduced the variation of the educational processes to become a profession, the semi-profession of healthcare management increased in variation in the curriculum to become more inclusive of the perceived and actual diversity of healthcare organizations themselves. Without a standardized qualitative understanding of what it meant to become a healthcare manager, and with it the required body of knowledge necessary to practice, one that was known by the community of professionals in the early development of the field, healthcare management devolved.

Living systems theory provides a different answer to this desire for diversification. It is found through the potential of specification toward an educational focus on the NS-NS-NS organization type of healthcare organization. If the profession focuses on a core body of knowledge that is not diluted to the exclusion of the understanding of what makes healthcare organizations unique, then an understanding of how different types of organizations work is included. Given the higher complexity of healthcare organizations, becoming a professional of the highest level includes the need to understand and work with lower levels of organizations. As is common with systems thinking, it is by focusing on the most complex that the field becomes inclusive and professional. If healthcare organizations are to thrive and produce value for their communities, we do believe there is a need for a science-based profession in healthcare administration and the social science necessary to do that is available to support its development.

REFERENCES

1. Begun, J. W., & Kaissi, A. (2004). Definition and scope of health services administration. *Journal of Health Administration Education*, *21*(2), 227-239.

2. Etzioni, A. (1969). *The semi-professions and their organization.* The Free Press.

3. Covey, S. R. (2013). *The 7 habits of highly effective people: Powerful lessons in personal change (Anniversary edition).* Simon & Schuster.

4. Cronin, C.E., Schuller, K.A., & Bolon, D.S. (2018). Hospital administration as a profession. *Professions and Professionalism*, 8(2), e 2112, 1-14. https://doi.org/10.7577/pp.2112

5. Drucker, P. (2002). *Managing in the next society*. St. Martin's Press.

6. Lee, F. (2004). *If Disney Ran Your Hospital: 9 ½ things you would do differently.* Bozeman, MT: Second River Healthcare Press.

7. Lowell, L. (1923). The profession of business. *Harvard Business Review*. 1(2), 129-131.

8. Merton, R.K. (1968). *Social theory and social structure*. Free Press.

9. Mick, S. S. (2004). Must we broaden the definition of health services administration? A response to the final report of the blue ribbon task force. *Journal of Health Administration Education, 21*(2), 173-177.

10. Miller, J.G. (1978). *Living systems*. McGraw Hill.

11. Miller, J. G., & Miller, J. L. (1991). A living systems analysis of organizational pathology. *Behavioral Science, 36(4),* 239. https://doi.org/10.1002/bs.3830360402

12. Mintzberg, H. (1979). *The structuring of organizations.* Prentice Hall.

13. Mintzberg, H. (2017). *Managing the myths of health care*. Berrett-Koehler Publishers, Inc.

14. Peck, M.S. (1994). *A world waiting to be born: Civility rediscovered.* Bantam Books.

15. Starr, P. (2017). *The Social Transformation of American Medicine (2nd edition)*. Basic Books.

16. Stegall, M.S., Stegall, M.H., & McIlwain, T. (2022). *Why healthcare organizations are different: A new classification of organizations* [Unpublished manuscript]. Department of Health Care Management, Clayton State University.

THE BUSINESS OF HEALTHCARE: THE INTERDISCIPLINARITY OF HEALTHCARE MANAGEMENT PEDAGOGY

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ABSTRACT

The healthcare sector is indeed dynamic, with change being the only constant in this rapidly evolving field. Best practices have surely been established over the years, but as change continues so must the way by which we approach and address challenges in healthcare, as well as the policies that frame it. As healthcare expenditures continue to grow in response to changing technology and improved quality of care, our approach to the challenges in our sector must change in efforts to right-size the numerous healthcare delivery systems and supporting industries. The business sector has been quite successful at right-sizing their networks, creating improved efficiencies and ultimately improved performance – a sound example for the necessary changes in healthcare.

As we 'Get Back to the Business of Education as (Un)Normal', we must acknowledge how the delivery and, in some cases, the desired outcomes of education have changed. The Covid-19 Pandemic ushered in required virtual learning, prompting the learning of new technologies for students and educators alike. It shed light on the problems in healthcare delivery, as the system was stretched to the limits forcing suppliers and providers to pivot at a moment's notice. The healthcare sector had to not only focus on the patient care aspects of the field, but also the business aspects as many organizations struggled to stay afloat and viable. Student learning outcomes must evolve to prepare future professionals for the 'new normal'. Finance, human resources, supply chain and other business-based functions carry the responsibility of mitigation and solutions – reallocating funds to get the necessary resources, hiring or contracting the additional personnel and securing more supply options – all last-minute challenges during the pandemic, requiring strategic thinking and a deeper understanding of business processes.

Future healthcare managers/administrators must have at least the basics of these skills. This approach means a direct impact on future healthcare management/administration pedagogy, as basic business practices would become a standard part of the required curriculum. The overarching objective of this research is to examine the business and healthcare sectors, for future interdisciplinarity of healthcare management/administration academic programming. This conference session is expected to engage the audience in a deep discussion that will achieve the following three objectives: 1) Examine the often-blurred boundaries of the business and healthcare sectors, 2) Examine the commonalities between the healthcare and business sectors, and 3) Examine possible implications of the shared best practices on healthcare management/administration pedagogy.

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WHY NOT EMBRACE SIMULTANEOUS INSTRUCTION? YOU'RE DOING IT ANYWAY….

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ABSTRACT

March 2020 witnessed a mass movement from seated instruction to distance education in response to the societal shutdowns generated by the COVID-19 pandemic. Many instructors, at all instructional levels, now were required to teach using technologies and techniques to produce distance education. For much of 2020 and 2021, organizations in the education sector allocated considerable human resource time and technological expense to upgrade instructor skills and knowledge to provide quality distance instruction.

Three major outcomes of this natural experiment in the radical transformation of the production methods for the higher education sector are considered in this presentation. First, instructors that traditionally resisted moving from the seated classroom format to the distance education format were forced to change and many found that they, surprisingly, could teach content via distance education and that there were additional benefits in teaching and learning from home. Second, instructors actually became competent in providing distance education from the training, education, and practice obtained over the multiple semester period starting with the societal lockdown in March 2020. Third, the principal input, the students, also became more comfortable and competent in learning with the new format.

In 2021, many university systems began moving back to using a seated classroom format. For example, the University of Georgia System *required* its colleges and universities to move all previously seated course instruction away from the distance format and back to the pre-pandemic seated format.

We suggest that such either/or mandates unnecessarily waste the skill development of both the individual instructional providers and student consumers that occurred by the forced changes. We propose a simultaneous educational format be considered that incorporates both seated and distance educational formats. Simply stated, create courses that are seated, but students have the choice of either attending on-site or by their computer from home or work. Many instructors are now doing this anyway due to university and college requirements to provide accommodations for students that have contracted COVID and cannot attend class. Additionally, simultaneous instruction is not new in that it has been previously utilized when courses were either televised or transmitted via cable to gatherings of students at remote sites. A framework is presented to illustrate the differences between seated, simultaneous, and synchronous distance education and the technological requirements of each.

Our experiences with synchronous distance education provides the tools to allow the simultaneous format to occur. For example, the use of standalone cameras and wireless headsets while using multiple screens to project the educational materials both to a local classroom screen and to student computers is discussed. Also discussed are techniques to conduct simultaneous group work both in the classroom and amongst the students attending through distance education systems like Microsoft Teams or Kaltura Newrow.

Obviously, there are pros and cons to a simultaneous educational format and these are analogous to those discussed with organizational structures based on product, department and matrix designs. Simultaneous instruction is directly analogous to the complex matrix organizational design. One particular potential positive of simultaneous instruction is the use of Quality Matters standards, designed to improve the quality of distance and blended classes, with those improvements now actively applied to the co-produced seated instruction. Other positives provided by a simultaneous format include providing freedom to students to actively continue in a course when personal issues arise, including for those that started their education via distance education during the pandemic but are now finding courses

offered only in a seated format. This consumer freedom may translate into advantages in marketing, recruiting, retaining, and graduating students.

One major "What if?" is what if all the students in a particular class select one format over the other? In briefly speaking with seated undergraduate and hybrid seated graduate students, educational level preferences are being repeated. Graduate students are stating a preference for the synchronous distance format while the undergraduates are mixed in their format preference. It is also important to consider academic administration implications of a simultaneous classroom instruction format from the perspectives of department chairs and MHA program directors that must consider training, equipment, scheduling, accreditation, and funding issues.

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WHEN ETHICS COLLIDE IN OUR HEALTHCARE SYSTEM: A BUSINESS CASE STUDY ON SERVING THE LGBTQ+ COMMUNITY

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ABSTRACT

Once heralded as LGBTQ+ friendly, Mercy San Juan Medical Center lost its luster with the LGBTQ+ community by refusing to perform a hysterectomy on a transgender patient. While laws protect against sex-based discrimination, Mercy claimed it is also bound to facially neutral (and Constitutionally protected) rules set forth in its Religious Directives for Catholic Health Services. The case not only found its way to the Supreme Court but was also tried in the Court of Public Opinion. In this business case study, students will analyze the intersection of law and ethics as it relates to diversity and inclusion.

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HEALTHCARE ADMINISTRATION EDUCATION AND QUALITY MATTERS: THE 15% FOR PROFESSIONALISM

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ABSTRACT

Consider the possibility that a Bloom-industrial complex exists supporting and promoting the concept of measurable educational objectives. The three educational domains described by Bloom (1956) are cognitive, affective, and psychomotor and they roughly correspond with KSA (knowledge, skills and attitude). However, the often cited Bloom Taxonomy focuses only on one domain: the cognitive domain. This is the domain that is most developed both in terms of numerical goal creation and numerical assessment. The cognitive domain's focus on theory is absolutely necessary for professionals, and is relatively easy to sell and promote by consultants and accreditors alike, but is not in itself sufficient for educational programs intent on producing professionals.

The affective domain (attitude) is also essential in the development of professionals in that it is through this domain that feelings, values, appreciations, motivations, and attitudes are addressed. In medical education, addressing the professionalization of students via education from the affective domain is often referred to as the "hidden curriculum." The perceived need for using affective domain objectives for the development of a professional are also noted from the educational literature of nursing and architecture. The difficulty of measuring such affective domain objectives is also documented.

Attitudes are the result of belief structures that are salient for individuals and are formed from many experiences; however, education outcome assessment assumes, many times, that since we can quantify knowledge easier that is all we need to do, i.e., it is measurable. If we just measure the cognitive domain (hence the concentration on the cognitive domain in Bloom when it comes to taxonomies of objectives) then we miss important professional behavioral outcomes not easy to measure. One knows professional behavior when one sees it, but how could the precursors of professional behavior have been measured earlier in a person's career?

One of seven…Quality Matters, the "non-profit organization specializing in standards, process and professional development for quality assurance in online and blended learning" (*Quality Matters Higher Education Rubric Workbook,* 2018) allows one of seven course objectives to be non-measurable. The importance of this "one" is that the one can be from the very difficult to measure affective domain associated with value development that is associated with developing professionals. In the *Rubric* annotation for reviewers, it is explicitly stated to reviewers that only 85% of course-level objectives must be measurable and this is to allow courses to add objectives "that are not easily measured."

There are administrative considerations of including non-measurable curricular and course objectives in a curriculum assessment. Department chairs and MHA program directors must balance and meet not only requirements from AUPHA certification, CAHME accreditation, and potentially Quality Matters certification, but must also respond to university accreditation standards that may not acknowledge non-measurable objectives.

W. Edwards Deming (1994) states in *The New Economics* "the magnitudes of the most important losses from action or inaction by management are unknowable (note: therefore, unmeasurable);" that "It is wrong to suppose that if you can't measure it, you can't manage it—a costly myth;" and, includes a section on the "Futility of a numerical goal." In other words, as stated explicitly in the latest (2018) edition of the text, if you want to improve quality of outputs, "You can STOP managing by the visible numbers alone." These statements come from the individual that

advanced the use of numerical statistical process control and builds the case that an over-reliance on measurable objectives can be just as harmful as an under-reliance.

Finally, consider the use of numbers and measurable goals vs. non-measurable analogous to the lyrics from the old Kenny Rodgers song "The Gambler" of "know when to hold them, know when to fold them." From an organization behavior theory perspective, this states contingency theory in an entertaining manner. To the credit of Quality Matters, in its certification processes, the need for both measurable and non-measurable course and learning objectives is recognized. Our case is that those of us involved with the education of professionals should not diminish the quality of our educational product by reducing all objectives to the measureable. Affective learning is required for the development of professionals, and although hard to measure and assess, professional development is still our educational responsibility in healthcare administration education. Consider that professionalism may well be worth an explicit, albeit potentially non-measurable, learning objective in your curriculum.

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TRACK:

HEALTHCARE INFORMATICS & TECHNOLOGY

MACHINE LEARNING-INFORMED REMOTE HEALTHCARE CARE INVESTMENT GO/NO GO DECISIONS AS A PRACTICAL CASE STUDY

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ABSTRACT

The pandemic has seen a large-scale introduction of telemedicine across various medical specialties, facility types, and patient populations. Telehealth services can greatly expand access to care during and beyond the pandemic, keep vulnerable patients safe during quarantine or disease surges, and have been used effectively in some specialties, (e.g., telepsychiatry). In some specialties and regions, the decision to introduce telehealth programs is not clear cut from a central planning perspective, either because of provider supply, relative size, distribution or composition distribution of patient pool, or local/regional/state policies that impose burdensome restrictions. We outline a machine learning modeling approach to predict promising regions for introducing telemedicine by specialty and walk through a companion modeling exercise that can be used with graduate students in the business and health finance classroom.

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TRACK:

HEALTHCARE MANAGEMENT

HOSPITAL-AT-HOME: A NEW MODEL IMPACTING QUALITY & COST OF CARE

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ABSTRACT

Hospital-at-Home (HaH) is an innovative model of healthcare that has very promising outcomes. HaH was first used in the United Kingdom and in other countries with government-run health systems. This model provides a substitution for in-hospital care. Care is coordinated by nurses, physicians, and allied health professionals. This presentation focuses on the clinical dimensions of the HaH model, the physician's role, patient safety concerns, technology, and the limitations of the model. Current research is used to support quality of care, selection criteria and cost savings. The HaH multidisciplinary team model is discussed in detail.

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EXPLORATORY AND QUANTITATIVE ANALYSIS OF STAFFING RETENTION PRACTICES IN LONG-TERM CARE

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ABSTRACT

When long-term care organizations are fully staffed, residents receive better quality care, but retention of certified nursing assistants (CNAs) – the primary caregivers in long-term care – has never been more challenging. This project aimed to identify a myriad of practices nursing facilities have employed to enhance CNA retention, explore how widespread their use is, and assess whether they correlate with desirable organizational performance.

Following a literature review and crowdsourcing methods, including data mining of social media groups and administrative focus groups, researchers compiled and inductively categorized a list of practices reportedly employed to enhance CNA retention. Subsequently, 59 nursing home administrators were interviewed to assess which staff retention practices from the developed list were employed within their organization. Facility demographics and organizational performance measures were also collected. An exploratory analysis identified frequencies of usage of 119 CNA-retention practices (across 10 categories). Additionally, correlations between employed retention practices and facility performance variables were examined.

Beyond providing a benchmark of both common and unique approaches to attempt increased CNA retention, three major categories of practices were found to be correlated with positive facility performance. Notably, orientation/onboarding practices were related to lower turnover, better staffing ratios and higher government star ratings. Additionally, emotional support practices correlated with reduced turnover and employee support practices were related to both lower turnover and higher profitability.

In conclusion, these findings are beneficial to all nursing facilities struggling with staffing challenges. They offer potential suggestions for retention strategies not previously considered, and they highlight practices that are correlated with desirable organizational performance. Administrators can use this information to restructure their culture, practices, and programs to best serve the needs of their nursing assistants and ultimately maximize quality of care for residents.

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TRACK:

INTERNATIONAL HEALTHCARE

PREVALENCE OF IRRITABLE BOWEL SYNDROME AMONG HEALTH CARE STUDENTS – A CROSS SECTIONAL STUDY FROM KING SAUD UNIVERSITY

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PREVALENCE OF IRRITABLE BOWEL SYNDROME AMONG HEALTH CARE STUDENTS – A CROSS SECTIONAL STUDY FROM KING SAUD UNIVERSITY

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ABSTRACT

We aimed to evaluate the prevalence of irritable bowel syndrome (IBS) among Health care students at King Saud University, Riyadh Saudi Arabia. A cross-sectional study in which a paper-based, self-administered questionnaire was conducted at King Saud University in September 2019 to December 2019, among undergraduates, to evaluate the prevalence of IB. A total of, 170 students completed and returned the questionnaire. The overall prevalence of IBS was 36.6% (n=56). The most common subtype of IBS encountered were mixed IBS (19.4%; n= 33) followed by unknown IBS (18.8%; n=32), IBS with constipation (19.4%; n=33) and IBS with diarrhea (17.1%; n=29). Most of the students, 70% (n=119), agreed that food can cause abdominal pain or diarrhea. About 14.1% of students exhibited hypersensitivity to food products. More than half (58.2%) agreed that spicy foods can cause IBS, followed by fatty foods (32.4%), coffee (28.2%) respectively. This study revealed a significant difference among nursing and pharmacy students concerning IBS incidence. (p=0.034). However, no significant difference was observed by age, year of study, or body mass index, and IBS prevalence (p=0.272, p=0.682, p=0.094). We established an IBS prevalence of 36.6%. The study suggests that students of health care professional disciplines may have a greater level of academic-related worries, which lead to IBS. Screening programs for IBS are recommended.

INTRODUCTION

Irritable bowel syndrome (IBS) is a condition that affects the regular activities of the digestive system and is associated with stomach spasms, bloating, diarrhea, and constipation, which results in destruction and or changes in bowel movements (Miwa, 2008; NHS,2018). The chronicity of this disorder affects lifestyle considerably, furthermore, IBS is not curable (Sayuk and Gyawali., 2015; Chey et al., 2015; Lovell and Ford., 2012). The cause and pathogenesis of IBS are still unclear (Corsetti and Whorwell., 2017) many studies globally reported that a wide variety of factors, including gender, diet, lifestyle habits, and other psychological factors, contribute to IBS (Alsuwailm et al., 2017; Naeem et al., 2012; Anbardan et al., 2012; Chang, 2011). Health care students, including pharmacy and nursing, and others are more often predisposed to great levels of emotional and psychological stress as a result of a high academic and professional workload, where seminar schedules, struggle for getting right jobs, detrimental living environments, poor dietary habits, responsibly managing patients, and ensuring punctuality for classes all contribute (Jung et al., 2011). These factors significantly contribute to the rise in IBS prevalence among individuals and students (Ghanaei et al., 2011; Abdulmajeed et al., 2011; Jimenez et al., 2010).

The global prevalence of IBS is 11% however, IBS remains underdiagnosed (Heidelbaugh et al.,2015; Nagari and Thomas., 2014). The prevalence of IBS in the USA was ranging between 5-20% and is more common among adults aged below 50 years (Heidelbaugh et al.,2015). While the prevalence in western countries was 10% with at least 50% of individuals experiencing IBS symptoms (Nagari and Thomas., 2014), the prevalence in North America is 10–15% (Almutairi et al.,2017). Most studies' results stated a high level of IBS prevalence in women compared to men (Almutairi et al.,2017; Chial, 2002). A recent study was done amongst healthcare students and interns from other regions of Saudi Arabia reported the overall incidence of IBS was 44.5% with a higher rate in females (31.8%) (Alsuwailm et al., 2017). Similarly, another cross-sectional study among medical undergraduate students in three local universities in the Qassim region of Saudi Arabia reported a higher prevalence of IBS.

Moreover, senior health care students were furthermore more prone to have increased risk of IBS than beginners than junior students, due to their critical assignments and examinations ((Almutairi et al.,2017; Ibrahim et al., 2016). Previous studies revealed that the prevalence of IBS has differed depending on the type of study subjects and the diagnostic criteria used for IBS, depending on the symptoms presented and IBS subtypes classifications (Drossman et al., 2006). Additionally, earlier findings reported a high prevalence rate of IBS among university students, especially health care students, which could be partly explained by the role of stress (Okami et al., 2011; Chu et al.,2012).

Frontline health care professionals such as nurses and pharmacists are an important part of the medical field since they work closely with patients. Obtaining a degree in health care practice is also a challenging, stressful, and high-pressure act. As a result, the well-being of health care students is a critical concern (Chang, 2011). A previous finding from, Saudi Arabia, indicated that up to 45.5 % of health care professionals such as nurses working in primary and secondary health care had work-related stress. Similarly, other studies among American nurses and Chinese reported a greater risk of having IBS (Nojkov et al.,2010; Liu et al., 2014). When compared to healthy people, people with IBS cost the healthcare system more money (Ghanaei et al., 2011). Recurrent hospital visits and costly examinations are common for IBS patients due to low quality of life (Butt et al., 2012; Ford et al.,2008).

In general, a battery of studies from both developed and developing countries including Saudi Arabia reported the high prevalence of IBS among college students (IBS (Alsuwailm et al., 2017; Naeem et al., 2012; Anbardan et al., 2012; Chang, 2011; Jung et al., 2011; Ghanaei et al., 2011; Abdulmajeed et al., 2011; Jimenez et al., 2010). However, despite the aforementioned few studies that highlight incidence of IBS among health college students in Saudi Arabia, little is known about IBS subtypes and food triggers IBS among students. In other words, given their crucial role as future health care professionals, leading a healthy lifestyle is important, to achieve better grades in academic to become practicing professional, as they will contribute into promoting healthy eating habits and counseling patients about health status and health promotions (Okami et al., 2011; Chu et al.,2012; Ford et al.,2008). Thus, this study aimed to assess the prevalence of IBS among health college students (Pharmacy and nursing) in Saudi Arabia.

PATIENTS AND METHODS

Study design, sample, and data collection

In this descriptive cross-sectional study, a self-administered questionnaire was used for four months from September to December 2019 to evaluate the prevalence of IBS among pharmacy and nursing undergraduates at Saudi University, Riyadh, Saudi Arabia. We included third- and fourth-year of Pharmacy and nursing students. A statement emphasizing the importance of participation in the study was made at the beginning of the survey. The act of filling out the survey suggested agreement and was regarded as written informed consent. The study did not include students under the age of 18 or students from other disciplines.

Questionnaire design and Procedure for data collection

This study used a 17-item questionnaire which was divided into three parts. The initial part is composed of demographic information such as age, sex, faculty type, year in the program, and nationality. The second section comprised questions on whether IBS was present, and its symptoms, and potential causes, and was used to establish subtypes. The third section obtained information on types of foods consumed and other potential factors contributing to IBS. The questionnaire was established by the Rome Foundation Board as a functional gastrointestinal disorder (FGID). The questionnaire was earlier tested for its sensitivity and Cronbach alpha was 65% (Jung et al., 2011). The Rome criteria define IBS as repeated stomach pain or uneasiness in the stomach for at least 3 months related to the resulting symptoms: (1) perfection after defecation; (2) at the beginning change in occurrence in bowel movement; (3) onset related with a change in the appearance of stools. Patients with an absence of red flag symptoms like fever, vomiting, anal blood, weight variations, may suggest the presence of other pathologies.

Constipation –IBS (IBS-C) was recognized as a hard stool for at least 25% of the time or watery-like stools in

less than 25% of bowel movements. Diarrhea- IBS (IBS-D) was having loose like watery stools of 25% and or hard stools in less than 25% of bowel movements. Mixed IBS (IBS-M) is having heard of which at least 25% and loose like a watery stool in at least 25% of bowel movements. Unknown IBS (IBS-U) was recognized as a deviation in stool consistency that did not fulfill the measures of the other three subtypes. Students were informed that anonymity would be preserved, and recorded responses would be used for scientific purposes only. The convenience sampling was used in the study to collect the data. We contacted students in their free time before lectures, invited them to participate, and provided them with a summary of the study aims. We started data collection in September 2019 and completed it in the same semester (December 2019). For the students in the third and fourth academic year, we picked an exam-free time to gather the data.

Data analysis

Descriptive statistics including percentages, and frequency distribution were used for each variable. The Chi-square test was carried out to establish the association between variables. The data were analyzed using Statistical Package for Social Sciences version 26.0 (SPSS Inc., Chicago, IL, USA), and a p-value of <0.05 was considered statistically significant.

RESULTS

An overall of 170 pharmacies and nursing undergraduates who received the questionnaire completed the survey. Most participants (76.5%) were aged between 21–25 years, about 23% (n=38) were aged 18–20 years old. One-quarter of students (22%; n=38) were enrolled in the nursing degree program, while most (77.6%; n=132) were enrolled in the PharmD degree program. Most students were Saudi nationals (96%; n=164). Of the 170 students who completed the survey questionnaire, 37.6% of second-year students (n=81), 52.3% of third-year students (n=89). Among the study subjects, about 24% of students (n=40) were overweight and only 9.4% (n =16) were obese. Regarding lifestyle habits, only 17.6% (n=30) were active smokers and about 45.3% (n=77) ate homemade food, with nearly half of participants eating food prepared at a restaurant (See in Table 1).

Table 1. Detailed demographics of study participants (n=170)

Irritable bowel syndrome (IBS)	**N (%)**
Age	
18-20 years	38 (22.4)
21-25 years	120 (76.5)
25-30 years	2 (1.2)
Faculty type	
Pharmacy	132 (77.6)
Nursing	38 (22.4)
Year of study	
Second-year	81 (47.6)
Third-year	64 (37.6)
Fourth-year	25 (14.7)
Nationality	
Saudi	164 (96.5)
Non- Saudi	6 (3.5)
Body mass index (BMI)	
Normal	105 (61.8)
Overweight	40 (23.5)
Obese	16 (9.4)
Moderately obese	9 (5.3)
Sleeping pattern	
Less than 6 hours/day	68 (40)
6-8 hours/day	82 (48.2)
8- 10 hours/day	20 (11.8)

Smoking status	
Yes	30 (17.6)
No	139 (89.8)
Eating habits and source	
Homemade	77 (45.3)
Restaurant	69 (40.6)
Both	24 (14.1)

The prevalence of IBS was 36.6 % (n=56) based on the Rome III criteria. IBS subtypes were divided according to bowel movement frequency and stool consistency in participants. The most common form of IBS was IBS with constipation (19.4; n=33), mixed IBS (19.4%; n=33), unknown IBS (18.8%; n=32), and IBS with diarrhea (17.1%; n=29). A detailed description was given in table 2.

Table 2. Prevalence of IBS and subtypes among study participants

Irritable bowel syndrome (IBS	**N (%)**
Do you have recurrent abdominal pain or discomfort for at least 3 days/month?	
Yes*	73 (42.9)
No	92 (54.1)
Do you have any of the below symptoms at least 3 days per month in the last 3 to 6 months?	
Constipation	33 (19.4)
Diarrhea	29 (17.1)
Mixed	33 (19.4)
Unknown	32 (18.8)
None	43 (25.3)
Food hypersensitivity	
Yes	24 (14.1)
No	137 (80.6)
Prevalence of IBS	56 (36.6)
To your knowledge, is food the cause of abdominal pain or diarrhea?	
Yes	119 (70)
No	41 (24.1)

Missing value *

Of the respondents, the majority of the students, 70% (n=119), agreed that food can cause abdominal pain or diarrhea. About 14.1% of students exhibited hypersensitivity to food products. More than half (58.2%) agreed that spicy foods can cause IBS; followed by 32.4% and 28.2% indicating that fatty foods and coffee, respectively, cause IBS. Table 3 outlines, the foods that trigger abdominal pain or diarrhea and hypersensitivity to IBS subtypes.

Table 3. Foods triggering abdominal pain/diarrhea and hypersensitivity to IBS subtypes

Food causing IBS	**N (%)**
Beans	
Yes	37 (21.8)
No	125 (73.5)
Sweets	
Yes	17 (10)
No	145 (85.3)
Fatty food (beef and fast food)	
Yes	55 (32.4)
No	107 (62.9)
Coffee	

Yes	48 (28.2)
No	114 (67.1)
Carbonated beverages (Drinks)	
Yes	14 (8.2)
No	147 (86.5)
Spicy foods	
Yes	99 (58.2)
No	63 (37.1)
Fruits (banana, watermelon)	
Yes	9 (5.3)
No	153 (90)
Vegetables (tomato)	
Yes	6 (3.5)
No	155 (91.2)
Parsley	
Yes	7 (4.1)
No	153 (90)
Milk products	
Yes	41 (24.1)
No	121 (71.2)

The results revealed a significant difference in IBS prevalence by faculty type (p=0.034). However, a significant difference by age, year of study, or body mass index (P=0.272, P=0.682, p=0.094, respectively) was not observed. The association between demographics and prevalence of IBS was given in Table 4.

Table 4. Association between demographics and prevalence of IBS among study participants.

Variable	Presence of IBS		*p-value*
	Yes	No	
Age			
18-20 years	8 (14.3)	24 (26.1)	
21-25 years	47 (83.9)	67 (72.8)	p>0.272
25-30 years	1 (1.8)	1 (1.8)	
Faculty type			
Pharmacy	39 (69.6)	78 (84.8)	p<0.034
Nursing	17 (30.4)	14 (15.2)	
Year of study			
Second-year	29 (54.8)	45 (48.9)	
Third-year	20 (35.7)	34 (37)	p>0.682
Fourth-year	7 (12.5)	13 (14.1)	
Body mass index (BMI)			
Normal	30 (53.6)	60 (65.2)	
Overweight	14 (25)	23 (25)	p>0.094
Obese	8 (14.3)	5 (5.4)	
Moderately obese	4 (7.1)	4 (4.3)	

Chi-square test P < 0.05 Considered significant difference

DISCUSSION

The prevalence of IBS in the present study was 36.6%, which is similar to a previous study in Saudi Arabia among paramedical students (33.3%) (Ibrahim et al., 2016), among Japanese nursing and medical students (35.5%) by Okami et al, in 2011 among Egyptian students by Elhosseiny et al (31.7%) (Elhosseiny et al., 2019), among

Chinese medical students by Liu Y et al (33. 3%) (Liu et al., 2014). Although the prevalence in the current study is higher than similar studies published among health care students of other regions of Saudi Arabia (Ibrahim et al., 2016; Taha et al.,2019). A previous study among university students in Lebanon found a lower prevalence than that in our study (Costanian et al.,2015). Similarly, another study by Tosun et al in 2016 among Nursing students reported 13.5% of the IBS prevalence, while, Koh et al in 2014 found 15% of prevalence of the IBS. The difference in the prevalence of IBS in the current findings compared to other findings might be due to variations in sample size, cultural variances in the examined populations, or differences in local clinical practice recommendations for screening IBS, or the study stool used for the study could all account for these findings. Despite the variation between countries, our findings suggest that IBS incidence among Saudi health college students is more prevalent compared to those from different countries.

The most common subtypes of IBS among students in the current was IBS with constipation. which is similar to the previous study by Taha et al., in 2019 in the western region of Saudi Arabia who found that 69.7% of the participants suffered from IBS constipation. While a study done by Ibrahim et al. (2016) in Jeddah reported that mixed IBS was the most common form (58.9%). The incidence of IBS by its subtype in the current study was relatively lesser than an earlier study done in Chinese university students, which reported that the highest prevalence of IBS with constipation (36.5%), surveyed by IBS with diarrhea (31.1%) and mixed IBS (23.9%) (Dong et al., 2010).

More than half of the students reported that spicy food was the main cause of trigger abdominal pain and diarrhea in IBS. Previous findings reported food hypersensitivity is the trigger for the increased prevalence of IBS (Ibrahim et al., 2016). More than half of respondents reported that foods triggering abdominal pain or diarrhea were spicy foods or fatty foods, while one-third of them reported that coffee milk products and beans mainly caused IBS symptoms. Comparable findings were reported by Lebanon (Costanian et al., 2015), wherein carbohydrates, oily foods, along with caffeine, malt or liquor, and spices were major causes for triggering IBS symptoms and subtypes. A recent study conducted in a Saudi community in the Northern region identified reduced water intake as the main cause for IBS (Alharbi et al., 2019), while another study conducted in an Iranian community reported that intake of spicy diets ≥10 times per weekdays were 92% more expected to have IBS associated with those who never consumed spicy diets (Esmaillzadeh et al., 2013).

In the current study, the risk of having IBS was significantly associated with faculty type. However, many studies reported that this risk is significantly different by gender, additionally, previous reports evidenced that being a female gender is more prone to IBS in comparison to men (Ibrahim et al., 2016; Okami et al., 2011; Costanian et al., 2015; Al-Turki et al., 2011). While Taha et al among Saudi students reported males were more prone to IBS than females (Taha et al., 2019). Additionally, earlier findings by Ibrahim et al in 2016 reported family history of IBS, working in outpatient clinics, having day shifts, poor sleep quality, and high anxiety and depression scale scores were significantly associated with IBS (Ibrahim et al., 2016).

In Saudi Arabia, the IBS prevalence was relatively higher compared to many other European countries (Saito et al., 2002; Wells et al., 2012). Despite the increased prevalence of IBS, some other studies from different countries reported psychological stress and physical activity, which are strongly associated with IBS onset (Dong et al., 2010; Shen et al., 2009). We did not measure the same factors; however, we found that faculty type was associated with IBS prevalence. Moreover, nutritional status, year of study, and age were not associated with IBS prevalence in our population. The current study has some limitations. First, the results were based on a self-completed questionnaire, which may have increased the possibility of biases such as social desirability bias or recall bias. Second, the results were derived from a single university in Saudi Arabia, making them not representative of others and not generalizable globally. Third, the study did not involve female students and was conducted solely on male students, given the easier access to male students found while spreading the questionnaire. Despite these limitations, our study suggests more emphasis on increasing the awareness of healthy college students towards self-care to make them more competent in raising public awareness on IBS.

CONCLUSION

IBS is a major health concern, which may disturb the quality of life because of its negative impact on health outcomes. Our study found that IBS prevalence among Saudi students was relatively higher than that seen in previous studies. We recommend additional education programs to increase the awareness to reduce symptoms of IBS, through adequate dietary education, and lifestyle change encouragement, also to control stress. Identifying the main factors responsible for IBS will help to establish management options for the disease.

REFERENCES

1. Alsuwailm WA, AL-Qahtani MM, AL-Hulaibi AA, AL-Hadi MA, Ali SI, Shehabeldeen SA. Irritable bowel syndrome among medical students and interns in King Faisal University. Open J Prev Med. 2017 Nov 9;7(11):235-246.

2. Anbardan SJ, Daryani NE, Fereshtehnejad SM, Vakili ST, Keramati MR, Ajdarkosh H. Gender role in irritable bowel syndrome: a comparison of irritable bowel syndrome module (ROME III) between male and female Patients. J Neurogastroenterol Motil. 2012 Jan;18(1):70-77.

3. Abdulmajeed A, Rabab MA, Sliem HA, Hebatallah NE. Pattern of irritable bowel syndrome and its impact on quality of life in primary health care center attendees, Suez Governorate, Egypt. Pan Afr Med J. 2011; 9: 5.

4. Almutairi M, AlQazlan M, Alshebromi A, Alawad M, Zafar M. Prevalence of irritable bowel syndrome and its associated factors among medical students. International Journal of Medical Research & Health Sciences. 2017;6(2):1-0.

5. Alharbi, S.H., Alateeq, F.A., Alshammari, K.I., Alshammri, A.S.S., Alabdali, N.A.N., Alsulaiman, M.A.S., Algothi, S.M.I., Altoraifi, A.S., Almutairi, M.Q. and Ahmed, H.G. (2019) Irritable Bowel Syndrome and Dietary Habits in Northern Saudi Arabia. Health, 11, 289-297.

6. Al-Turki YA, Aljulii MZ, Al Murayshid A, Al Omaish HR, Al Daghiri KS, Al Seleemi AY, Albarrak A, Al Aseeri AA, Al Jumah HA, Al Badrani AA, Al Robayan F. Prevalence of Irritable Bowel Syndrome among Students in King Saud University, Riyadh, Saudi Arabia. Middle East Journal of Family Medicine. 2011 Jun 1;9(5).

7. Butt AS, Salih M, Jafri W, Yakoob J, Wasay M, Hamid S. Irritable bowel syndrome and psychiatric disorders in Pakistan: A case control study. Gastroenterol Res Pract 2012;2012:291452

8. Costanian C, Tamim H, Assaad S. Prevalence and factors associated with irritable bowel syndrome among university students in Lebanon: findings from a cross-sectional study. World J Gastroenterol. 2015 Mar 28;21(12):3628-35.

9. Chey WD, Kurlander J, Eswaran S. Irritable bowel syndrome: a clinical review. JAMA. 2015 Mar 3; 313(9): 949- 958. doi: 10.1001/jama.2015.0954.

10. Corsetti M, Whorwell P. The global impact of IBS: time to think about IBS-specific models of care? Therap Adv Gastroenterol. 2017 Sept;10(9):727-736.

11. Chang L. The role of stress on physiologic responses and clinical symptoms in irritable bowel syndrome. Gastroenterology. 2011 March; 140(3), 761-765.

12. Chial HJ, Camilleri M. Gender differences in irritable bowel syndrome. J Gend Specif Med 2002; 5: 37–45.

13. Chu L, Zhou H, Lü B, Li M, Chen M. [An epidemiological study of functional bowel disorders in Zhejiang

college students and its relationship with psychological factors]. Zhonghua nei ke za zhi 2012; 51:429-32.

14. Drossman DA, Corazziari E, Delvaux M, Spiller RC, Talley NJ, Thompson WG, Whitehead WE, Editors . Rome III: The Functional Gastrointestinal Disorders, Third Edition. McLean, VA: Degnon Associates, Inc; 2006.

15. Dong YY, Zuo XL, Li CQ, Yu YB, Zhao QJ, Li YQ. Prevalence of irritable bowel syndrome in Chinese college and university students assessed using Rome III criteria. World J Gastroenterol. 2010 Sep 7;16(33):4221-6.

16. Elhosseiny, D., Mahmoud, N.E. & Manzour, A.F. Factors associated with irritable bowel syndrome among medical students at Ain Shams University. *J. Egypt. Public. Health. Assoc.* **94,** 23 (2019). https://doi.org/10.1186/s42506-019-0023-8.

17. Esmaillzadeh A, Keshteli AH, Hajishafiee M, Feizi A, Feinle-Bisset C, Adibi P. Consumption of spicy foods and the prevalence of irritable bowel syndrome. World J Gastroenterol. 2013 Oct 14;19(38):6465-71.

18. Ford AC, Forman D, Bailey AG, Axon AT, Moayyedi P. Irritable bowel syndrome: A 10-yr natural history of symptoms and factors that influence consultation behavior. Am J Gastroenterol 2008;103:1229-39; quiz 1240.

19. Ghanaei F, Fallah MS, Heidarzadeh A, Jafarshad R, Joukar F. Rezvan-Ghasemipour prevalence and characteristics of irritable bowel syndrome (ibs) amongst medical students of Gilan Northern Province of Iran. MEJDD. 2011;1:100-105.

20. Heidelbaugh JJ, Stelwagon M, Miller SA, Shea EP, Chey WD. The spectrum of constipation-predominant irritable bowel syndrome and chronic idiopathic constipation: US survey assessing symptoms, care seeking, and disease burden. Am J Gastroenterol. 2015 Apr;110(4):580-7.

21. Ibrahim NK, Al-Bloushy RI, Sait SH, Al-Azhary HW, Al Bar NH, Mirdad GA. Irritable bowel syndrome among nurses working in King Abdulaziz University Hospital, Jeddah, Saudi Arabia. Libyan J Med. 2016 Mar 30;11:30866. doi: 10.3402/ljm.v11.30866. PMID: 27032964; PMCID: PMC4816808.

22. Jimenez C, Navia-Osorio PM, Diaz CV. Stress and health in novice and experienced nursing students. J Adv Nurs, 2010 Feb;66(2): 442-455.

23. Jung HJ, Park MI, Moon W, Park SJ, Kim HH, Noh EJ, Lee GJ, Kim JH, Kim DG. Are Food Constituents Relevant to the Irritable Bowel Syndrome in Young Adults? - A Rome III Based Prevalence Study of the Korean Medical Students. J Neurogastroenterol Motil. 2011 Jul;17(3):294-9.

24. Koh SJ, KimM, Ohda Y, et al. Psychosocial stress in nurses with shift work schedule is associated with functional gastrointestinal disorders. J Neurogastroenterol Motil.2014;20:516-522.

25. Liu L, Xiao QF, Zhang YL, Yao SK. A cross-sectional study of irritable bowel syndrome in nurses in China: prevalence and associated psychological and lifestyle factors. J Zhejiang Univ Sci B. 2014 Jun;15(6):590-7.

26. Miwa H. Prevalence of irritable bowel syndrome in Japan: Internet survey using Rome III criteria. Patient Prefer Adherence. 2008 Feb; 2:143–147.

27. NHS. What is IBS? Irritable bowel syndrome (IBS). Available at https://www.nhs.uk/conditions/irritable-bowel- syndrome-ibs/. Last modified on 11/26/2018.

28. Naeem SS, Siddiqui EU, Kazi AN, Memon AA, Khan ST, Ahmed B. (2012) Prevalence and factors associated with irritable bowel syndrome among medical students of Karachi, Pakistan: A cross-sectional study. BMC Res Notes. 2012 May 24; 5:255.

29. Nagari M, Thomas L. Diagnosis and management and of irritable bowel syndrome. Prescriber. 2014;25(6):17-23.

30. Nojkov B, Rubenstein JH, Chey WD, Hoogerwerf WA. The impact of rotating shift work on the prevalence of irritable bowel syndrome in nurses. Am J Gastroenterol. 2010 Apr;105(4):842-7.

31. Okami Y, Kato T, Nin G, Harada K, Aoi W, Wada S, Higashi A, Okuyama Y, Takakuwa S, Ichikawa H, Kanazawa M, Fukudo S. Lifestyle and psychological factors related to irritable bowel syndrome in nursing and medical school students. J Gastroenterol. 2011 Dec;46(12):1403-10. doi: 10.1007/s00535-011-0454-2. Epub 2011 Aug 24. PMID: 21863219.

32. Saito YA, Schoenfeld P, Locke GR. The epidemiology of irritable bowel syndrome in North America: a systematic review. Am J Gastroenterol. 2002;97:1910–1915.

33. Shen L, Kong H, Hou X. Prevalence of irritable bowel syndrome and its relationship with psychological stress status in Chinese university students. J Gastroenterol Hepatol. 2009 Dec;24(12):1885-90.

34. Sayuk GS, Gyawali CP. Irritable bowel syndrome: modern concepts and management options. Am J Med. 2015 Aug; 128(8): 817-827. doi: 10.1016/j.amjmed.2015.01.036.

35. TosunO,DabakR, SarginM, et al. Frequency of irritable bowel syndrome among healthcare personnel. Gastroenterology Nursing.2016;39(3): 227-231.

36. Taha HY, Al Johani A. Prevalence and Associated Factors Of Irritable Bowel Syndrome Among Healthcare Professionals In Primary Health Care Setting In Al-Madinah, Saudi Arabia. Malaysian Journal of Public Health Medicine. 2019 Jan 1;19(1):110-6.

37. Wells M, Roth L, McWilliam M, Thompson K, Chande N. A cross-sectional study of the association between overnight call and irritable bowel syndrome in medical students. Can J Gastroenterol. 2012;26:281–284.

ASSESSMENT OF HEALTH-SEEKING BEHAVIOR AND ASSOCIATED FACTORS AMONG SAUDI ADULTS IN SAUDI ARABIA - A CROSS-SECTIONAL COMMUNITY STUDY

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ABSTRACT

Despite the available treatment options, people's attitudes toward health change significantly. Therefore, this study aimed to assess public health-seeking behavior in Saudi Arabia. A cross-sectional web-based study was conducted in early, 2021 using a valid, self-administered online questionnaire. Among the respondent's a greater proportion of them were males 68.8% (n=574), slightly more than half 54.6%(n=456) were consulted physicians, while 19.4% of them (n=192) visited pharmacists for seeking health care, 16.4%(n=137) used herbal or alternative medicine. A greater percentage of women's seeks physicians (56.9%) in comparison to men (53.5%), while more men's prefer to consult pharmacists (20%) in comparison to females (18.1%), also women used more herbal medicine for seeking treatment in comparison to men. The health-seeking behavior is significantly associated with being a female gender (p=0.0001), nationality of the participant (p=0.0001, employment (p=0.0001), and age of the individual (p=0.0001). Increasing public understanding of the rational choice of seeking health care is a critical issue in maintaining an individual's health. issues.

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AN ANALYSIS OF THE RELATIONSHIP BETWEEN ORGANIZATIONAL SOCIAL CAPITAL AND OCCUPATIONAL STRESS: THE IMPACT ON THE JOB SATISFACTION OF NURSING ASSISTANTS

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AN ANALYSIS OF THE RELATIONSHIP BETWEEN ORGANIZATIONAL SOCIAL CAPITAL AND OCCUPATIONAL STRESS: THE IMPACT ON THE JOB SATISFACTION OF NURSING ASSISTANTS

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ABSTRACT

The need for long-term care workers (LTCW) will grow significantly as the American population ages. Understanding the factors that impact job satisfaction of this workforce has important implications for policy and practice. For this research, data was extracted from the National Nursing Assistant Survey (2004), and exploratory factor analysis was utilized to examine if the constructs developed to measure organizational social capital and occupational stress were supported empirically. To examine relationships between variables of interest, both bivariate and multivariate analyses were conducted.

INTRODUCTION

Long term services and supports (LTSS) for people needing functional assistance are provided mainly by unpaid caregivers (e.g., family and friends), but also by formal caregivers (e.g., paid workers) (U.S. Department of Health and Human Services, 2006). However, the availability is likely to decrease considerably over time. The average number of adult children is dropping due to decreasing fertility, and with that a decrease in the availability of unpaid supports. In 2018, America's fertility rate dipped to an all-time low of 1.73, down 2% from the year before (Center for Disease Control [CDC], 2012). At the same time, many of the adult children who would provide unpaid care–both sons and daughters–must work for pay, making them less available to provide care. Adult children typically must juggle the responsibilities of their own lives, including children and job demands, leaving them with little time to care for aging parents (Dawson and Surpin 2001; Stone and Weiner 2001). This decrease in the availability of unpaid caregivers will impact the formal LTSS sector, creating more demand for paid caregivers (Bureau of Labor Statistics, 2011). Therefore, the recruitment and retention of long-term care workers (LTCW) is a critical issue.

Job Satisfaction of Long-Term Care Workers

Although long-term care workers are an important participant in the care provided to older adults, there are concerns with the decrease in job satisfaction and increased turnover of these workers (Banaszak-Holl & Hines, 1996; Geiter et al., 2011). Job dissatisfaction has been identified as the most influential reasons that LTCW leave their jobs (Irvine & Evans, 1995; Cohen- Manfield, 1997; Aiken et al., 2002; Castle et al., 2007; Kinjerski & Skrupnek, 2008). High turnover rates have an unfavorable effect on patient outcomes, satisfaction, operating costs, and worker productivity (Price & Mueller, 1981; Hayes et al., 2006; Beecroft et al., 2008). Not all workers that report low job satisfaction will leave their jobs, but dissatisfaction may influence the quality of their work (Squires et al., 2015). Dissatisfied staff may display poor work ethic, such as tardiness and taking unscheduled days off (Castle et al., 2006). Job dissatisfaction is also associated with reduced quality of resident care (Chou et al., 2002) and resident quality of life (Pekkarinen et al., 2004). As a result, job satisfaction is a timely and important issue.

Occupational Stress

It is well understood that the work environment, and specifically the level of occupational stress that a worker experiences, has an impact on job satisfaction. In particular, occupational stressors negatively affect job satisfaction (Chao et al., 2013; HOboubi et al., 2017). To operationalize occupational stress, this study utilizes the job demands-

resources (JD-R) model. The JD-R model proposes that the characteristics of a work environment can be classified into two broad categories: job demands and job resources, and that stress results when demands exceed resources. In other words, the JD-R theory posits that occupational stress results from an imbalance between job demands and job resources. Job demands refer to aspects of the job that require sustained effort (Wolter et al., 2018). Examples include work overload and time pressure. This theory is easily applied to the long-term care setting. Prior studies have found that LTCW who feel they do not have enough time to complete work assignments report lower job satisfaction (Ejaz et al., 2008; Probst et al., 2010). On the other hand, job resources are the organizational aspects of the job that help workers to achieve work-related goals and encourage personal growth and learning. For example, Ball, Lepore, Perkins, Hollingsworth, and Sweatman (2009) reported that LTCW who feel that they are making a difference in the lives of the residents (i.e., providing good care) are more likely to express job satisfaction.

Organizational Social Capital

Organizational social capital can be gained via interactions within the workplace with co-workers, supervisors, patients, and their families and has been shown to be linked to job satisfaction. For example, social support by co-workers and supervisors may prove important by providing resources that can help workers complete tasks at work (e.g., communication and advice). A study by van Beek and colleagues examined communication and advice exchange among 380 nursing home staff in the Netherlands and their association with job satisfaction. They found that social networks in nursing homes are large, and that communication and advice among coworkers is an important factor contributing to job satisfaction (2011). Furthermore, studies examining social networks in the health care sector found that staff often form “cliques” and are more apt to communicate and receive advice from personnel with similar characteristics (i.e., job position, geographic region, gender) (Raider & Krachardt, 2001). Castle, Degenholtz & Rosen (2006), among others (Tourangeau et al., 2010; Woodhead et al., 2014), also found a positive correlation between job satisfaction and relations with coworkers.

In this study, I have adopted the definition of organizational social capital based on work by Nahapiet and Ghoshal (1998). This definition of organizational social capital forms the most widely used and accepted framework for understanding organizational social capital. In this conceptualization, organizational social capital consists of three components: “structural (connections among actors), relational (trust between actors) and cognitive (shared goals and values among actors) (Gutberg & Berta, 2017). In other words, Nahapiet and Ghoshal define organizational social capital as the resources (both current and potential) that are available through the social networks within a workplace.

The Present Study

Although occupational stress and organizational social capital are conceptually adjacent, they are rarely studied simultaneously. Therefore, the aim of this research is to further examine the conceptualization and measurement of organizational social capital and occupational stress and to understand how they are similarly and differentially related to job satisfaction. The second aim of this research is to use the National Nursing Assistant Survey (NNAS) to examine the relationship between occupational stress and organizational social capital and job satisfaction of nursing assistants.

Research Question 1: Are the constructs developed to measure organizational social capital and occupational stress supported empirically?

Research Question 2: Controlling for covariates, what are the relationships among organizational social capital, occupational stress and job satisfaction?

Hypothesis 2a: Controlling for covariates, organizational social capital and job satisfaction are positively correlated.

Hypothesis 2b: Controlling for covariates, occupational stress and job satisfaction are negatively correlated.

METHODOLOGY

Data Source & Sample Selection

This secondary data analysis utilized data from the 2004 NNAS. This survey is the most recent national dataset available that includes detailed responses from CNAs on topics such as job satisfaction, environment, training,

and advancement opportunities. NNAS survey is part of a larger study of national nursing homes: the 2004 National Nursing Home Survey (NNHS). The NNHS survey used a multistage probability design, resulting in a final sample of 1,500 nursing facilities. The sample was split into strata based on certification status (Medicare/Medicaid), setting (hospital-based and non-hospital- based), ownership, and geographic region (CDC, 2012). Nursing homes were then selected using systematic sampling based on bed size of the facility (CDC, 2012).

In the second stage, a sample of CNAs was selected randomly from each of the 582 facilities. A total sample of 4,542 CNAs was selected to participate; of these, 4,274 were eligible. To be eligible for inclusion, the employed (working at least 16 hours/week) CNAs had to provide ADL assistance and be certified by the state to provide Medicare/Medicaid reimbursable services. Telephone interviews were conducted to obtain information that included "recruitment, education, training and licensure, job history, family life, management and supervision, client relations, organizational commitment, job satisfaction, workplace environment, work-related injuries, and socio-demographic status" (CDC, 2009). Of those that were eligible, 3,017 completed the survey, resulting in a response rate of 71% among those eligible and a combined NNHS-NNAS response rate of 53 percent (Squillace et al., 2007).

Of the 3,017 completed interviews, those who had left their jobs at the time of the interview were not included in the analyses (n=120), resulting in a sample of 2,897 for this study. STATA 15.0 was used to analyze the dataset.

Measures

Dependent Variable

Job satisfaction was measured using CNAs' responses to the question: "overall, how satisfied are you in your job, are you…?", which had 4 response categories: extremely satisfied, somewhat satisfied, somewhat dissatisfied, and extremely dissatisfied. Prior research has combined the responses to somewhat dissatisfied and extremely dissatisfied due to the low numbers (n=124 extremely dissatisfied) in these respective categories (Bishop et al., 2009).

Occupational Stress

Occupational stress variables were selected based on the job demands- resource theory (JD-R). As noted, this theory states that occupational stress is the result of low job resources (lack of opportunity for growth, advancement and/or lack of respect within the organization), and high job demands (high workload and/or dangerous environmental conditions). Eight variables from the National Nursing Assistant Survey were chosen to measure these dimensions of occupational stress. Each of the items were coded as dichotomous variables (yes or no responses).

Organizational Social Capital

In this study, I adopted the definition of organizational social capital based on work by Nahapiet and Ghoshal (1998). This definition of organizational social capital forms the most widely used and accepted framework for understanding organizational social capital and indicates that organizational social capital consists of three dimensions, which are structural, relational, and cognitive. Thirteen items were included from the NNAS to measure these components of organizational social capital.

Control Variables

Control variables included in this research include gender, primary language, level of education, household income, marital status, and age

Data Analysis

The first research question and hypothesis were based on the review of the theoretical literature on organizational social capital and occupational stress, which raised concerns about the extent to which these theoretical frameworks reflected discrete concepts that have empirical support in the data – in this case, the NNAS. In order to

answer research question 1 (RQ1), exploratory factor analysis was used to further examine if the constructs of organizational social capital and occupational stress are supported empirically. To determine an appropriate conceptualization for each construct (i.e., how to group variables form the NNAS), EFA analysis was run on occupational stress and organizational social capital variables separately. A total 21 items were included in the analysis (8 variables for occupational stress, and 13 items for organizational social capital). To examine whether factors made a difference to the overall factor structure, sensitivity analysis was carried out using orthogonal rotation. Once I determined what the factors were, and which variables load onto each, I then performed confirmatory factor analysis (CFA), and created new variables after running the factor command.

In addition, further analysis examined all the discrete variables that make up the occupational stress and organizational social capital variables to get an overview of each of the dimensions that make up these constructs. To examine relationships between variables of interest (organizational social capital, occupational stress, and job satisfaction), both bivariate and multivariate analyses were conducted. First, I examined the extent to which covariates predicted job satisfaction. The second set of models also included the dependent and independent variables (organizational social capital, occupational stress), and was adjusted for covariates.

RESULTS

Sample Characteristics

Table 1 shows the respective percentages for the variables of interest. Overall, 80% of CNAs responding to the NNAS reported that they were either somewhat or completely satisfied at work. Examining variables used to construct occupational stress, of the sample, approximately 41% of CNAs reported that they did not feel that they had sufficient time to complete all tasks, whereas slightly more (42%) reported that they did not have enough time to complete ADL tasks with patients. Within the sample, 20% of CNAs reported that they did not feel that they had a chance to gain new skills at the job, a higher percentage (30%) did not feel respected by management, less than 1% reported that they were not confident in their ability to do their work, and less than 9% did not feel challenged by their work.

Organizational social capital consists of three dimensions: structural, relational, and cognitive. Two questions measuring structural social capital were included. Of those in the sample, 95% reported that they asked other CNAs for help, and 80% asked other staff members for help when needed. Ten questions were asked about supervisor support as a measurement of cognitive social capital. CNAs responded that they agreed that their supervisor was clear (88%), fair (68%), responded to concerns (76%), open to new ideas (84%), supportive of progress (78%), offered praise (77%), helped (77%), was able to listen (91%), allowed employees to work in groups or teams (87%), appropriately disciplines (65%). Finally, one variable was included to measure relational social capital, and findings showed that 85% of CNAs felt trusted to make decisions at work (85%).

Examining sociodemographic variables, 38% of respondents were under the age of 35, 95% of the sample was female, and 58% were not married. The majority (67%) had a High-School education or less. Examining income, 46% of the sample had a household income below $20,000, whereas only 3% of respondents had a household income above $50,000. Most respondents (88%) spoke English as their primary language.

Table 1. Descriptive statistics for the sample

Variable	**Variable coding**	**Study Sample (n=2292) %**
Job Satisfaction		
	Extremely Satisfied	33.89
	Somewhat Satisfied	46.98
	Extremely/ somewhat dissatisfied	19.13
Immigration Status		
	U.S-born	80.65
	Naturalized	11.21
	Resident Alien	8.14
Race/Ethnicity		
	White	56.19
	Black	25.09
	Asian	2.23
	Non-Hispanic “other”	4.64
	Hispanic	11.85
Occupational Stress		
	Not enough time to complete all tasks	40.65
	Not time to complete ADL tasks	41.68
	Lack of opportunity for new skills	19.6
	Not appropriately rewarded/respected	29.60
	Not confident in ability to do work	0.34
	Not involved in challenging work	9.19
Organizational Social Capital		
	Ask other NA for help when needed	94.93
	Ask staff for help when needed	79.83
	Supervisor is clear	87.61
	Supervisor is fair	68.37
	Supervisor responds to concerns	75.98
	Supervisor is open to ideas	84.00
	Supervisor is supportive	77.74
	Supervisor offers praise	76.94
	Supervisor helps	76.70
	Supervisor listens	91.06
	Supervisor supports teams	87.07
	Supervisor disciplines	65.12
	NA feels trusted to make decisions at work	85.24
Age (16:65)		
	Under<25	17.52
	25-34 years	20.17
	35-44 years	24.13
	45-54 years	24.96
	55 years and over	13.22
Gender		
	Female	93.39

	Male	6.61
Marital status		
	Married /Partnered	42.49
	Not Married (widowed, separated, divorced)	57.51
Education		
	EducationHS≤ diploma	67.11
	Education college+	32.89
Household Income		
	<$19,999	45.87
	$20,000 to $29,999	28.00
	$30,000 to $39,999	14.40
	$40,000 to $49,999	8.27
	$50,000+	3.47
Primary Language		
	English	88.29
	Spanish/other	11.71

Conceptualization of Occupational Stress and Organizational Social Capital

First, exploratory factor analytic procedures were used to assess the dimensionality of questions designed to measure occupational stress. The number of factors to be extracted was determined by factor eigenvalues above 1. Kaiser's criterion (Pallant, 2013) states that if a factor has an eigenvalue of less than one, then it is contributing little to the explanation of variances in the variables and is thought of as redundant. For the occupational stress variable, there were 2 distinct factors (eigenvalue > 1), showing convergent validity and explaining 99% of the variance accounted for by these factors. Three questions 1) I have a chance to gain new skills 2) I am appropriately rewarded/respected 3) I am challenged by my work all load onto Factor 1, while questions pertaining to 1) I have sufficient time to complete tasks and 2) I have sufficient time to complete ADL tasks load onto Factor 2. These variables group into the subcategories of occupational stress that were predicted theoretically, although with minor adjustments. Two variables regarding job demands load together (time to complete tasks). Four of five predicted items cohere together to measure lack of job resources. One question, *I can decide on my own how to go about doing my work*, had a weak factor loading and was dropped. In addition, *injured at work* didn't fit with either factor and was dropped from the study. Further statistical analysis used two constructs to measure occupational stress - job demands (2 questions) and lack of job resources (4 questions).

Thirteen variables were included in the EFA of organizational social capital and a pattern similar to that found for occupational stress emerged. Results loaded on two factors. The 10 variables pertaining to supervisory support load onto one factor significantly, and a second factor included the questions *I ask other Nursing Assistants for help* and *I ask staff for help*. The supervisor questions grouped together (as predicted) and aimed to measure cognitive social capital. The two questions pertaining to asking for help group together to measure structural social capital. The question included to measure relational social capital (trust), did not load high on either factor. Given that trust can be measured as a single variable, this item was still included in further analysis.

Construct Overlap between Occupational Stress and Organizational Social Capital

After dropping the injured at work and lack of independence at work variables, a total of 19 items were included from NNAS that reflect organizational social capital and occupational stress. Some clearly fall into organizational social capital, others fall into occupational stress, and some could be used to represent either. For example, lack of job resources (a component of occupational stress) could also measure organizational social capital. This prediction is based on the JD-R theory, which posits that individuals will seek to protect themselves from loss of resources and instead strive to obtain and maintain resources at work (Hobfoll, 2001). Those with a greater pool of resources are less susceptible to stress in the workplace (Hobfoll, 2002). One of the resources that may be utilized is social connection with coworkers. Within this study, I examined lack of job resources as part of occupational stress-but some of these dimensions are social in nature. The items comprising lack of job resources could reasonably be

categorized as either occupational stress or organizational social capital. I therefore used exploratory factor analysis to determine how to group these items. To identify which factors to retain, I used Guttman-Kaiser (Eigenvalues> 1). EFA analysis revealed four factors with eigenvalues exceeding 1, explaining 70.1%, 11.8%, 9.9%, and 8.1%, of the variance respectively -- or 99.9% of the variance cumulatively.

I then further examined each factor and the underlying dimensions for the original set of observed variables by looking at the factor loadings. Factor loadings show the correlation between the original variables and the factor (Statgen, 2009). A factor is considered weak if it falls below the cutoff point of <0.40 (Cabrera-Nguyen, 2010; Costello & Osborn, 2009). In these instances, the variable may either not be related to the other items or suggest an additional factor that should be explored (Costello & Osborn, 2005). With larger sample sizes, minimum loading of an item may be less than 0.40. Given the sample size of this study, <0.32 may be considered acceptable (Matsunaga, 2010; Tabachnick & Fiddell, 2001).

As one might expect, many items had a high factor loading that corresponded to the theoretical constructs of occupational stress and job satisfaction. However, some items crossloaded, consistent with the theoretical overlap described previously. A crossloading item is an item that loads at 0.32 or higher on two or more factors (Costello & Osborn, 2005). Items that load on more than one factor included opportunity to learn new skills, confident in ability to do work and appropriately rewarded/respected. This indicates that these variables fall within the construct of both an occupational stress and organizational social capital. Within this study both constructs, occupational stress, and organizational social capital, were analyzed in separate models, removing any issues with validity when running further analysis.

Table 2. Variable construction for Organizational Social Capital & Occupational Stress based on factor loadings

Question	**Organizational Social Capital**	**Occupational Stress**	**Neither**	**Both**
Job demands- workload				
I feel I have sufficient time to complete all other tasks…		x		
I feel I have sufficient time to complete all tasks pertaining to clients…		x		
Job demands-environmental conditions				
Job injury (yes/no)			x	
Job resources (lack of)				
I am involved in challenging work…		x		
I am confident in my ability to do my job...				x
I have a chance to gain new skills and knowledge…				x
I can decide on my own how to go about doing my work.			x	
I am appropriately respected or rewarded by my nursing facility for my work				x
Structural Social Capital				
How often do you ask other nursing assistants for help with problems that relate to your current job?	x			
How often do you ask other employees, besides other nursing assistants, for help with problems that relate to your current job?	x			
Relational Social Capital				
I am trusted to make resident decisions…			x	
Cognitive Social Capital				
my supervisor provides clear instructions when assigning work	x			

My supervisor treats all nursing assistants equally	x			
My supervisor deals with the complaints and concerns of nursing assistants	x			
My supervisor is open to new and different ideas, such as a new or better way of dealing with resident care	x			
My supervisor is supportive of progress in my career, such as further training	x			
My supervisor listens to me when I am worried about a resident's care	x			
My supervisor supports nursing assistants working in groups or teams with other health care workers, such as physical therapists, dieticians, RNs, LPNs, or other nurses…	x			
My supervisor disciplines or removes other nursing assistants who do not do their job well or their share of the work…	x			
My supervisor tells me when I am doing a good job	x			
My supervisor helps me with my job tasks when help is needed	x			

Bivariate Analysis

Several analyses were run to examine the relationships among the variables of interest. First, bivariate analysis using Pearson Chi Square correlation was performed to determine the relationships and percentages for combinations of categories across two or more categorical variables. This analysis examined all of the discrete variables that make up the occupational stress and organizational social capital variables to get an overview of each of the dimensions that make up these constructs. In addition, simple regression analysis using the factor variables created for occupational stress and organizational social capital was also run.

Organizational Social Capital and Job Satisfaction

Simple regression findings show that organizational social capital and job satisfaction are positively correlated. However, the analyses found no significant relationship between structural social capital (asking NA and/or staff for help) and job satisfaction.

Table 3. Regression Results: The Relationship Between Job Satisfaction and Organizational Social Capital

Variable		
	Coef.	Standard Error
Organizational Social Capital: Cognitive	0.331**	0.017
Organizational Social Capital: Structural	0.009	0.026
Organizational Social Capital: Relational	0.235***	0.036
Pseudo R2	0.14	

Table 4 presents the bivariate percentages for job satisfaction response for all each discrete variable questions used to measure organizational social capital. No significant differences were noted in the CNA responses to asking staff or other CNAs for help. Highest ratings of job satisfaction were associated with supervisor support. More specifically the highest satisfactory ratings were found for supervisor appropriately disciplines (37.1% extremely satisfied) and supervisor is fair (37.3% extremely satisfied) (both of these questions fall in the cognitive domain of

organizational social capital). These findings suggest that positive leadership exerts a significant influence on job satisfaction of LTCW. As predicted, those who responded "yes" to questions measuring organizational social capital were most likely to report that they were very or somewhat satisfied at work. Regarding measurement of relational social capital, 31% of CNAs that reported that they were trusted to make resident care decisions reported as very satisfied at work, compared to 20% of those who reported that they did not feel trusted.

Table 1. Bivariate analysis: The relationship between job satisfaction and Organizational Social Capital Discrete Variables

Variables	**Job Satisfaction**			
	Very Satisfied	Somewhat Satisfied	Dissatisfied	P-value
Full Sample	33.89 %	46.98%	19.13%	
Organizational Social Capital				
Structural Social Capital				
Don't ask Nursing Assistant for help	28.86%	50.63%	19.78%	0.640
Ask Nursing Assistant for Help when needed	32.26%	46.77%	20.97%	0.640
Don't ask staff for help	30.77%	48.98%	20.24%	0.644
Ask staff for help when needed	28.91%	51.15%	19.93%	0.644
Cognitive Social Capital				
Supervisor is not clear	9.52%	43.98%	46.50%	<0.001
Supervisor is clear	31.99%	51.75%	16.26%	<0.001
Supervisor is not fair	13.33%	50.63%	36.04%	<0.001
Supervisor is fair	37.34%	50.78%	11.87%	<0.001
Supervisor is not open to ideas	7.96%	44.52%	47.53%	<0.001
Supervisor is open to ideas	33.37%	52.00%	14.61%	<0.001
Supervisor is not supportive	9.28%	48.48%	42.24%	<0.001
Supervisor is supportive	34.89%	51.50%	13.60%	<0.001
Supervisor doesn't offer praise	9.63%	48.89%	41.48%	<0.001
Supervisor offers praise	35.22%	51.34%	13.44%	<0.001
Supervisor doesn't help	12.12%	49.00%	38.88%	<0.001
Supervisor helps	35.36%	51.39%	13.24%	<0.001
Supervisor doesn't listen	8.83%	42.40%	48.76%	<0.001
Supervisor listens	31.46%	51.70%	16.85%	<0.001
Supervisor doesn't support teams	9.91%	46.00%	44.08%	<0.001
Supervisor supports teams	32.24%	51.33%	16.42%	<0.001
Supervisor doesn't appropriately discipline	14.40%	50.25%	35.35%	<0.001
Supervisor appropriately disciplines	37.1%	60.0%	12.0%	<0.001
Supervisor doesn't respond to concerns.	9.57%	49.04%	41.38%	<0.001
Supervisor responds to concerns.	35.39%	51.2%	13.4%	<0.001
Relational Social Capital				
Not trusted to make resident care decisions	19.57%	44.50%	13.4%	<0.001
Trusted to make resident care decisions	30.61%	51.75%	17.64%	<0.001

Occupational Stress and Job Satisfaction

Bivariate analysis was also run to further examine the relationships between the discrete variables that make up the occupational stress construct and job satisfaction. In addition, simple regression analysis using the factor variables created for occupational stress was also run. Simple regression results showed that occupational stress was negatively associated with job satisfaction.

Table 5. Regression Results: The Relationship Between Job Satisfaction and Occupational Stress

Variable		
	Coef.	Standard Error
Occupational Stress: Job demands	-0.225***	0.015
Occupational Stress: Lack of Job Resources	-0.264***	0.021
Pseudo R2	0.22	

*p<.05, **p<.01, ***p<.001

Table 6 presents the percentages for each job satisfaction response by occupational stress. Two items made up job demands: sufficient time to complete ADL and sufficient time to complete all tasks. CNAs who felt time pressure at work reported lower job satisfaction, 31% of those who did not have enough time to complete tasks reported that they were very dissatisfied, whereas 12% of people who reported that they do have enough time to complete tasks say they are very dissatisfied.

Further examining the questions that make up lack of job resources, approximately 9% of workers who reported that they were not appropriately rewarded/respected reported being very satisfied at work, compared to 39% who reported that they were appropriately rewarded/respected. The highest dissatisfaction rates were associated with not being confident to complete work (a component of lack of job resources). Of those CNAs that reported they were not confident in their ability to do work, 52% reported job dissatisfaction. These findings suggest that adequate training to make sure that workers feel confident with their work would be beneficial to job satisfaction. There were similar findings when examining responses regarding opportunity for new skill within the job. Of those who reported they did not have an opportunity to learn skills on the job, 45% were dissatisfied compared to 14% of CNAs that reported they did have an opportunity to learn new skills at work. From the sample, 45% of those who identified that they were not involved in challenging work reported job dissatisfaction, compared to 18% of CNAs that report they are involved in challenging work reporting job dissatisfaction.

Table 6. Bivariate analysis: The relationship between job satisfaction and Occupational Stress

Variables	**Job Satisfaction**			
	Very Satisfied	Somewhat Satisfied	Dissatisfied	P-value
Full Sample	33.89 %	46.98%	19.13%	
Job Demands				
Not enough time to Complete all tasks	16.06%	53.17%	30.77%	0.000
Enough time to Complete all tasks	39.27%	49.00%	11.73%	0.000
Not enough time to Complete ADL tasks	15.12%	53.33%	31.55%	0.000
Enough time to Complete ADL tasks	39.85%	48.89%	11.26%	0.000
Lack of Job Resources				
Not appropriately rewarded or respected	8.70%	50.22%	41.07%	0.000
Appropriately rewarded or respected	38.76%	51.00%	10.23%	0.000
Not confident in ability to do work	17.65%	29.41%	52.94%	0.003
Confident in ability to do work	29.11%	50.61%	19.69%	0.003
Lack of opportunity for New skills	6.76%	48.04%	45.20%	0.000
Opportunity for New skills	34.68%	51.43%	13.90%	0.000
Not involved in Challenging work	10.62%	44.24%	45.14%	0.000
Involved in challenging work	30.74%	51.44%	17.82%	0.000

Organizational Social Capital and Job Satisfaction

The test statistics for proportional odds assumption was significant and therefore the criteria for ordinal regression analysis was not met. As a result, multinomial regression analysis was run to further examine these relationships. The chi-square test for the difference in log likelihood for the model was significant at $p < .001$ and McFaddens R2 was .15. Results provide support for the first hypothesis under RQ2, that when controlling for covariates, organizational social capital is positively correlated with job satisfaction. However, structural social capital (asking other staff or NA for help) shows insignificant findings. Of the organizational social capital variables, cognitive social capital (or supervisor behavior) has the largest impact compared to the other dimensions of social capital. Interestingly workers that had a household income of $30,000-$39,999 were significantly less likely to report job satisfaction compared to workers that had a household income less than $20,000. In addition, this model also highlighted that job satisfaction is lower for older workers.

Table 7. Multinomial regression for job satisfaction and Organizational Social Capital

	Extremely Satisfied vs. Dissatisfied			Somewhat Satisfied vs. Dissatisfied			Extremely Satisfied vs. Somewhat Satisfied		
	Coef.	SE	Significance	Coef.	SE	Significance	Coef.	SE	Significance
Female	-0.210	0.258	0.414	0.331	0.218	0.128	0.120	0.192	0.531
Age (<25 reference group)									
25-34 Years	0.189	0.205	0.357	-0.094	0.168	0.578	0.096	0.152	0.528
35-44 Years	-0.431	0.213	0.043**	0.076	0.180	0.675	-0.356	0.152	0.019*
45-54 Years	-0.510	0.223	0.023**	-0.044	0.190	0.819	-0.553	0.161	0.001***
55 years and over	-0.452	0.264	0.088	-0.072	0.227	0.752	-0.524	0.193	0.007**
Marital status (not married)	0.113	0.151	0.452	- 0.212	0.127	0.094	-0.099	0.110	0.368
Education (Higher than HS education)	0.082	0.074	0.266	- 0.008	0.062	0.903	0.074	0.054	0.165
Language (non-English Speaker)	0.001	0.160	0.994	0.052	0.139	0.708	0.053	0.111	0.633
Household income (<20,000 reference group)									
$20,000 to $29,999	-0.083	0.170	0.627	-0.118	0.141	0.402	-0.201	0.127	0.114
$30,000 to $39,99	-0.599	0.219	0.006**	0.261	0.186	0.162	-0.339	0.154	0.028**
$40,000 to $49,999	-0.376	0.294	0.201	0.386	0.248	0.119	0.010	0.204	0.960
$50,000+	-0.002	0.354	0.996	-0.137	0.291	0.639	-0.138	0.265	0.602
OSC Cognitive	2.100	0.141	0.000***	- 0.868	0.080	0.000***	1.232	0.128	0.000***
OSC Structural	1.389	0.104	0.557	0.660	0.084	0.096	0.729	0.079	0.446
OSC Relational	0.128	0.218	0.000***	0.268	0.161	0.000***	0.140	0.184	0.000***

Occupational Stress and Job Satisfaction

Multinomial regression results examining job satisfaction and occupational stress, controlling for covariates are shown in Table 8. The chi-square test for the difference in log likelihood for the model was significant at $p < .001$ and McFaddens R2 was .14. Of the occupational stress variables, lack of job resources has the largest impact compared to job demands. Interestingly, when these variables were included within the regression, the age ranges 35-54 and over became significant, suggesting lower levels of job satisfaction among this group of older workers. Similar to the last model that included organizational social capital variables, in the model including occupational stress, workers with a household income of $30,000- $39,999 were significantly less likely to report job satisfaction compared to workers who had a household income less than $20,000.

Table 8. Multinomial regression for job satisfaction and Organizational Social Capital

	Extremely Satisfied vs. Dissatisfied			**Somewhat Satisfied vs. Dissatisfied**			**Extremely Satisfied vs. Somewhat Satisfied**		
	Coef.	SE	Significance	Coef.	SE	Significance	Coef.	SE	Significance
Female	-0.367	0.255	0.150	0.454	0.220	0.039*	0.087	0.191	0.650
Age (<25 reference group)									
25-34 years	0.272	0.205	0.186	-0.174	0.169	0.302	0.097	0.153	0.524
35-44 years	-0.209	0.215	0.331	-0.070	0.184	0.703	-0.279	0.152	0.066
45-54 years	-0.338	0.228	0.139	-0.097	0.194	0.618	-0.435	0.164	0.008**
55 years and over	-0.354	0.272	0.192	-0.075	0.235	0.750	-0.429	0.195	0.028*
Marital status (not married)	0.169	0.153	0.270	-0.307	0.129	0.017*	-0.139	0.111	0.212
Education (Higherthan HS education)	0.094	0.075	0.210	-0.026	0.063	0.682	0.068	0.054	0.213
Language (non-English Speaker)	0.005	0.159	0.976	0.008	0.139	0.954	0.013	0.111	0.909
Household income (<20,000 reference group)									
$20,000 to $29,999	-0.098	0.172	0.568	-0.106	0.144	0.206	-0.204	0.128	0.111
$30,000 to $39,99	-0.610	0.222	0.006**	0.239	0.189	0.115	-0.371	0.158	0.019*
$40,000 to $49,999	-0.474	0.300	0.114	0.397	0.252	0.972	-0.077	0.209	0.712
$50,000+	-0.134	0.364	0.711	-0.010	0.299	0.000***	-0.145	0.268	0.589
OS: Job Demands	-1.467	0.099	0.000***	-0.684	0.059	0.000***	-0.783	0.090	0.000***
OS:Lack of job resources	-1.304	0.106	0.000***	-0.599	0.087	0.039*	-0.705	0.081	0.000***

DISCUSSION

The purpose of this study was to advance the understanding of the impact of organizational social capital and occupational stress on the job satisfaction of LTCW using a large, nationally representative dataset. The first aim of the study was to conceptualize occupational stress and organizational social capital using empirical data from the National Nursing Assistant Survey. There were two 2 factors for occupational stress (lack of job resources and job demands), and two factors for organizational social capital (cognitive and structural). I also kept the single variable "trusted to make decisions at work" as a measurement of relational social capital. In doing so, this research

operationalized both occupational stress and organizational social capital using questions from the National Nursing Assistant Survey and identified support for the job-demand resource theory. Although there is an abundance of research investigating both occupational stress and organizational social capital, research looking into both is nascent. Within the workplace, employees exist within and are impacted by a broad social and environmental context. Insight into the social factors that impact job satisfaction (i.e., organizational social capital) can inform supervisors on how to approach any relationship concerns within the workplace and facilitate the quality of care provided to older adults. Furthermore, understanding and addressing workplace characteristics that contributes to occupational stress can in turn impact job satisfaction of LTCW, and guide the planning of higher-quality, more efficiently-run LTSS.

Conceptualization of Organizational Social Capital & Occupational Stress

Although these concepts are related, prior studies have not clearly delineated organizational social capital and occupational stress. The conceptual framework guiding this dissertation pulls from the model of organizational social capital proposed by Nahapiet and Ghoshal (1998) and the JD-R model of occupational stress, which incorporates overlapping elements of job resources and positive social relationships at work. Under the occupational stress model, job resources fit in to lack of job resources, while under the organizational social capital model, social networks serve as a job resource. By using theory to support the conceptualization of these constructs, and empirical evidence to back it up, this research helps identify the factors that contribute to occupational stress and those that contribute to social capital within the workplace. My analysis does find an overlap between aspects of social capital and job resources (specifically opportunity for new skills, confident in ability to do work, and feeling rewarded/respected at work). Results indicate that organizational social capital may be a job resource that can offset the demands of the job, resulting in lower levels of stress within the workplace.

The Relationship between Organizational Social Capital & Job Satisfaction

Based on the organizational social capital literature by Naphiet & Ghoshal, organizational social capital research outlines three dimensions of social capital, structural social capital (the number of connections in the workplace), relational social capital (characteristics of personal relationships, including trust) and cognitive social capital (shared representations, interpretations, and systems of meaning). The results of this study showed that the components of social capital (relational, cognitive and structural) have a positive and significant relationship on CNAs job satisfaction. The results of this research are consistent with the results of research by Rostami, Ghazvini, Saraei (2013), among others that show that there is a significant relationship between organizational social capital and job satisfaction. These findings indicate that the trust that CNAs feel that others have in their work, as well as the rules and norms that govern those relationships, positively impacts job satisfaction. However, findings were not significant for the structural domain of organizational social capital (the number of connections CNAs have in the workplace), which included questions pertaining to how often Nursing Assistants asked other workers for help.

In addition, descriptive results from this study suggest that of the variables that make up organizational social capital construct, the biggest predictor of job satisfaction was that the supervisor appropriately disciplines, and that the supervisor is fair (both which fell in the cognitive social capital domain of organizational social capital). These findings suggest that positive leadership exerts a significant influence on job satisfaction of LTCW. In line with previous research that highlights the importance of positive social relationships at work (Adler, Kwon, & Heckshur, 2008), this finding supports research that specifically emphasizes the importance of supervisor support in creating a positive work environment (Bishop, 2009).

The Relationship between Occupational Stress & Job Satisfaction

The JD-R theory of occupational stress posits that workplace environments with excessive job demands (i.e., overload, physical and/or emotional demands) and low job resources (i.e., social support, autonomy, opportunities to learn, and feedback) could undermine employees' wellbeing, resulting in negative outcomes such as job dissatisfaction (Guglielmi et al., 2016). These findings support previous research that has found that occupational stress results in lower job satisfaction (Sveinsdóttir et al., 2006). Although it is possible to experience stress at work and to report being very satisfied, this is rare: only 9% of workers who responded that they were not appropriately rewarded or respected at work (lack of job resources) reported being extremely satisfied at work (compared to 41% reported being very dissatisfied). These findings provide support for the theory that insufficient praise and/or confidence-building within the workplace may result in work stress.

These findings have implications for health care managers in identifying these critical needs. Consistent with findings by McNeese- Smith (1996), who examined hospital workers, this study suggests that an important workplace strategy to alleviate some job-related stress and potentially increase job satisfaction would be to make sure to provide manageable deadlines, sufficient training, and clear duties, as well as acknowledgement of efforts and praise of good work.

Policy & Practice Implications

As illustrated by this paper and supported by a number of other studies, LTCW are a group that warrants particular attention, especially as a growing number of paid workers will be needed to provide LTSS in the upcoming decades. A wide variety of possible factors are associated with job dissatisfaction within this workforce. Whereas organizational social capital is beneficial to the job satisfaction of CNAS. CNAs have the arduous, yet imperative responsibilities of assisting older adults. In particular, this research finds that occupational stress is negatively associated with job satisfaction. CNAs have low-status employment, coupled with poor work conditions, challenging job tasks and low wages (Paraprofessional Healthcare Institute, 2011; Zakoscielna, 2013). Tailoring existing workplace environments to promote job resources among LTCW is a practical way to reduce the negative and costly consequences of occupational stress within the workplace. The key policy and practice implications for these findings are most appropriately discussed in relation to recruiting and maintaining satisfied LTCW. When leadership invests in CNAs, job satisfaction of these workers will likely improve.

CONCLUSION

Both organizational social capital and occupational stress are included as key independent variables in this study, a unique contribution that moves beyond prior studies, which focus on one or the other separately. This research supported prior research that both occupational stress and organizational social capital are associated with job satisfaction. By understanding relationships between occupational stress, organizational social capital and using them to guide nursing home management practices, we can improve CNA job satisfaction, and decrease staff turnover rates. This would not only be beneficial to LTCW, but also to nursing home residents and to long-term care in its entire.

REFERENCES

1. Adler, P., Kwon, S.W., & Heckshur C. (2008). Professional work: The emergence of collaborative community, *Organization Science* 19(2), 359-376.

2. Aiken L.H., Clarke S.P., Sloane D.M., Sochalski J., Silber J.H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA.* 288(16):1987–1993.

3. Ball, M., Lepore, M., Perkins, M., Hollingsworth, C. & Sweatman, M. (2009). They are the reason I come to work: The meaning of resident-staff relationships in assisted Living. *Journal of Aging Studies*, 23, 37-47.

4. Banaszak-Holl, J., & Hines, M.A. (1996). Factors associated with nursing home staff turnover. T*he Gerontologist*, 36(4), 512-517.

5. Beecroft, P.C., Dorey, F., Wenten, M. (2008) Turnover intention in new graduate nurses: A multivariate analysis. *Journal of Advanced Nursing*. 62(1):41–52.

6. Bishop, C., Weinberg, D.B., Leutz, W. Dossa, A., Pfefferle S., & Zincavage. R.M. (2008). Nursing assistants' job Commitment: Effect of nursing home organizational factors and impact on resident well-being. *The Gerontologist* 48 (special issue 1), 36-45.

7. Bishop, C., Squillace, M., Meagher, J., Anderson, W., Wiener J. (2009). Nursing home work practices and nursing assistants' job satisfaction. *The Gerontologist*. 49(5), 611- 622.

8. Bureau of Labor Statistics, US Department of Labor. (2011). Workplace injuries and illnesses—2010 (News release USDL-11-1502). Retrieved from http://www.bls.gov/news.release/ pdf/osh.pdf.

9. Cabrera-Nguyen, E. (2010). Author guidelines for reporting scale development and validation results in the journal of the society for social work and research. *Journal of the Society for Social Work and Research*, 1, 99-103.

10. Castle, N., Engberg, J., Anderson, R., & Men, A. (2007). Job satisfaction of nurse aides in nursing homes: Intent to leave and turnover. *The Gerontologist* 47(2), 193-204.

11. Center for Disease Control and Prevention. (2012). Vital and Health Statistics Retrieved from https://www.cdc.gov/nchs/data/hus/hus12.pdf

12. Chao, M., Jou, R., Liao, C., & Kuo, C. (2013). Workplace stress, job satisfaction, Job Performance, and Turnover Intention of Health Care Workers in Rural Taiwan. *Asia-Pacific Journal of Public Health*, 27, 2, 208-216.

13. Chou SC, Boldy DP, Lee AH. (2002). Staff satisfaction and its components in residential aged care. *Journal of Quality Health Care*.14(3):207-217.

14. Cohen-Mansfield, J. (1997). Turnover among nursing home staff. A review. *Nursing management*,28(5), 59-62.

15. Costello, AB & Osborne, Jason. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*,10, 1-9.

16. Dawson, Steven and Rick Surpin. (2001). Direct Care Health Workers: The Unnecessary Crisis in Long Term Care. The Aspen Institute.

17. Ejaz, F., Noelker, L., Menne, H., Bagaka., J. (2008). The impact of stress and support on direct care workers' job satisfaction. *The Gerontologist*, 48, 60-70.

18. Gieter,S., Hofmans, J., Pepermans, R. (2011). Revisiting the impact of job satisfaction and organizational commitment on nurse turnover intention: an individual differences analysis. *International Journal of Nursing Studies;* 48(12):1562-1569.

19. Guglielmi, D., Avanzi, L., Chiesam R., Mariani, M., Bruni, I., & Depolo, M. (2016). Positive aging in demanding workplaces: The gain cycle between job satisfaction and work engagement. *Frontiers in Psychology*, 15.

20. Hayes LJ, O'Brien-Pallas L, Duffield C, Shamian J, Buchan J, Hughes F, Laschinger HKS, North, N., Stone, P.W. (2006) Nurse turnover: a literature review. *International Journal of Nursing Studies*.

21. Hawes, F.M . (2020). Occupational Stress and Job Satisfaction of Long-Term Care Workers: The Impact of the Social Working Environment. Dissertation. University of Massachusetts Boston. Retrieved from: https://scholarworks.umb.edu/doctoral_dissertations/609/

22. Hobfoll, S.E. (1998). Stress, Culture, and Community: The Psychology and Philosophy of Stress. New York: Plenum

23. Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Applied Psychology International*. Review 50(3):337–70

24. Hobfoll, S.E. (2002). Social and psychological resources and adaptation. *Revised General Psychology*, 6(4):307–24.

25. Hobfoll, SE. (2011a). Conservation of resource caravans and engaged settings. *Journal of Occupational Organizational Psychology*, 84, 116–22.

26. Hobfoll, S. E. (2011b). Conservation of resources theory: its implication for stress, health, and resilience. In The Oxford Handbook of Stress, Health, and Coping, ed. S Folkman, pp. 127–47. New York: Oxford Univ. Press

27. Hobfoll, S.E. (2012). Conservation of resources and disaster in cultural context: the caravans and passageways for resources. Psychiatry: Interpersonal Biological Processes, 75(3), 227–32.

28. Hobfoll, S. E., Stevens, N. R, Zalta, A.K. (2015). Expanding the science of resilience: Conserving resources in the aid of adaptation. *Psychological Inquiry*, 26(2), 174–80.

29. Hoboubi, N., Choobineh, A., Kamari Ghanavati, F., Keshavarzi, S., & Akbar Hosseini, A. (2017). The impact of job stress and job satisfaction on workforce productivity in an Iranian petrochemical industry. *Safety and health at work*, 8(1), 67–71.

30. Irvine, D.M. and Evans, M.G. (1995) Job-satisfaction and turnover among nurses— Integrating research findings across studies. *Nursing Research*, 44, 246-253.

31. Kinjerski, V., & Skrypnek, B.J. (2008). The promise of spirit at work: increasing job satisfaction and organizational commitment and reducing turnover and absenteeism in long-term care. *Journal of gerontological nursing*, 34 10, 17-25.

32. Matsunaga, Masaki. (2010). How to factor-analyze your data right: Do's don'ts, and how-to's. *International Journal of Psychological Research*, ISSN 2011-7922, Vol. 3, Nº. 1, 2010, 97-110.

33. Miller, E., & Mor, V. (2006). Out of the Shadows: Envisioning a brighter future for long- term care. A Brown University Report for the National Commission for Quality Long- Term Care.

34. Nahapiet, J., & Ghoshal, S. (1998). Organizational social capital, intellectual capital, and the organizational advantage. *The Academy of Management Review*, 23(2), 242-266.

35. Pallant, J. (2013). SPSS Survivial manual. A step by step guide to data analysis using SPSS, 4th edition. Allen & Unwin/ Retrieved from www.allenandunwin.com/spss

36. Pekkarinen, L., Sinervo, T., Perala, M., Elovainio, M. (2004). Work stressors and the quality of life in long-term care units. *The Gerontologist.* 44, 633-643.

37. Price, J.L. and Mueller, C. (1981), A casual model of turnover for nurses, *Academy of Management Journal,* 24, 543-65.

38. Probst, Janice & Baek, Jong-Deuk & Laditka, Sarah. (2010). The Relationship Between Workplace Environment and Job Satisfaction Among Nursing Assistants: Findings from a National Survey. *Journal of the American Medical Directors Association.* 11. 246-52.

39. Raider, H., & Krackhardt, D. (2001). Intraorganizational networks. In Companion to organizations. Edited by Baum JAC. Oxford, UK: Blackwell, 58-74.

40. Rostami, M.F., Ghazvini, M., Farmani, M., & Saraei, A. (2013). Relation of Organizational Social Capital with Job Satisfaction and Job Stress: An Empirical Investigation. Retrieved from: https://www.semanticscholar.org/paper/Relation-of-Organizational-Social- Capital-with-Job-Rostami-Ghazvini/4700703bbb523b04b9ef754c46e13e8586d78eca

41. Squires, J., Hoben, M., Linklater, S., Carleton, H., Graham, N., Estabrooks, C. (2015). Job satisfaction among care aides in residential long-term care: A systematic review of contributing factors, both individual and organizational, *Nursing Research and Practice*, 1-24.

42. Squillace MR, Rosenoff E, Remsburg, RE, Bercovitz A,Branden L. (2007). Introduction to the National Nursing Assistant Survey, Hyattsville, MD National Center for Health Statistics, *Vital and Health Statistics* 1(44).

43. Squillace, M.R., Remsburg, R.E., Harris-Kojetin, L.D., Bercovitz, A., Rosenoff, E., & Han, B.(2009). The National Nursing Assistant Survey: improving the evidence base for policy initiatives to strengthen the certified nursing assistant workforce. *The Gerontologist*, 49 (2), 185-97.

44. Stone, R.I. & Wiener, J. (2001). Who will care for us? Addressing the long-term care workforce crisis. Washington, D.C.: The Urban Institute and the American Association of Homes and Services for the Aging.

45. Stone, R. (2004). The direct care worker:A key dimension of home care policy. *Home Health Care Management & Practice*, 16 (5): 339-349.

46. Tabachnick, B. & Fidell, L. (2001). Using multivariate statistics. Needham Heights: Allyn & Bacon

47. Tourangeau, A., Cranley, L. Spence, L., & Panchis, J. (2010), Relationships among leadership practices, work environments, staff communication and outcomes in long- term care. *Journal of Nursing Management*, 18.

48. U.S Department of Health and Human Services [HRSA]. (2006). Nursing Aides, Home Health Aides, and Related Health Care Occupations -- National and Local Workforce Shortages and Associated Data Needs. Retrieved from http://www.phinational.org/sites/phinational.org/files/clearinghouse/RNandHomeAide

49. Van Beek, A., Wagner, C., Spreeuwenberg, P., Frijters, D., Ribbe, M., & Groenewegen, P. (2011). Communication, advice exchange and job satisfaction of nursing staff: a Social network analyses of 35 long-term care units. BMC Health Service Research.

50. Wolter, C., Andreas, M., Wörfel, F., Burkhard, G., and Lesener,T. (2018). Job demands, job resources, and well-being in police officers—a resource-oriented approach. *Journal of Police and Criminal Psychology*. 34. 1-10.

51. Woodhead, E., Northrop, L., Edelstein, B. (2014.) Stress, social support, and burnout among long-term care nursing staff, *Journal of Applied Gerontology*, 1-22.

EVALUATION OF HANDWASHING KNOWLEDGE AND PRACTICE AMONG NURSING UNDERGRADUATES IN KING SAUD UNIVERSITY, SAUDI ARABIA

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EVALUATION OF HANDWASHING KNOWLEDGE AND PRACTICE AMONG NURSING UNDERGRADUATES IN KING SAUD UNIVERSITY, SAUDI ARABIA

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ABSTRACT

The main aim of this study is to assess the frequency and knowledge of handwashing among nursing students at the college of nursing at King Saud University in Riyadh, Saudi Arabia. A cross-sectional, web-based study was conducted among Saudi nursing students over 3 months from September to November 2021, using a structured, self-administered online questionnaire. A response rate of 70.9% was obtained during the study period. Of the responses 73(50.7) were male and 82 (56.9%) of the respondents were aged between 22 and 25 years. Most of the students were single (134, 93. 1%). The majority of the undergraduates (90.3%), believed that direct and indirect contacts are the most important routes for the transmission of infections, and 94.4% agreed that proper and consistent hand-washing prevents infections in health facilities. Almost 91.7% wash their hands before and after contact with patients. while 92.4% wash their hands after contact with body secretions. A majority 96.1% wash their hands before performing any clean and aseptic procedure, However, a greater proportion of students (80.6%) reported using soap during hand-washing. Hand hygiene is the first line of defense against infection among health care professionals and patients. The findings of this study reveal that Saudi nursing students exhibit good knowledge and practice of hand hygiene.

INTRODUCTION

Hand washing is seen as an essential and cost-effective strategy for reducing health-related infections in healthcare settings, hence increasing patient safety and health (Colet et al., 2015). Hand washing is defined by the World Health Organization (WHO) as "a preventative condition to reduce healthcare-related infections (HCAIs) (WHO,2009; Nasirudeen et al., 2012; Lam et al., 2004; Sahay et al., 2010). Middle- and low-income countries, on the other hand, are more likely than high-developed countries to have HCAIs. In underdeveloped nations, the incidence of HCAIs is predicted to be 15.5 per 100 patients, compared to 9 per 100 patients in developed countries, while the prevalence of HCAIs in Saudi Arabia was 6.8% (Alshamrani et al., 2019).

According to earlier reports, healthcare professionals who practice proper hand hygiene at the appropriate times reduce the risk of contracting HCAIs. Hand hygiene has such a major impact on health that it can prevent nearly 30 percent of HCAIs (Pittet et al., 2006; Allegranzi, et al., 2009). Because of a lack of comprehension of the WHO guidelines, hand hygiene adherence among healthcare professionals is as low as 40%, on the other hand, (Longtin et al., 2011) is more likely to result in Hospital Infections (HI), although patient safety and healthcare expenses are also a major concern for the health-care system. Despite these findings, multiple research implies that healthcare providers' hand cleanliness compliance is often low.

Strict hand hygiene habits among health care providers particularly, nurses and physicians can considerably lower the prevalence of hospital-acquired infections (Al-Tawfiq et al., 2013; Mestre et al., 2012; Rosenthal et al., 2005). Additionally, previous research has shown that nurses play a critical role in hand hygiene. According to a survey conducted among nurses in Iran, they had good knowledge 149 (74.5%), a favorable attitude 141 (70.5%), and good performance 175 (87.5%) when it came to hand hygiene (Sharif et al., 2016). Similarly, another study in Lagos, done among undergraduate nursing students reported poor practice of hand hygiene (Ademuyiwa et al., 2019). In

Saudi Arabia, the prevalence of HCAIs was reported to be 6.8%, with pneumonia (27.2%), urinary tract infections (20.2%), and bloodstream infections being the most common forms of infections (10.5%) (Alshamrani et al., 2019).

Healthcare professionals are the conduits through which infections connected with healthcare are disseminated. According to the Centers for Disease Control and Prevention (CDC) and the Association of Infection Control and Epidemiologists, hand washing is the most important strategy to avoid hospital infections. Nurses are the ones who should be avoided because they frequently come into contact with patients while performing "clean" duties (e.g., lifting a patient, measuring blood pressure, taking an oral temperature, or touching a patient's hand, shoulder, or groin) (Boyce and Pittet 2002; Asadollahi et al., 2015). Despite the importance of hand hygiene, some research has revealed that nursing students have limited knowledge of the topic (Cruz et al., 2015; Wu et al., 2009). Levels of knowledge and comprehension of hand hygiene were associated with good compliance and practice (Cruz and Bashtawi 2016). The objective of the present study was to assess the hand hygiene knowledge and practice among undergraduate nursing students at the King Saud University College of Nursing in Riyadh, Saudi Arabia.

METHODOLOGY

Study design and settings

A cross-sectional, web-based study was conducted among nursing students at King Saud University College of Nursing in Riyadh, Saudi Arabia. The data was collected using a convenience sample strategy, using a structured, self-administered online questionnaire that was produced and given to second, third, and fourth-year nursing students. Students who were juniors, non-Arabic speakers, and students from other disciplines were excluded.

The study instrument was designed by utilizing previously published similar studies (Sharif et al., 2016) for data collection. After the first draft of the questionnaire was completed, it was reviewed by a panel of senior colleagues (one researcher and one college of nursing academic professor) who were experts in developing research questions and had substantial survey design experience, to check the content and accuracy of the questionnaire. With the help of a trained native Arabic speaker, the questions were translated into the Arabic language utilizing a forward and backward translation technique. The study tool is subjected to a pilot study to confirm that the questions are correct. The questionnaire was evaluated on a small group of nursing students to see how easy it was to read and how tough it was to complete before being distributed. The pilot study's findings were not included in the main study. The questionnaire's Cronbach's alpha was 0.75, respectively.

Study questionnaires and procedure

Three sets of questions were included in the study tool. The first set of questions focused on demographic data such as gender, educational level, and marital status. The second set of questions focused on hand hygiene knowledge, with a total of 12 items evaluated using three options ("yes," "no," and "I don't know"). The last set of questions was based on a three-point Likert-type scale and pertained to the frequency of handwashing (Always, Sometimes, Never). By awarding a "1" to correct answers and a "0" to incorrect answers and "I don't know," the mean knowledge and frequency scores were determined. Data were collected via social media websites such as WhatsApp, after collecting the group leader number by visiting the College of Nursing during workdays. At the beginning of the survey and following the study title, a disclosing statement followed by consenting & agreement to use filled information for publication purposes was highlighted. Students below the age of 18 and students from other disciplines were excluded from the study.

Ethics statement

The principles of the Declaration of Helsinki from 1995 were observed in this research investigation (revised in 2013). Before data collection, the ethical committee from King Saud University's College of Medicine examined the study methodology and questionnaires. The study was submitted to and approved by the King Saud University College of Medicine's institutional review board, and participants were promised that their data would be used solely for research purposes and that their privacy would be respected throughout the study.

Statistical analysis

The collected data were analyzed using the IBM SPSS Statistics 26 (IBM Inc., Chicago, IL, USA) and IBM SPSS 22 (IBM Inc., Chicago, IL, USA) software. Descriptive statistics, frequencies, and percentages were used to summarize the data. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 205 responses were obtained during the study of the 144 responses were included in the study (response rate of 70.9%) while 61 responses were excluded due to incompleteness of the questionnaires. Of the responses 73(50.7) were male and 71 (49.3) were female. In total, 82 (56.9%) of the respondents were aged between 22 and 25 years, and 52 (36.1%) of them were 18-21 years old. Most of the students were single (134, 93. 1%). A detailed description of participant characteristics is presented in Table 1.

Table 1. Demographic information of study participants (n=144)

Characteristics	n(%)
Gender	
Male	73 (50.7)
Female	71 (49.3)
Age (Years)	
18-21	52 (36.1)
22-25	82 (56.9)
25 and over	10 (6.9)
Year of course	
Second-year	28(18.3)
Third-year	89(58.2)
Fourth-year	36(23.5)
Marital status*	
Married	10(6.9)
Unmarried	134(93.1)
Divorced\widowed	-----

**Missing response*

Table 2 shows participants' responses to statements in the second part of the questionnaire on hand hygiene knowledge. Among the respondents, 90.3% believed that direct and indirect contacts are the most important routes for the transmission of hospital-acquired infections. Most of the participants (94.4%) agreed that proper and consistent hand-washing prevents infections in health facilities. Additionally, the majority of them (86.8%) did not agree about the sentence that there is no need for hand-washing for those who exercise caution about it. Just over half (85.4%) did not agree with the statement that there is no need for hand-washing if gloves are properly worn. A large majority (92.4%) agreed that health professionals should always wash their hands immediately upon arriving at health institutions. Similarly, 91.7% agreed that effective hand-washing consists of wetting, soaping, applying friction, rinsing, and drying adequately. Most of the participants (85.4%) agreed that using disinfectants during hand-washing decreases the bacterial load on hands, and 70.8% believed that alcohol has a greater ability to eradicate micro-organisms compared to water. Nearly 81.3% agreed that hand-washing is the single most effective mechanism to prevent the spread of infection.

Table 2. Participants' responses about knowledge of hand hygiene

Statements	Yes n(%)	No n(%)	Don't Know n(%)
Direct or indirect contact is the most important route for the transmission of hospital-acquired infections	130 (90.3)	14 (9.7)	0 (0.0)
Proper and consistent hand-washing prevents infections in health facilities	136 (94.4)	4 (2.8)	2 (2.8)
There is no need for hand-washing for those who perform their activity with caution	19 (13.2)	125 (86.8)	--
There is no need for hand-washing if gloves are properly worn	21 (14.6)	123 (85.4)	--
Health professionals should always wash their hands immediately when they arrive at health institutions	133 (92.4)	11 (7.6)	---
Hand hygiene should be practiced routinely even when gloves are worn	109 (75.7)	35 (24.3)	----
Effective hand-washing consists of wetting, soaping, applying friction, rinsing, and drying adequately	132 (91.7)	12 (8.3)	--
Hands should be washed at least for 10-15 seconds	68 (47.2)	76 (52.8)	---
Using disinfectants during hand-washing decreases the bacterial load on the hands	123 (85.4)	21 (14.6)	--
Health professionals should wash their hands or use an antiseptic hand rub before putting on or after the removal of gloves	130 (90.3)	14 (9.7)	---
Alcohol has a superior ability to eradicate micro-organisms compared to water	102 (70.8)	42 (29.2)	----
Hand-washing is the single most effective mechanism to prevent the spread of infection	117 (81.3)	27 (18.8)	---

Table 3 shows the responses of participants to the statements in part three of the questionnaire, relating to hand hygiene frequency. Almost 91.7% wash their hands before and after contact with patients. while 92.4% wash their hands after contact with body secretions. A majority 96.1% wash their hands before performing any clean and aseptic procedure, However, a greater proportion of students (80.6%) reported using soap during hand-washing Over half (50.7%) said they use alcohol-based hand rub (Figure-1).

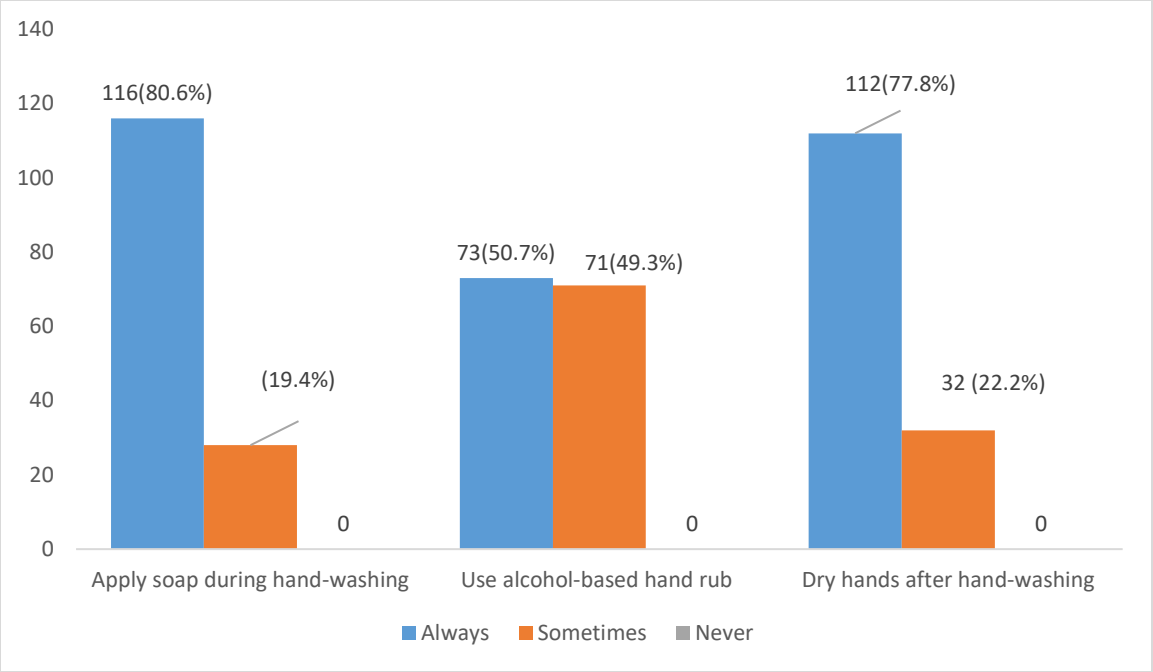

Figure 1. Participant responses towards using disinfectants

Table 3. Participants' practice hand *hygiene*

Statements	Always n(%)	Sometimes n(%)	Never n(%)
Wash hands before and after contact with patients	132 (91.7)	12 (8.3)	0 (0.0)
Wash hands after contact with body secretions	133 (92.4)	11 (7.6)	0 (0.0)
Wash hands before performing any clean and aseptic procedures	118 (91.9)	26 (18.1)	0 (0.0)

DISCUSSION

The current findings reported the majority of the students agreed that proper and consistent hand-washing prevents infections in health facilities (90.3%). Also, most of the students agreed on washing hands before and after contact with the patients (91.7%), which has a positive finding and indicated good knowledge and practice in hand hygiene. Our findings were similar to previous findings by Humran et al among medical and health care students who reported good knowledge. Although the knowledge score was higher among nursing students in comparison to medical other categories of students. Similarly, another finding by Nair et al among nursing and medical students reported poor knowledge of (74%) of hand washing. The differences in the knowledge and practice of handwashing in the above studies were might be due to differences in their curriculum, and course undertaking. Although many studies reported that nursing students have the highest proportion of receiving extra courses and training in comparison to medical and other students this suggests nursing students are having high attention towards disinfection and hand washing practice (Humran et al.,2018).

The majority of students (91.9%) cleansed their hands before completing any clean and aseptic operations, while 80.6% of undergraduates used soap throughout the handwashing processes. While a comparable study by

Humran et al in 2018 found that 61.8% of nursing students followed hand-washing procedures, and almost 70% of students felt terrible if they did not wash their hands. Only 46% of students in previous research said that practicing hand hygiene is simple (Humran et al., 2018). In this study, 50.7% of the students used alcohol-based hand rub for hand hygiene, which suggested that using sanitizer for hand hygiene practice is very low. Since alcohol-based sanitizers are the most effective ways to kill germs and bacterial transmission, thereby control the harmful spread of the infection among patients and health care professionals (Al Saleh et al., 2019). As a result, it was critical to teach nursing students and healthcare workers about the importance of hand hygiene in their work. Hand hygiene, on the other hand, was a well-known, evidence-based fact that proved helpful in preventing infection transmission to patients in healthcare settings. A study of nursing students in Saudi Arabia found that after establishing a training program, there was a considerable improvement in understanding of infection prevention, particularly hand cleanliness (Humran et al., 2018). Additionally, mentors and role models can help students to improve their knowledge, and practice provided they are used correctly.

There are certain limitations to the current study. First, the findings were based on a self-administered questionnaire, which could have increased the risk of biases such as social desirability bias or recall bias. Second, the findings came from a single institution, making them unrepresentative of others and ungeneralizable globally. Despite these limitations, our research advises that more focus be placed on enhancing nursing students' awareness of handwashing through additional training and education about the importance of handwashing is needed.

CONCLUSION

Hand hygiene is the primary line of infection defense for both health care providers and patients. According to the findings of this study, Saudi nursing students have a strong understanding and practice of hand hygiene. Our findings highlight the significance of upgrading current hand hygiene training programs for nursing students. Hand hygiene training sessions may need to be held more regularly, and continuous monitoring and performance feedback is necessary to urge them to follow proper hand hygiene practices.

REFERENCES

1. Allegranzi, Benedetta, et al. “Burden of endemic health-care-associated infection in developing countries:systematic review and meta-analysis.” The Lancet, Vol. 377, No. 9761, 2011, pp. 228-41.

2. Allegranzi, B., & Pittet, D. (2009). Role of hand hygiene in healthcare-associated infection prevention. Journal of hospital infection, 73(4), 305-315.

3. Al-Tawfiq JA, Abed MS, Al-Yami N, Birrer RB. Promoting and sustaining a hospital-wide, multifaceted hand hygiene program resulted in significant reduction in health care-associated infections. Am J Infect Control 2013; 41(6): 482-6.

4. Ademuyiwa IY, Farotimi AA, Afolabi WA, Quadri YO. Knowledge and Practice of Hand Hygiene among Undergraduate Nurses in College of Medicine University of Lagos. International Journal of Health Science Research. 2019;9(12):97-103.

5. Alshamrani, M. M., El-Saed, A., Alsaedi, A., El Gammal, A., Al Nasser, W., Nazeer, S., & Balkhy, H. H. (2019). Burden of healthcare-associated infections at six tertiary-care hospitals in Saudi Arabia: A point prevalence survey. Infection Control & Hospital Epidemiology, 40(3), 355-357.

6. Asadollahi M, Bostanabad MA, Jebraili M, Mahallei M, Rasooli AS, Abdolalipour M. Nurses' knowledge regarding hand hygiene and its individual and organizational predictors. Journal of caring sciences. 2015 Mar;4(1):45.

7. Al Saleh S, Al Rammah AA, Syed W, Al Duhailan R, Kattan S, Al-Mana F. Stethoscope hygiene and barriers among physicians–A cross-sectional study from National Guard Health Affairs in Dammam, Saudi Arabia. Journal of Patient Safety and Infection Control. 2019 May 1;7(2):53.

8. Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Infection Control & Hospital Epidemiology. 2002 Dec;23(S12):S3-40.

9. Cruz JP, Bashtawi MA. Predictors of hand hygiene practice among Saudi nursing students: A cross-sectional self-reported study. Journal of infection and public health. 2016 Jul 1;9(4):485-93.

10. Cruz JP, Cruz CP, Al-Otaibi AS. Gender differences in hand hygiene among Saudi nursing students. International Journal of Infection Control. 2015 Dec 16;11(4).

11. Colet PC, Cruz JP, Cruz CP, Al-Otaibi J, Qubeilat H, Alquwez N. Patient safety competence of nursing students in Saudi Arabia: a self-reported survey. International journal of health sciences. 2015 Oct;9(4):418.

12. Humran MB, Alahmary K. Assessment of knowledge, attitude, and practice of hand hygiene among medical and health profession students at king Saud bin Abdulaziz University for health sciences in Saudi Arabia. Saudi Critical Care Journal. 2018 Oct 1;2(4):66.

13. Lam, B. C., Lee, J., & Lau, Y. L. (2004). Hand hygiene practices in a neonatal intensive care unit: a multimodal intervention and impact on nosocomial infection. Pediatrics, 114(5), e565-e571.

14. Longtin Y, Sax H, Allegranzi B, Schneider F, Pittet D: "Videos in clinical medicine.Hand hygiene," The New England Journal of Medicine 2011, 24: 324-364.

15. Mestre G, Berbel C, Tortajada P, et al. "The 3/3 strategy": a successful multifaceted hospital wide hand hygiene intervention based on WHO and continuous quality improvement methodology. PLoS One 2012; 7(10)e4720.

16. Nasirudeen, A. M. A., Koh, J. W., Lau, A. L. C., Li, W., Lim, L. S., & Ow, C. Y. X. (2012). Hand hygiene knowledge and practices of nursing students in Singapore. American journal of infection control, 40(8), e241-e243.

17. Nair SS, Hanumantappa R, Hiremath SG, Siraj MA, Raghunath P. Knowledge, attitude, and practice of hand hygiene among medical and nursing students at a tertiary health care centre in Raichur, India. International Scholarly Research Notices. 2014;2014.

18. Pittet, D., Allegranzi, B., Sax, H., Dharan, S., Pessoa-Silva, C. L., Donaldson, L., & Boyce, J. M. (2006). Evidence-based model for hand transmission during patient care and the role of improved practices. The Lancet infectious diseases, 6(10),641-652.

19. Rosenthal VD, Guzman S, Safdar N. Reduction in nosocomial infection with improved hand hygiene in intensive care units of a tertiary care hospital in Argentina. Am J Infect Control 2005; 33(7): 392-7.

20. Sahay, S., Panja, S., Ray, S., & Rao, B. K. (2010). Diurnal variation in hand hygiene compliance in a tertiary level multidisciplinary intensive care unit. American journal of infection control, 38(7), 535-539.

21. Wu CJ, Gardner GE, Chang AM. Taiwanese nursing students' knowledge, application and confidence with standard and additional precautions in infection control. Journal of Clinical Nursing. 2009 Apr;18(8):1105-12.

22. World health organization (WHO).2009. WHO Guidelines on Hand Hygiene in Health Care: Available at https://apps.who.int/iris/bitstream/handle/10665/70126/WHO_IER_PSP_2009.07_eng.pdf;jsessionid=A643167 07E6766D878291B867E1ADB13?sequence=1.Last accessed on 26 January 2022.

HOW THE PANDEMIC HAS AFFECTED THE NURSING SHORTAGE

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ABSTRACT

The COVID-19 pandemic has been raging for two years with different variants appearing. This has had a tremendous impact on the health care system; in particular, the nursing profession. Nurses have been stretched by extreme workload, poor working conditions, etc. Prior to the pandemic, there was a shortage of nurses; particularly in certain geographical areas. The demand for nurses has not lessened but increased. Enrollment in nursing program has surged during the pandemic. This has been hampered by the ability of training to take place in health care facilities. Nursing programs have had to seek alternative methods of training. Also, the nursing population is surging with "baby boomers" reaching retirement age.

This paper examines three different trends over the past decades. The three trends are enrollment in nursing, retirements in the nursing profession, and demand for nurses. Using these trends, it is possible to determine whether the nursing shortage is increasing or decreasing. This does not take into consideration the number of nurses that are going on to receive advance practice degrees.

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TRACK:

PHARMACY

HEALTH

A COMPARATIVE ANALYSIS OF PUBLIC HOSPITAL PHARMACY SYSTEM IN NORWAY AND PAKISTAN: IMPLEMENTATION OF THE AMERICAN SOCIETY OF HEALTH-SYSTEM PHARMACISTS' (ASHP) GUIDELINES

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ABSTRACT

The objective of the study is to analyze and compare public hospital pharmacy practices in Pakistan and Norway. In addition, the study intends to identify the barriers and challenges to improving the public hospital pharmacy system and propose recommendations that could help reform the practice to enhance patient safety and compliance. A cross-sectional study was conducted to understand public hospital pharmacies' organizational structure and determine their practices in Norway and Pakistan. The results of the research showed differences in 11 main areas of the pharmacy systems of the sampled hospitals. When compared to Norway, the study found that the public hospital pharmacy system in Pakistan could be improved in 9 main areas. The results show that hospital pharmacies in Pakistan could benefit from the experience of similar international structures in relation to universal standards and practices

INTRODUCTION

An adverse drug reaction (ADR) is a harmful event that occurs when a medication is not properly used. ADRs can result in termination of the future dispensation or adjusting the dosage regimen (Coleman & Pontefreact, 2016). Medication errors cause more than 250 000 deaths in the United States alone, and this number is rising in developing countries like Pakistan (Ioannidis & Lau, 2001). An effective team of healthcare professionals, in combination with pharmacists (and especially clinical pharmacists), can help detect, manage, prevent, and report ADRs. This can improve patient safety while also reducing healthcare costs (Graban, 2016).

For decades, pharmacists have made significant contributions to elevate the profession of pharmacy in hospitals worldwide (Anderson, 2002). There has been a long tradition of clinical activities being performed by pharmacists within the hospital setting (Cobaugh et al., 2008). A large body of research has discovered a positive impact on patient outcomes (Bond & Raehl, 2007; Sanghera et al., 2006; Bosma et al., 2008; Makowsky et al., 2009). For instance, an assessment of pharmacists' clinical involvement from 1989 to 1998 showed a reduced number of deaths with the delivery of different pharmacy services in seven main areas. These areas were drug use evaluation, in-service education, monitoring of ADRs, management of drug protocols, participation in the cardiopulmonary resuscitation team, participation in medical rounds, and completion of admission drug histories (Bond & Raehl, 2007).

A study on the role of hospital pharmacists showed that their presence in hospital settings had improved the effectiveness of drug therapy in different patients (Sanghera et al., 2006; Bosma et al., 2008). To capitalize on these successes, hospital pharmacy organizations worldwide are calling on pharmacists to expand their focus from the distribution of medications to patient outcomes (LeBlanc & Dasta, 2005). For example, the development of the Basel Statement and the Six Goals promoted in Vision 2015 by the International Pharmaceutical Federation (FIP) and the Canadian Society of Hospital Pharmacists accentuate the importance of patient outcomes (Basel Statement, 2009). This new emphasis is consistent with the vision statement by the pharmacy profession in Canada: "Optimal drug

therapy outcomes for Canadians through patient-centred care" (Blueprint for Pharmacy, 2008).

In 2009, hospital pharmacy professionals gathered in Basel, Switzerland, to expand on the vision statement of the hospital pharmacy system. The latest changes to patient-centred pharmacy practice now involve pharmacists giving recommendations to the prescribing physicians as well as offering consultations to patients or their caregivers. The responsibilities of medication preparation as well as dispensing continue as pharmacists are incorporated into the healthcare team, improving pharmacotherapeutic strategies of patients and being answerable for healthcare consequences (Anderson, 2002). In evidence-based practice, the hospital pharmacist seeks to manage as well as shape the standard and efficacy of every phase of the procedures used in medicating (Dückers et al., 2009). Professional pharmacy practice follows several important outlines of training as well as education, inter-professional associations, clinical practice, and administrative authority (Cooper et al., 2008). A substantial number of researches have investigated hospital pharmacy practice, the competence of pharmacy services, and their staffs (Abdel-Qader et al., 2010; Doloresco & Vermeulen, 2009; Pedersen et al., 2012; Prot-Labarthe et al., 2007). These studies concentrate on practices in a particular area or a country or on particular pharmacists or hospitals.

Practices among pharmacies within hospitals differ from one country to another, even though many regions have the same issues (Mills et al., 1990). In many nations, the responsibilities of a hospital pharmacist have evolved, with the latest change being from a drug-oriented service to patient-oriented one. Both the American Society of Health-System Pharmacists (ASHP) and the European Association of Hospital Pharmacists have published surveys on ongoing practices and guidelines in institutional pharmacy services (Vlasses et al., 2012). However, these studies have been limited to hospitals in the United States. Some researches have compared the organizational structure of hospital pharmacies among two countries like France and Canada (Prot-Labarthe et al., 2007). These studies have helped improve the overall quality of healthcare systems.

In the last few years, developed countries, particularly the European and North American countries, have significantly improved their healthcare system and reduced the chances of undesirable pharmaceutical errors (Sujan et al., 2017). However, many errors have recently occurred in hospital pharmacies of Pakistan (Hirani & Farlane, 2016; Jafree et al., 2017; Atif et al., 2018; Khan et al., 2019). This raises the question about how the organizational structure of hospital pharmacies in Pakistan differs from developed countries, such as Norway, for example, and how these differences can produce considerable variations in the outcomes of pharmaceutical care. When the literature is reviewed, there appears to be a need to examine hospital pharmacy systems of developing countries and compare these with the best practices. Accordingly, this study compares the organizational structure of public hospital pharmacy systems in Norway and Pakistan and compares their public hospital pharmacy practices. The research question posed is: What are the differences in the organizational structure and public hospital pharmacy practices in Norway and Pakistan?" In order to answer that question, this study has the following sub-objectives;

- To compare the organizational structure of public hospital pharmacies in Norway and Pakistan.
- To compare the public hospital pharmacy practices in both countries.
- To determine the improvements in public hospital pharmacy practice in both countries.
- To understand the management challenges public hospital pharmacists face in both countries.

METHODOLOGY

Study design

A cross-sectional study was conducted to understand public hospital pharmacies' organizational structure and determine their practices in Norway and Pakistan.

Data collection tool

The structured questionnaire was adapted from guidelines crafted by the ASHP regarding minimum standards for pharmacies in hospitals (ASHP, 2013). The ASHP guidelines on least standards provide the fundamentals for pharmacy services in U.S. hospitals. These recommendations describe a minimum level of facilities and services that

a hospital pharmacy must constantly deliver. Several sections of these recommendations might be appropriate to other healthcare settings or help in assessing the extent and quality of pharmacy services. Several researchers used these standards to evaluate hospital pharmacy practices in Iran, Saudi Arabia, Lebanon, and Spain, respectively (Alomi et al., 2016; Chamoun et al., 2020; Isfahani et al., 2013; Puigventós et al., 2010).

The questionnaire used in this study was modified from the original ASPH standards to match our research objectives. The nine core elements of care recommended by ASHP were included in the study. The ASPH guidelines used open-ended questions in subsections (formulary management, samples archiving system, inspection criteria, barcoding method, and method of sterilization), which we modified to close-ended questions. Our structured questionnaire eventually comprised 9 sections with 53 questions related to: practice management; medication use policy development; optimizing medication therapy; drug product procurement and inventory management; preparing, packaging, and labeling medications; medication dispensing and delivery; monitoring medication use; evaluating the effectiveness of the medication-use system; and research. After assembling the questionnaire, we arranged for one pharmacist from each country to review it for clarity. Modifications that were deemed necessary were incorporated into the final version of the questionnaire. The final version of the questionnaire was distributed to 42 pharmacists (17 Pakistani, 25 Norwegian) in the sampled hospitals. The total number of respondents was 12 (response rate = 28.6%).

Study location

Norway and Pakistan were selected for the study. The Norwegian healthcare system is based on the principle of equal access to all. All residents must have the same opportunities to receive health services. In the World Health Organization's ranking of 191 nations' healthcare systems, Norway holds 8th place (Doupi et al., 2010). By contrast, Pakistan occupies the 121st spot. Pakistan is struggling to achieve healthcare on a par with other developing countries by setting numerous goals and expectations (Nizar & Chagani, 2016). But for now, these huge differences in healthcare quality provide a springboard for this study which can be used in Pakistan's efforts to improve its pharmaceutical system. The Norwegian public hospitals included in this study are Ullevål hospital (NH1) and Akershus University Hospital (NH2), while NICVD (PH1) and Sindh Government Hospital in Korangi (PH2) are the ones from Pakistan. These public hospitals were not randomly sampled. Rather, they were chosen because the researcher has close links to them.

All the sampled hospitals are tertiary care hospitals with more than 400 beds. Their public mission, research, and teaching objectives are also similar. NH1 is the biggest state hospital in providing quality care and conducting research. The hospital pharmacy leadership of NH1 has the guiding responsibility for other public hospitals in Norway. In Pakistan, PH1 plays a pivotal role in caring for patients with heart disease. It is the first tertiary cardiac care institute in South Asia. At the time of this study, PH1 had 5 pharmacies and 15 pharmacists, while PH2 had 1 pharmacy and 2 pharmacists. NH1 had 1 pharmacy and 15 pharmacists, while NH2 had 1 pharmacy and 10 pharmacists.

Statistical analysis

Data entry was done in Microsoft Excel. Frequency tables were generated, and cross-tabulations were performed. Chi-square test was applied to analyze the differences between outcomes from hospital pharmacies in Pakistan and Norway at the level of significance ($P < 0.05$) using Statistical Package for the Social Sciences (SPSS version 23).

Ethical considerations

There were no ethical considerations related to this study as it involved no internal data or information from the organization. After a brief introduction to the study, participants voiced their consent and filled out written informed consent forms.

Limitations

The first limitation was that the researcher used a convenience sampling method. Secondly, the results of the study were limited to the sampled hospitals. Thirdly, the limitations of cross-sectional studies can apply in this case.

Fourthly, a low response rate was received from the participating pharmacists.

RESULTS

Females (n = 4 (3 Norwegian pharmacists and 1 Pakistani pharmacist)) constituted 33.3% of the sample (8 males or 66.7%). The mean age of the participants was 37.08 (min: 25, max 56) years. Over half of the sample (n = 8, 66.7 %) were 35 years or younger, whereas 33.3% (n = 4) were 36 years or older. The mean number of practice years was 9.68 (min: 1.5 years; max: 29.2 years). More than half of the sampled physicians (n = 8, %) had 10 or fewer years of practice, while 42% (n =4) had 11 or more years of practice.

Practice management

Table 1 shows how pharmacists feel about a particular practice management. A written mission statement on goals and scope of services was found in each of the study hospitals in Pakistan as well as Norway. Unlike Norway, practice standards and guidelines for the pharmacy were not found in Pakistan. Pharmacy policy and procedure manuals were present in half the hospitals surveyed in Pakistan, which contrasts with Norway, which had such manuals in both of the studied hospitals. Designed job descriptions of each position in the pharmacy department were found in 50% of the studied hospitals in Pakistan as well as Norway. There was no established procedure for orienting new personnel in the pharmacy departments of the examined hospitals in Pakistan, while the Norwegian hospitals had a well-established procedure for orientating new pharmacy staff. Written work schedules were used in both of the studied hospitals in Pakistan, whereas only half the Norwegian hospitals had such a schedule. Procedures for evaluating pharmacy staff performance was found in both the studied hospitals in Norway, compared to only one in Pakistan. Defined policies regarding conflict-of-interest and ethical conduct existed in both of the study hospitals in Norway, but no such policy was found in either of the Pakistani hospitals.

It was reported that 24-hour pharmacy services were not available in either of the study hospitals in Pakistan, while only one (50%) of the studied Norwegian hospitals had round-the-clock services. However, after-hours pharmacy access was present in one of the two studied hospitals in both Pakistan as well as in Norway. Furthermore, there was no concept of personal safety education in the subject hospitals in Pakistan, but this did exist in the Norwegian counterparts. Both hospitals in Pakistan and Norway indicated that their pharmacy departments participate in medical emergencies. Pharmacists were not involved in immunization in any of the studied hospitals. A director of the pharmacy service was present in one of the studied hospitals in Pakistan, and the same was found in one studied hospital in Norway. Qualified pharmacists were present in all of the studied hospitals of both countries. However, qualified pharmacy technicians were not present in either hospital studied in Pakistan, while both Norwegian hospitals were so appointed. Conversely, it was found that non-qualified pharmacy technicians were present in the studied hospitals of both countries. Comprehensive pharmacy computer systems integrated with computerized provider-order entry, medication administration, electronic health recording, and patient billing systems were common in the studied hospitals of Norway, while there was no such system in the studied hospitals of Pakistan. Pharmacists' active participation in hospital and health-system committees was found in all four studied hospitals in both countries.

The results show that adequate pharmacy spaces and resources at any standard were absent in both of Pakistan's studied hospitals, while Norway's pharmacy spaces and resources were all up to standard. Adequate space for medication storage and preparation as per standard was present in all of the studied hospitals in Norway, while in Pakistan only 50% of the studied hospitals had such space. Patient assessment and consultation areas were present in 50% of the studied hospitals in Pakistan, while in Norway, the corresponding share was 100%. Adequate office and meeting areas for the pharmacy department were present in all hospitals studied in Pakistan and Norway. Adequate space and resources for drug information services were common in the studied hospitals in Norway, while only one of the studied hospitals in Pakistan had such space.

It was found that there was no concept of a well-controlled formulary of approved medications in the hospitals studied in Pakistan, while this existed in both the studied hospitals in Norway. The participating pharmacists provided

patient-specific drug information about drugs and drug therapy to health professionals, patients, and patients' caregivers in all the studied hospitals in Pakistan and the same was true in the studied hospitals of Norway. In addition to these duties, pharmacists ensured timely dissemination of drug product information in all of the studied hospitals in Pakistan as well as Norway. The pharmacists from the study reported that the pharmacy and therapeutics (P&T) committee regularly reviewed the formulary for safety information in 50% of the studied hospitals in Norway, while this concept was not present in either studied hospital in Pakistan. The P&T committee existed and operated according to guidelines in both the studied hospitals in Norway, while only one of the studied hospitals of Pakistan even had a P&T committee.

Table 1. Pharmacists' concerns on the public hospital pharmacy practices in Norway and Pakistan

		Yes		No		Yes		No	
		n	%	n	%	n	%	n	%
Pharmacists' opinions on practice management	Written mission statement, goals and scope of services present	6	100			6	100		
	Practice standards and guidelines in the pharmacy			6	100	6	100		
	Pharmacy policy and procedure manual	3	50	3	50	6	100		
	Designed job description of each position in pharmacy	3	50	3	50	3	50	3	50
	Established, structured procedure for orienting new personnel	6	100			6	100		
	Written work schedules			6	100	3	50	3	50
	Procedure for measuring performance of pharmacy employees	3	50	3	50	6	100		
	Defined policy regarding conflict-of-interest and ethical conduct			6	100	6	100		
Pharmacy services working hours	24-hour of pharmacy services	6	100			3	50	3	50
	After-hours pharmacy access in the absence of 24-hour	3	50	3	50	3	50	3	50
	Personal safety education	6	100			6	100		
	Pharmacy department participation in emergencies	6	100	3	50	6	100		
	Pharmacist involved in immunization			6	100			6	100
	Director of pharmacy services	3	50	3	50	3	50	3	50
	Qualified pharmacist present	6	100			6	100		
	Qualified pharmacy technicians present			6	100	6	100		
	Non-qualified pharmacy technicians present	6	100			6	100		
	Comprehensive pharmacy computer system integrated with computerized provider-order-entry medication administration, electronic health record, and patient billing systems			6	100	6	100		
	Pharmacy system is integrated with clinical decision support tools			6	100	3	50	3	50
	Pharmacist actively participate in hospital and health-system committees	6	100			6	100		
Pharmacy space and other resources	Adequate pharmacy spaces and resources as per any standard			6	100	6	100		
	Adequate space for medication storage and preparation as per standard	3	50	3	50	6	100		
	Patient assessment and consultation area	3	50	3	50	6	100		
	Adequate office and meeting areas	6	100			6	100		
	Adequate space and resources for drug information services	3	50	3	50	6	100		

When the responses to questions regarding optimizing medication therapy was evaluated, it was found that pharmacists provided direct patient care in 50% of the studied hospitals in Pakistan and in 100% of the studied hospitals in Norway. Patient confidentiality was maintained in 50% of the studied hospitals in Pakistan, while both the studied hospitals in Norway maintained confidentiality about the patient's disease and drug therapy. Half the studied hospitals in Norway and Pakistan revealed that pharmacists have immediate access to comprehensive medication histories for each patient. The same share applied to pharmacists providing verbal and written consultations regarding disease and the use of medications. Recommendations made by the pharmacist and actions taken in response to those recommendations were reported in 50% of the studied hospitals of Pakistan, while this practice was present in all the studied hospitals in Norway. Pharmacists were involved in medication therapy decisions in all the studied hospitals in Pakistan and Norway.

Table 1. continued

		Yes		No		Yes		No	
		n	%	n	%	n	%	n	%
Pharmacists' opinions on medication-use policy development	Well-controlled formulary of approved medications			6	100	6	100		
	Pharmacist provides patient specific information about drugs and drug therapy to health professionals, patients, and patients' caregivers	6	100			6	100		
	Pharmacist ensures timely dissemination of drug information	6	100			6	100		
	P&T committee regularly reviews the formulary for safety information			6	100	3	50	3	50
	P&T committee exists and operates according to guidelines	3	50	3	50	6	100		
Pharmacists' opinions on optimizing medication therapy	Pharmacists provide direct patient care	3	50	3	50	6	100		
	Patient's confidentiality is maintained	3	50	3	50	6	100		
	Pharmacists have immediate access to comprehensive medication histories for each patient	3	50	3	50	3	50	3	50
	Pharmacists provide oral and written consultations	3	50	3	50	3	50	3	50
	Recommendations made by the pharmacist and actions taken in response to those recommendations are documented	3	50	3	50	6	100		
	Pharmacists involved in medication therapy decisions	6	100			6	100		
Pharmacists' opinions on drug product procurement and inventory management	Policies and procedures for managing medication acquisition	3	50	3	50	6	100		
	Criteria for selecting drug product manufacturers and suppliers	3	50	3	50	6	100		
	Proper medication storage conditions	3	50	3	50	6	100		
	Policies and procedures for managing drug product shortages			6	100	6	100		
	Policies and procedures for distribution and use of controlled substances	3	50	3	50	6	100		
	Policies and procedures for patient's own medications			6	100	3	50	3	50
	Policies and procedures for inspection of all stocks of medications	3	50	3	50	6	100		
	Policies and procedures for returning recalled, expired, and other unusable items	6	100			6	100		

Drug product procurement and inventory management

Each of the studied hospitals in Norway had policies and procedures for managing medication acquisition, while only one of the studied hospitals in Pakistan had such a policy or procedure. Criteria for selecting drug manufacturers and suppliers were found in one of the studied hospitals in Pakistan, while both Norwegian hospitals had those criteria. Of the hospitals studied in Pakistan, one in two reported proper medication storage conditions, while all such hospitals in Norway had proper conditions. Policies and procedures for managing drug shortages did not exist in the studied hospitals in Pakistan, unlike their counterparts in Norway. All the studied hospitals in Norway had policies and procedures for the distribution and use of controlled substances, whereas, in Pakistan, the comparative fraction was one half. Policies and procedures for the patient's own medications were not found in either studied hospital in Pakistan and only in half the studied hospitals in Norway. Policies and procedures for the inspection of all stocks of medications existed in only 50% of the hospitals surveyed in Pakistan, while all the equivalent Norwegian hospitals had well-established policies in this regard. However, policies and procedures for returning recalled expired, and other unusable items were well-established in both countries' studied hospitals.

Table 1 continued

		Yes		No		Yes		No	
		n	%	n	%	n	%	n	%
Pharmacists' opinions on preparing, packaging, and labeling medications	Compounding facility available			6	100	6	100		
	Area for sterile preparations available			6	100	6	100		
	Unit dose dispensation for admitted patients			6	100	3	50	3	50
	Unit dose packaged with a barcode			6	100	6	100		
Pharmacists' opinions on medication dispensing and delivery	Pharmacist has immediate access to the patient's diagnosis	3	50	3	50	3	50	3	50
	Documented policy and procedure for verbal medication orders	3	50	3	50	6	100		
	Medication orders are reviewed by pharmacist	3	50	3	50	6	100		
	Policies and procedures for medication delivery and administration			6	100	6	100		
Pharmacists' opinions on monitoring medication use	Pharmacist conducts medication therapy monitoring	3	50	3	50	6	100		
	Pharmacist is involved in educating and counseling patients	3	50	3	50			6	100
Pharmacists' opinions on evaluating the effectiveness of the medication-use system	Documentation of pharmacist provided patient care services	3	50	3	50	3	50	3	50
	Process to routinely monitor and document workload and financial performance			6	100	3	50	3	50
	Ongoing program for monitoring drug utilization and costs	3	50	3	50	6	100		
	Pharmacist involved in multidisciplinary efforts to prevent, detect, and resolve drug-related problems	3	50	3	50	6	100		
	Pharmacist involved in policies and procedures regarding medication error and adverse event	3	50	3	50	6	100		
	Policies and procedures for optimal use of antimicrobial agents	3	50	3	50	6	100		
	Pharmacist monitors patients' laboratory reports of microbial-sensitivities or applicable diagnostic markers and advise prescribers	3	50	3	50	6	100		
	Pharmacist participates in antimicrobial stewardship and infection-prevention	3	50	3	50	6	100		

It was reported that both the queried Norwegian hospitals had compounding facilities, sterile preparation areas, and unit dose packages with a bar code, and one had unit dose dispensations for admitted patients. By contrast, none of the hospitals from Pakistan had any of these practices. As can be seen in the table, medication dispensing and delivery practices were carried out in 50% of the studied hospitals of both Pakistan and Norway. This result shows that pharmacists have immediate access to the patient's diagnosis. Documented policy and procedure for oral or written medication orders existed in only one of the two hospitals of Pakistan, unlike Norway, where both hospitals had well-established procedures. The same fraction held for medication orders reviewed by pharmacists: half the studied hospitals in Pakistan, all the studied hospitals in Norway. There were well-defined policies and procedures for medication delivery and administration in both hospitals in Norway, but no such practices in either Pakistani hospital.

Fifty per cent of the studied hospitals of Pakistan, pharmacists conducted medication therapy monitoring, while this practice was common in all the studied hospitals in Norway. Moreover, in half of the studied hospitals in Pakistan, pharmacists were involved in educating and counseling patients while this practice was not found in either hospital in Norway. Moreover, documentation of pharmacist-provided patient care services was present in 50% of the studied hospitals in both Pakistan and Norway. There was no process to routinely monitor and document the workload and financial performance of the pharmacy department in either of the studied hospitals in Pakistan, while half the Norwegian hospitals had this practice. There was an ongoing program for monitoring drug utilization and costs in 50% of the studied hospitals of Pakistan, whereas all the studied Norwegian hospitals had such programs. Pharmacists were involved in multidisciplinary efforts to prevent, detect, and resolve drug-related problems in 50% of the studied hospitals in Pakistan, compared to Norway where all the pharmacists of all the studied hospitals carried out this activity. Similarly, pharmacists were involved in policies and procedures regarding medication error and adverse events in 50% of the studied hospitals in Pakistan and all the studied hospitals in Norway. Policies and procedures for optimal use of antimicrobial agents were found in 50% of the pharmacy departments of the studied hospitals in Pakistan, while Norway again scored 100% in this regard. The same ratios were found in response to the query about pharmacists monitoring patients' laboratory reports of microbial sensitivities or applicable diagnostic markers and advice prescribers. It was also 50% for Pakistan and 100% for Norway when asked whether pharmacists participate in antimicrobial stewardship and infection prevention.

Research

As can be seen from Table 1 that pharmacists participated in and supported clinical and practice-related research appropriate to the goals, objectives, and resources of the specific hospital in 50% of the studied hospitals in Pakistan, while in Norway the pharmacists of all the studied hospitals were involved in such activities.

DISCUSSION

The main purpose of this research was to compare the organizational structure of public hospital pharmacies and pharmacy practices in Norway and Pakistan. This study highlighted the improvements in hospital pharmacies of both countries at government level by exploring their public hospital pharmacy system. The challenges faced by hospital pharmacists and their managers in both countries were also addressed.

Hospital pharmacy is built on practice management standards, medication use policy, optimizing medication therapy, drug procurement and inventory management, preparing, packaging, and labeling medications, medication dispensing and delivery, monitoring medication use, evaluating the effectiveness of the medication-use system, and research to improve services. Over the years, pharmacy practice has been transformed from its focus on drug distribution to an emphasis on care delivery. Pharmacists have expanded their function as a provider of medication services and information to that of active participants inpatient care. More than ever, their job is to ensure that a patient's pharmacotherapy is properly dispensed with the utmost efficiency in the safest manner possible as well as in accordance with the patient's wishes. By holding absolute responsibility for the individual patient's drug needs, pharmacists can wield a great influence on medication therapy outcome as well as on the patient's quality of life (Wiedenmayer et al., 2006).

Practice management

The mission of pharmacists is to help people make the best use of medications (Toklu, 2013). This study revealed that a written mission statement with goals and scope of services was found in both of the study hospitals in Pakistan as well as Norway. Practice standards and guidelines in the pharmacy were not found in Pakistan but were in Norway. Practice guidelines for several disease conditions and healthcare subjects exist from national organizations and specialist boards (King et al., 2000). Improving as well as upholding a policy and procedure manual can deliver a well-organized and efficient approach to administer transformation (Alsultan et al., 2012). Hiring a workforce amid reviewing or evolving policies and procedures can build self-esteem and contentment (Tomich & Dydek, 2006). This study found that policy and procedure manuals were common in all studied hospitals of Norway, while half the studied hospitals in Pakistan were found to be deficient. There must be a recognized, organized process for familiarizing new employees with the pharmacy department (Baldwin & Dole, 2003). Clinical practice guidelines have been shown to improve processes of care, clinical outcomes, and quality medical care (Lliadis et al., 1999). ASHP surveys conducted in 2007 and 2010 showed 80% of U.S. hospitals used such policies and procedures regularly to minimize medication errors (Pedersen et al., 2008; Pedersen et al., 2011). Yet this study found no established procedure for orienting new pharmacists in Pakistan, unlike Norway which had well-established procedures in place. However, a designed job description of each position in the pharmacy department was found in half the studied hospitals of Pakistan as well as Norway. Written work schedules were being used in both of the subject hospitals in Pakistan and only half those in Norway. Scheduling staff members in service industries can be more complicated than in manufacturing. In service industries, benefits and wages often comprise a significant fraction of outlays. From a competitive standpoint, staff planning becomes significant when fairness and staff preferences are crucial, customer needs are changing, and wages are the key factor (Butt & Acar, 2013).

Twenty-four-hour pharmacy services were not present in any of the studied hospitals in Pakistan, but did exist in half the Norwegian hospitals. On other hand, after-hours pharmacy access was available in half of the studied hospitals in both Pakistan and Norway. Round-the-clock facilities are essential in institutions that have clinical programs which require careful medication therapy. If it's not possible to provide 24-hour-service, then a pharmacist should be on an on-call basis (ASHP, 2010). Moreover, a significant difference ($P<0.05$) was observed in various factors related to practice management between Pakistan and Norway, including personal safety education, pharmacist involvement in immunization, qualified pharmacy technicians, comprehensive pharmacy computer system integrated with computerized order entry, medication administration, and pharmacy system integrated with clinical decision support tools. Neuhauser et al. (2004) compared the demographics, professional activities, and job satisfaction of immunization-certified and other pharmacists in Texas. This cross-sectional study found that significantly more certified pharmacists were involved in immunizations as an advocate, partner (hosting immunization providers in the practice), and provider (99%) when compared with non-certified pharmacists (24%; $P<0.001$). Of those certified, 74% classified themselves as providers, actually administering immunizations. The most frequently administered vaccines were influenza (96%), pneumococcal (77%), hepatitis B (55%), and tetanus-diphtheria (19%).

There is a minimum recommendation for the space needed for a hospital pharmacy based on the number of clinical departments and hospital beds. In larger hospitals, the recommended guideline for drug storage is 0.3 m^2–0.4 m^2 for each bed (Bellingham, 2007; Bernstein, 2008; Shargel et al., 2009). The layout and its outcome on practice reveals an important role in aspects of routine procedures. Organizations should be planned in a way to control future costs on upgrades to existing facilities. Successful institutional planning methods have been shown to decrease functioning inadequacies and may reduce expenses by up to 30% (McDowell & Huang, 2012). The pharmacy department of any hospital should plan for appropriate resources to permit the proper receiving, storage, and formulation of medicines so as to guarantee drug integrity as well as employees safety. Sufficient office and meeting areas should be accessible for administrative, educational, and training activities (ASHP, 2013). Previously, many insufficiencies and blunders were reported in spaces, equipment, services, and drug counseling, which the pharmaceutical care departments are supposed to offer in the Iranian hospital pharmacies (Sabzghabaee et al., 2010). The present study revealed that adequate pharmacy spaces and resources as per standard were not present in any of the studied hospitals in Pakistan, while Norway had adequate space. Significant differences ($P<0.05$) were found in space for medication storage and preparation in all of the studied hospitals in Norway compared to Pakistan, where only 50% of the hospitals in Pakistan had adequate space. Adequate office and meeting areas for the pharmacy department were present in all studied hospitals of Pakistan as well as Norway. Adequate space and resources for drug information services were common in Norway but only half so in Pakistan.

Formulary controlling is key to regulating the quality and cost of pharmaceuticals. Therefore, any drug formulary system must be established on suitable clinical as well as pharmacoeconomic foundations (Odedina et al., 2002). A pharmacy and therapeutic committee operates as a consultative body to the medical workforce and managers in all subjects concerning medicines and supervises the formulary system. This practice has been defined as the process by which a healthcare institution develops strategies about the use of medications, pharmacotherapies, and drug-related products and detects those that are most medically suitable and economical to assist the health and welfare of a patient population (Penm et al., 2013). The medication-use policy development section of the study revealed that there was no concept of a supervised formulary of accredited medications in the studied hospitals in Pakistan, while there is in Norway. The P&T committee regularly reviewed the formulary for information in 50% of studied hospitals of Norway while this concept was absent in the studied hospitals of Pakistan. Furthermore, there was a significant difference ($P<0.05$) in that the P&T committee existed and operated according to guidelines in all studied hospitals of Norway and Pakistan.

Optimizing medication therapy

The section on optimizing medication therapy found significant differences ($P<0.05$) between Pakistan and Norway with respect to providing direct patient care by the pharmacist, maintaining patient confidentiality, pharmacist's ready access to overarching medication histories for all patients, and pharmacist found to be involved in consulting patients regarding the use of medications. Furthermore, pharmacists were involved in medication therapy decisions. The studied hospitals in Norway were found to be superior to Pakistan in the optimization of drug therapy. In the USA, it was reported that drug therapy for ambulatory patients taking multiple medications to treat chronic conditions could be improved through collaboration between physicians and community pharmacists (Doucette et al., 2005).

Drug product, procurement, and inventory management

With increased understanding of proper delivery of medicine, keeping a trail of drug distribution is recommended by the Food and Drug Administration (Chircu et al., 2014). The standards concerning drug procurement and inventory management were found to be outstanding in the studied hospitals of Norway. Because pharmaceutical purchasing is a multi-disciplinary procedure requiring medical, pharmaceutical, administrative, financial, and often political skills, it should be done according to the laws and procedures recommended by international bodies. As far as the section on preparing, packaging, and labeling medications is concerned, the studied hospitals of Pakistan had no compounding facility available or area for sterile preparations. Moreover, there was no concept of unit dose dispensation for admitted patients or unit dose packaged with a barcode. However, the studied hospitals met all criteria of formulation, packing, and labeling of medications. Medication dispensing and delivery were compliant with standard practices in Norway, in contrast to Pakistan where only half the studied hospitals adhered to standard protocols. Fifty percent of the studied hospitals in Pakistan had pharmacists conducting medication therapy monitoring, while this practice was common in all the studied hospitals of Norway. Moreover, in 50% of the studied hospitals of Pakistan, pharmacists ($P<0.05$) were involved in educating and counseling patients while this practice was not found in Norway. The section concerning assessing efficacy of the medication-use system was not up to the mark of Pakistan's studied hospitals, as it was in Norway. Migbaru et al. (2016) and Nigah et al. (2010) also reported the need for proper management of inventory control in hospital pharmacies in Ethiopia and India, respectively.

Preparing, packaging, and labeling medications

This study found that the two Norwegian hospitals had compounding facilities, sterile preparation areas, unit dose dispensation for admitted patients, and unit doses packaged with a barcode. For Pakistan, neither hospital had such practices. Good dispensing practices ensure that medication is delivered to patients with appropriate directions in a pack which preserves the potency of the drug up to the time of use (Athuraliya et al., 2016). Compounding, then, is akin to the preparation of unlicensed drugs, both sterile and non-sterile, with the intention to fulfill patient-specific needs which are not covered by licensed medications. Compounded drugs are usually prepared extemporaneously in community as well as hospital pharmacies for custom orders (Falconer & Steadman, 2017). According to Fadel et al. (2017), minimum standards and best practice recommendations to ensure safety of sterile compounding were reported in hospitals in Saudi Arabia, the United Arab Emirates, Bahrain, Kuwait, Egypt, Malta, the USA, and others. However, advanced technologies were not implemented by the majority of the hospitals.

Medication dispensing and delivery

Pharmacists must have instant access to the patient's diagnosis as well as the expected pharmacotherapeutic or medical purposes of drugs. Half the studied hospitals in both Pakistan and Norway revealed that pharmacists had such access. Vocal drug orders must be given only in extraordinary and emergency situations. In such cases the order should be repeated back to the prescriber to confirm it, and written confirmation must be presented to the pharmacy within a specified period (Spivey, 2012). Documented policy and procedure for oral medication orders existed in only half the studied hospitals of Pakistan, while Norway was fully compliant—at least in the two studied hospitals. All medication-orders should be prospectively reviewed by a pharmacist and evaluated concerning relevance to patient and clinical outcome before dispensation of the first dose, unless there is an emergency (Spivey, 2012). However, the study found that pharmacists reviewed medication orders in 50% of the subject hospitals in Pakistan, and in all the Norwegian counterparts. There were well-defined policies and procedures for medication delivery and administration in all of Norway's studied hospitals, and no such practice was found in the two hospitals in Pakistan. In France, it was reported that a wide range of errors occurred during the dispensing process following ASHP practice guidelines (Bohand et al., 2009).

Monitoring medication use

Pharmacists along with other hospital personnel should find and frequently modify strategies concerning medication error and adverse drug event interception and documenting (ASHP, 1995). However, this study revealed that there was no process to routinely observe and document workload and performance of the pharmacy department in any of the studied hospitals from Pakistan and only half those in Norway. There was an existing program for observing drug consumption and costs in 50% of Pakistan's studied hospitals, and the same was true in Norway. Pharmacists were involved in multidisciplinary efforts to avert, sense, and settle drug-related problems in 50% of the studied hospitals in Pakistan, whereas in Norway pharmacists in all the studied hospitals carried out this activity. Similarly, pharmacists were involved in strategies and methodologies concerning medication error and adverse events in 50% of the studied hospitals in Pakistan, and all the studied hospitals in Norway. Hospital patients might need constant observation of their drug therapy and effects to deal with new or recurring drug-associated problems. Whether for a new problem or subsequent monitoring, the pharmacist evaluates the particular pharmacotherapeutic problem in light of the overall medical and drug history (Burns, 2008). The study revealed that in 50% of the studied hospitals in Pakistan, pharmacists conducted medication therapy monitoring, while this practice was common in both hospitals in Norway. However, in half the studied hospitals in Pakistan, pharmacists were involved in educating and counseling patients while this practice was not found in Norway. According to Saffouh El Hajj et al. (2011), the lowest incidence of agreement across the drug procurement, distribution process statements, and monitoring medication use was observed for the adequacy of medication supply statements (33% of all respondents).

Evaluating the effectiveness of the medication-use system

Drug shortages have been recognized as a public health problem in several regions around the world. It can impair the quality and effectiveness of patient care, and increase the cost of therapy (Bochenek et al., 2018). Therefore, there must be well-defined policies and procedures to cope with shortages of medications. However, significant differences ($P<0.05$) were found between Pakistan's and Norway's studied hospitals in the documentation of pharmacist-provided care services, ongoing programs for supervising drug consumption and costs, policies and procedures for optimal use of antimicrobial agents, pharmacists monitoring patients' laboratory reports of microbial considerations or appropriate diagnostic markers, and suggesting prescribers. In Oslo, a hospital pharmacy operating group was established to deal with shortages of medications in all of the hospital regions. As a result, these shortages were controlled efficiently (Bochenek et al., 2018). In Italy, the introduction of policies and procedures for optimal use of antimicrobial agents resulted in significant decreases in adverse events (Bassetti et al., 2000). According to Chukwuani et al. (2002), noticeable gaps in knowledge regarding rational drug use still exist among the cadres of healthcare professionals in Nigeria.

Research

As with any discipline, research is vital for the development of hospital as well as clinical pharmacy service. The pharmacist must instigate, contribute to, and encourage clinical as well as practice-associated research that supports the aims and intentions of an institution (Puglisi et al., 2018). The study found that pharmacists participating in and supporting clinical and practice-related research relevant to the goals, purposes, and assets of the particular

hospital were significantly different ($P<0.05$) in the studied hospitals of Pakistan, compared to Norway where all the questioned pharmacists were involved in such activities. According to Moles (2015), clinical pharmacy in Australia has been guided through the development and update of the Standards of Practice for Clinical Pharmacy, published in 2013, and pharmacists actively participate in research-oriented programs and activities. However, poor implementation of research-oriented policies in hospital pharmacies was found in Middle East countries (Kheir et al., 2008).

CONCLUSION

This study compared healthcare services and practices in hospital pharmacies in Pakistan and Norway. The evaluation was based on the ASHP guidelines for the systematic assessment of minimum standards in hospital pharmacies. These guidelines are built upon several standards regarding practice management, medication use policy development, optimizing medication therapy, drug product procurement and inventory management, preparing, packaging, and labeling medications, dispensing and delivery of medications, monitoring medication use, evaluating the effectiveness of the medication-use system, and research to improve the provision of services. After surveying for all of these standards, it was found that the studied hospital pharmacies in Norway had better utilization of practice management standards than those hospital pharmacies in Pakistan. This study was the first of its kind to explore differences and similarities between hospitals in Pakistan and Norway. It found that the quality and degree of services provided by hospital pharmacies in Pakistan was not up to the mark. Therefore, there is a need for states, NGOs, academic institutions, hospitals, and other health-related organizations to understand the necessity of hospital pharmacy practices in Pakistan, so as to deliver quality services and ensure patient safety. Furthermore, this study identified opportunities for improving and expanding the services provided by the pharmacy departments in both Pakistan and Norway. An international collaboration between countries could advance the provision of pharmacy services and ensure that patients receive the care they deserve. Based on the study outcomes, our proposed solutions are labor and resource-intensive and would require standardization and oversight. Nevertheless, accurate medication lists across the healthcare continuum are of paramount importance. It is also suggested that pharmacy practice could be improved through cooperation, sharing successes, providing examples of specialized pharmacy services, and encouraging student exchanges. Moreover, the Ministry of National Health Services in Pakistan could improve hospital pharmacy services through the following steps: first, unfreeze the existing situation, which can be done by showing that reasons for change outweigh arguments against change; second, transition the system to a new equilibrium; and finally, freeze the new system, thereby ensuring that people do not revert to the old ways.

REFERENCES

1. Abdel-Qader, D. H., Harper, L., Cantrill, J. A., & Tully, M. P. (2010). Pharmacists' interventions in prescribing errors at hospital discharge. Drug safety, 33(11), 1027-1044.

2. Alomi, Y., Mudaiheem, H., Alsharfa, A., Albassri, H., & Alonizi, K. (2016). National Drug Information Center Services through the Ministry of Health Hotline Calling Center (937) in Saudi Arabia. Advances in pharmacoepidemiology and drug safety, 5(1), 1-7.

3. Alsultan, M. S., Khurshid, F., Salamah, H. J., Mayet, A. Y., & Al-jedai, A. H. (2012). Hospital pharmacy practice in Saudi Arabia: Prescribing and transcribing in the Riyadh region. Saudi pharmaceutical journal, 20(3): 203-210.

4. Al-Fadel, N., Mahmoud, M. A., Dabliz, R., Tabbara, O., & Aljadhey, H. (2016). Implementation of safety standards of compounded sterile preparations in hospital pharmacies: a multinational cross-sectional study. European journal of hospital pharmacy, 23(6), 339-342.

5. American Society of Health-System Pharmacists. (1995). ASHP guidelines: minimum standard for pharmacies in hospitals. American Society of Health-System Pharmacists. American journal of health-system pharmacy, 52(23), 2711-2717.\

6. American Society of Health-System Pharmacists. (2010). ASHP guidelines on remote medication order processing. American journal of health-system pharmacy, 67(8), 672-677.

7. American Society of Health-System Pharmacists. (2013). ASHP guidelines: minimum standard for pharmacies in hospitals. American journal of health-system pharmacy, 70(18), 1619-1630.

8. Anderson, S. (2002). The state of the world's pharmacy: a portrait of the pharmacy profession. Journal of interprofessional care, 16(4), 391-404.

9. ASHP–SHM joint statement on hospitalist–pharmacist collaboration. American Journal of Health System Pharmacy, 65(3), 260-263.

10. Atif, M., Azeem, M., Sarwar, M. R., Malik, I., Ahmad, W., Hassan, F., Rehman, A., & Rana, M. (2018).

11. Evaluation of prescription errors and prescribing indicators in the private practices in Bahawalpur, Pakistan. Journal of the Chinese Medical Association, 81(5); 444-449.

12. Athuraliya, N., Walkom, E., Dharmaratne, S., & Robertson, J. (2016). Assessing medication packaging and labelling appropriateness in Sri Lanka. Journal of pharmaceutical policy and practice, 9(1), 38

13. Baldwin, J. N., & Dole, E. J. (2003). ASHP statement on the pharmacist's role in substance abuse prevention, education, and assistance. American journal of health-system pharmacy, 60(19), 1995-1998.

14. Bassetti, M., Di Biagio, A., Rebesco, B., Cenderello, G., Amalfitano, M. E., & Bassetti, D. (2000). Impact of an antimicrobial formulary and restriction policy in the largest hospital in Italy. International journal of antimicrobial agents, 16(3): 295-299.

15. Bernstein, W. N. (2008). Clean spaces. A look at the revised and reissued USP 797 pharmacy design regulation. Health facility Management, 21(10): 63–66.

16. Bellingham, C. (2007). How to design pharmacy premises to support pharmacy services delivery. Pharmaceutical journal, 279(7467): 225-231.

17. Bochenek, T., Abilova, V., Alkan, A., Asanin, B., de Miguel Beriain, I., Besovic, Z., Vella Bonanno, P., Bucsics, A., Davidescu, M., De Weerdt, E., & Duborija-Kovacevic, N. (2018). Systemic measures and legislative and organizational frameworks aimed at preventing or mitigating drug shortages in 28 European and Western Asian Countries. Frontiers in pharmacology, 8, 942.

18. Bohand, X., Aupée, O., Le Garlantezec, P., Mullot, H., Lefeuvre, L. & Simon, L. (2009). Medication dispensing errors in a French military hospital pharmacy. Pharmacy world & science, 31(4): 432-438.

19. Bond, C. A., & Raehl, C. L. (2007). Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. Pharmacotherapy, 27(4): 481-493.

20. Burns, A. (2008). Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). Journal of the american pharmacists association, 48(3), 341-353.

21. Butt, S. E., & Acar, I. P. (2013). Modeling independent pharmacy staff scheduling. European international journal of science and technology, 2(9), 101-108.

22. Chamoun, N., Usta, U., Karaoui, L. R., Salameh, P., Hallit, S., Shuhaiber, P., Henaine, A. M., Akiki, Y., Zeenny, R. M., & Iskandar, K. (2020). Current trends in hospital pharmacy practice in Lebanon. Hospital pharmacy, 55(2), 112-118.

23. Cobaugh, D. J., Amin, A., Bookwalter, T., Williams, M., Grunwald, P., LaCivita, C., & Hawkins, B. (2008).

24. Coleman, J. J., Pontefract, S, K. (2016) Adverse drug reactions.

25. Cooper, R. J., Lymn, J., Anderson, C., Avery, A., Bissell, P., Guillaume, L., Hutchinson, A., Murphy, E., Ratcliffe, J., & Ward, P. (2008). Learning to prescribe–pharmacists' experiences of supplementary prescribing training in England. BMC medical education, 8(1), 57.

26. Chircu, A., Sultanow, E., & Saraswat, S. P. (2014). Healthcare RFID in Germany: an integrated pharmaceutical supply chain perspective. Journal of applied business research (JABR), 30(3), 737-752.

27. Chukwuani, C. M., Onifade, M. & Sumonu, K. (2002). Survey of drug use practices and antibiotic prescribing pattern at a general hospital in Nigeria. Pharmacy world and science, 24(5): 188-195.

28. Doucette, W. R., McDonough, R. P., Klepser, D., & McCarthy, R. (2005). Comprehensiv medication therapy management: identifying and resolving drug-related issues in a community pharmacy. Clinical therapeutics, 27(7): 1104-1111.

29. Doupi, P., Renko, E., & Giest, S. (2010). Country Brief: Norway

30. Dückers, M., Faber, M., Cruijsberg, J., Grol, R., Schoonhoven, L., & Wensing, M. (2009). Safety and risk management in hospitals: Health Foundation.

31. Falconer, J. R., & Steadman, K. J. (2017). Extemporaneously compounded medicines. Australian prescriber, 40(1), 5.

32. Graban, M. (2016). Lean hospitals: improving quality, patient safety, and employee engagement: CRC press.

33. Hirani, S. A. A., & Farlane, J. M. (2016). Medication errors by novice nurses in a pediatric and neonatal care setting of Pakistan: Analysis of problems and proposed solutions. Pediatric Neonatal Nursing, 2(1); 13-25.

34. Sanghera, N., Chan, P., Khaki, Z. F., Planner, C., Lee, K. K., Cranswick, N. E., & Wong, I. C. (2006). Interventions of hospital pharmacists in improving drug therapy in children. Drug Safety, 29(11), 1031-1047.

35. Ioannidis, J. P., & Lau, J. (2001). Evidence on interventions to reduce medical errors. Journal of general internal medicine, 16(5), 325-334.

36. Isfahani, S. S. N., Mirzaeian, R., & Habibi, M. (2013). Assessment of pharmacy information system performance in selected hospitals in Isfahan city during 2011. Jundishapur journal of natural pharmaceutical products, 8(1), 3.

37. Jafree, S. R., Zakar, R., Zakar, M. Z., & Fischer, F. (2017). Assessing the patient safety culture and ward error reporting in public sector hospitals of Pakistan. Safety in Health, 3(1), 10.

38. Khan, T. (2011). Challenges to pharmacy and pharmacy practice in Pakistan. The Australasian medical journal, 4(4), 230.

39. Kheir, N., Zaidan, M., Younes, H., El Hajj, M., Wilbur, K., & Jewesson, P. J. (2008). Pharmacy education and practice in 13 Middle Eastern countries. American journal of pharmaceutical education, 72(6): 565-569.

40. King, K., Bungard, T., McAlister, F., Ackman, M., Simpson, S., & Teo, K. (2000). Quality improvement for CQI. Preventive medicine and management care, 1(3), 129-137.

41. Pedersen, C. A., Schneider, P. J., & Scheckelhoff, D. J. (2011). ASHP national survey of pharmacy practice in hospital settings: prescribing and transcribing-2007. American journal of health system pharmacy, 68: 669-688.

42. Mills, A., Vaughan, J. P., Smith, D. L., Tabibzadeh, I., & Organization, W. H. (1990). Health system decentralization: concepts, issues and country experience: World Health Organization.

43. McDowell, A. L., & Huang, Y.-L. (2012). Selecting a pharmacy layout design using a weighted scoring system. American journal of health-system pharmacy, 69(9), 796-804.

44. Moles, R. J., & Stehlik, P. (2015). Pharmacy practice in Australia. The Canadian journal of hospital pharmacy, 68(5): 418.

45. Migbaru, S., Yigeremu, M., Woldegerima, B., & Shibeshi, W. (2009). ABCVEN matrix analysis of pharmaceutical inventory management in tikur anbessa specialized hospital for the years 2009 to 2013, Addis Ababa, Ethiopia. Indian journal of basic applied medicine research, 5: 734-743.

46. Neuhauser, M. M., Wiley, D., Simpson, L., & Garey, K. W. (2004). Involvement of immunization-certified pharmacists with immunization activities. Annals of Pharmacotherapy, 38(2): 226-231.

47. Nigah, R., Devnani, M., & Gupta, A. K. (2010). ABC and VED analysis of the pharmacy store of a tertiary care teaching, research and referral healthcare institute of India. Journal of young pharmacists, 2(2): 201-205.

48. Odedina, F. T., Sullivan, J., Nash, R., & Clemmons, C. D. (2002). Use of pharmacoeconomic data in making hospital formulary decisions. American journal of health-system pharmacy, 59(15), 1441-1444.

49. Penm, J., Chaar, B., Dechun, J., & Moles, R. (2013). Formulary systems and pharmacy and therapeutics committees in the Western Pacific Region: exploring two Basel Statements. American journal of health-system pharmacy, 70(11), 967-979.

50. Pedersen, C. A., Schneider, P. J., & Scheckelhoff, D. J. (2008). ASHP national survey of pharmacy practice in hospital settings: prescribing and transcribing-2007. American journal of health system pharmacy, 65: 827-843.

51. Prot-Labarthe, S., Bussières, J.-F., Brion, F., & Bourdon, O. (2007). Comparison of hospital pharmacy practice in France and Canada: can different practice perspectives complement each other? Pharmacy world & science, 29(5), 526-533.

52. Puglisi, M. P., Johnson, C. L., Vellurattil, R., Wilcox, M., Slonek, J., Mukherjee, K., & Gentry, E. J. (2018). Mentor perceptions of the value of a fourth year research project for Doctor of Pharmacy students. Pharmacy education, 18, 217-223.

53. Puigventós, F., Santos-Ramos, B., Ortega, A., & Durán-García, E. (2010). Structure and procedures of the pharmacy and therapeutic committees in Spanish hospitals. Pharmacy world & science, 32(6), 767-775.

54. Sabzghabaee, A. M., Badri, S., Ashari, H. E., & Hosseini, S. M. (2010). The design and equipment of hospital pharmacies in Isfahan, Iran. Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences, 15(4), 219.

55. Saffouh El Hajj, M., Zaidan, M., & Jewesson, P. J. (2011). Pharmacist characteristics, medication use perceptions, and professional satisfaction: a first national survey in the state of Qatar. Journal of healthcare leadership, 3: 9-28.

56. Sanghera, N., Chan, P. Y., Khaki, Z. F., Planner, C., Lee, K. K., Cranswick, N. E., & Wong, I. C. (2006).

57. Sujan, M. A., Habli, I., Kelly, T. P., Gühnemann, A., Pozzi, S., & Johnson, C. W. (2017). How can health care organizations make and justify decisions about risk reduction? Lessons from a cross-industry review and a healthcare stakeholder consensus development process. Reliability Engineering & System Safety, 161; 1-11.

58. Spivey, P. (2012). Ensuring good dispensing practices. MDS-3 (Managing Drug Supply 3rd Ed): Managing Access to Medicines and Health Technologies. Arlington, VA. USA: Management Sciences for Health.

59. Nizar, H., & Chagani, P. (2016). Analysis of health care delivery system in Pakistan and Singapore.

International journal of nursing education, 8(2), 21-26.

60. Tomich, D. J., & Dydek, G. J. (2006). The Policy and Procedure Manual. Handbook of institutional pharmacy practice, 297.

61. Vlasses, P. H., Wadelin, J. W., Travlos, D. V., & Rouse, M. J. (2012). Accreditation council for pharmacy education: annual report. American journal of pharmaceutical education, 76(8).

62. Wiedenmayer, K., Summers, R. S., Mackie, C. A., Gous, A. G., Everard, M., Tromp, D., & Organization, W. H. (2006). Developing pharmacy practice: a focus on patient care: handbook: Geneva: World Health Organization.

63. Zerrin Toklu, H. (2013). Problem based pharmacotherapy teaching for pharmacy students and pharmacists. Current drug delivery, 10(1), 67-70.

ASESSING NON-TRADITIONAL ADMISSIONS PATHWAYS IN PHARMACY

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ABSTRACT

Pharmacy is a career that requires a specific foundation in the basic, social, and administrative sciences. Those foundational courses do not always fit within a specific undergraduate program's requirements. Moreover, those curricular admission requirements are not so extensive as to require 120 credit hours required for an undergraduate degree. As a result, students often apply to Doctor of Pharmacy programs with a wide variety of backgrounds and experiences. As tuition rises and competition for applicants increases, many colleges and schools of pharmacy have revisited their curricular admissions requirements and attempted to find ways to either streamline those requirements to allow students to complete those requirements in a more expedient fashion, or become more flexible in evaluating curricular admissions requirements. These changes simultaneously raise accreditation concerns, and the Accreditation Council for Pharmacy Education (ACPE) requires that colleges and schools of pharmacy assess such changes to ensure that all students admitted are equally prepared to succeed in the program.

The North Dakota State University (NDSU) School of Pharmacy (SoP) offers a Doctor of Pharmacy program. Historically, students apply to the program after 3 years of undergraduate study, and spend another 4 years in the Doctor of Pharmacy program (7 years total). These applicants are known as "Traditional Pathway" applicants. Within the Traditional Pathway, students complete three years of chemistry coursework (one year each of general chemistry, organic chemistry, and biochemistry/molecular biology). In 2018, the SoP began offering an "Early Admissions Pathway" (EAP) into the Doctor of Pharmacy program for high achieving high school students. Among other features, the program includes a streamlined curriculum in which the organic chemistry sequence is streamlined into a single semester (5 credit) course, and the biochemistry/molecular biology sequence is also condensed into a single (5 credit) course. This allows students complete all curricular requirements for admission in 2 years, rather than 3. EAP students complete the Doctor of Pharmacy program in 6 years, rather than 7, and all students complete the same courses during the professional component of the program (i.e., during the final 4 years).

ACPE required the SoP to assess whether students completing the EAP route into the Doctor of Pharmacy program fared the same, better, or worse than students admitted through the Traditional Pathway. This study undertakes the required assessment. The subjects of this analysis are the NDSU Doctor of Pharmacy graduating classes of 2023 and 2024. Each student cohort was assessed on a selected group of pre-professional (i.e., during the first 2-3 years) courses prior to admission, and professional courses completed after admission; that is, during the final 4 years of the program. These assessments were conducted cumulatively across groups of courses, as well as for specific courses. Each student was evaluated based on her/his cumulative, pre-professional, and professional course grade point averages. We find that the Traditional Pathway students only outperformed the EAP students in one category: the average GPA in selected pharmacy classes for the class of 2024. In the single analysis that traditional students outperformed EAP student's GPA average, traditional students only came out on top by 1.61% (0.05 GPA points). Concomitantly, EAP students performed better than Traditional Pathway students in most (but every) other assessments. Moreover, EAP student grade point averages exceeded those of the Traditional Pathway students by an average of 9.67% in these assessments. We conclude that EAP students, when comparing average GPA in pre-pharmacy and professional curriculum, are non-inferior to traditional students.

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TRACK:

PUBLIC HEALTH

COVID-19 DEATHS: DISPARITY AND THE IMPACT OF HOSPITAL AND COMMUNITY CHARACTERISTICS SHORT TITLE: DISPARITY IN COVID-19 DEATHS

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COVID-19 DEATHS: DISPARITY AND THE IMPACT OF HOSPITAL AND COMMUNITY CHARACTERISTICS SHORT TITLE: DISPARITY IN COVID-19 DEATHS

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ABSTRACT

The United States has one of the highest cumulative mortality of coronavirus disease 2019. Understanding which specific community and hospital factors have contributed to disparities in COVID-19 mortality are important to inform public health strategies.

This study aimed to explore the potential relationship between community and hospital characteristics and their impact on COVID-19 incidence and mortality.

We examined the effect of hospital service area (HSA) community and hospital characteristics (2013-2018) on publicly available COVD-19 (2020) mortality data. We employed a multi-level mixed-effects generalized linear model using Negative Binomial regression on 2,514 HSAs. Our outcome measure was COVID-19 number of deaths.

We found that higher uninsured percentage, adults 65 and older percentage, diversity score, and total population per 100,000 were all associated with a significantly higher rate of death. Lower market competition was associated with a significantly lower rate of death. West region showed a significantly higher rate of death compared to all other regions. None of the hospital characteristics were significant in predicting the number of deaths from COVID-19.

The association between some community characteristics and higher COVID-19 deaths demonstrated that access to healthcare, either for COVID-19 infection or worse health from higher disease burden or worsening comorbidities, is strongly associated with COVID-19 deaths. Hospital characteristics do not play a significant role in predicting COVID-19 deaths, indicating public health, as opposed to acute care provision, is more strongly associated with community health and, ultimately, the COVID-19 mortality.

INTRODUCTION

In 2019, the United States (U.S.) was assessed by the Global Health Security Index to be the best-prepared country in the world to manage a pandemic.[1] However, the COVID-19 pandemic has highlighted that multiple inefficiencies exist within our healthcare system. To date, most studies have sought to identify community or hospital characteristics associated with COVID-19 mortality, but not both. Thus, the purpose of this study is to explore the potential relationship between the community and hospital characteristics and their impact on COVID-19 mortality.

BACKGROUND

Recent studies have explored a variety of patient-level demographic and socioeconomic related to COVID-19. In particular, comorbidities among patients have been associated with an increased risk of contracting COVID-19 and developing complications, with the risk of complications rising with age.[2] Patients with COVID-19 risk factors identified by the Centers for Disease Control and Prevention (CDC) were also found to suffer from higher mortality than those who did not possess those risk factors.[3] Additionally, several cohort studies have indicated that COVID-19 has a disproportionate impact on African Americans, counties with a high population of African Americans, patients of older age, patients insured by either Medicare or Medicaid, uninsured patients, and patients living in poorer areas.[4] Moreover, studies have identified several risk factors specific to increasing racial and ethnic minorities' risk of COVID-19 infection and mortality. Those risk factors include lack of access to healthcare services, being a frontline worker, living in highly dense communities, lack of higher education, and lower socioeconomic status than their White counterparts.[5] These findings align with the previous association between racial and ethnic minorities and poorer health outcome.[6]

As it pertains to health delivery, hospital intensive care units (ICUs) have been crucial in treating patients with severe COVID-19 complications.[7] However, a 2019 study found that hospitals with ICU beds are not equitably distributed across the U.S. and were predominantly located in metropolitan areas.[8] Importantly, as the pandemic began to overwhelm the healthcare system across the country, particularly in states deemed COVID-19 epicenters, it was believed that areas with a higher average number of hospitals were more equipped to manage the increased demand for COVID-19, therefore potentially experiencing lower COVID-19 mortality.[7] This aligns with a previous study of other morbidities, which indicated a relationship between market competition and mortality, whereby hospitals located in more competitive markets had significantly lower mortality for certain morbidities.[9] Moreover, an assessment of these epicenters showed that they tended to be located in areas with a higher proportion of racial and ethnic minority groups.[10] This was of concern as social determinants of health, such as healthcare access, have historically prevented these racial and ethnic minority groups from possessing equal opportunities for economic, physical, and emotional healthcare services.[11] Therefore, the virus seemed to be disproportionally affecting minority groups, further exacerbating the healthcare issues of populations who have traditionally been at a higher risk of illness and mortality.

METHODOLOGY/PROCEDURES

Data Sources and Study Population

We utilized 2013 – 2018 data from the Area Health Resource File (AHRF) , CDC Atlas file, American Hospital Association (AHA) annual survey, and the Current Population Survey. Further, the Johns Hopkins COVID-19 county-level data and the COVID-19 United States state policy database, were also used. The AHRF data provides health information data at the national, county, and state levels. The CDC Atlas file contains data on disease prevalence such as diabetes. The AHA annual survey collects characteristic, financial, and demographic information from thousands of hospitals in all 50 states. The Current Population Survey collects year estimates on

U.S. population including demographic and socioeconomics information. Next, the Johns Hopkins COVID-19 provides times-series and cumulative data on COVID-19, while the COVID-19 U.S. State Policy dataset contains information regarding State-level COVID-19 mitigation public health policies aimed at promoting and enforcing social distancing practices.

Variables

Our outcome variable was the number of deaths from COVID-19, as measured by the number of total deaths between February 29th, 2020 (first confirmed death in the U.S.) and October 2nd, 2020.

The primary state-level variable utilized is a COVID-19 mitigation score. This mitigation score was developed as a composite score, reflective of all 50 states' COVID-19 mitigation public health policies, all aimed at promoting and enforcing social distancing practices. All policies: (1) stay at home, (2) mandatory quarantine for travelers, (3) shuttering of non-essential businesses, (4) prohibition of large public/private gatherings, (5) restaurant capacity limits, are equally weighted. Equal weights were assigned as no substantial evidence exists indicating a hierarchical order of importance amongst the five policies. The mitigation score is measured by the sum number of days between each policy's effective data and roll-back date, or up to the study's selected cut-off date of October 2nd, 2020. A higher COVID-19 mitigation score is indicative of longer-running social distancing policies.

All hospital and community characteristics were aggregated at the health service area (HSA). An HSA is defined as one or more counties that are relatively self-contained to routine hospital care provision. Service areas that include more than one county are characterized by travel between the counties for routine hospital care. The HSAs have been widely used in health services research.[12]

We included the average Herfindahl-Hirschman Index (HHI), an HHI close to 1 indicates a monopoly in the market, and the COVID-19 incidence rate, measured by the number of cases per 100,000 individuals. Additional characteristics were the average percentage of uninsured individuals, the average percent of the population that is elderly (65+), average diabetes prevalence (adjusted by age), and the average population density. Next, the total number of health professional shortage counties and regions (Northeast, Midwest, South, and West) were included. HSAs crossing state or regional boundaries were excluded from the sample. Finally, we included the average entropy index score, which measures the evenness of the distribution in the proportions of the U.S. six racial/ethnic groups in the community.

The HSA-level characteristics we used include the total number of hospital beds, number of ICU beds, not-for-profit hospital ownership, teaching hospitals, system membership, and the average percentage of Medicare payor mix.

Statistical Methods

Descriptive and multivariate analysis were carried out using STATA version 14SE software. Means and standard deviations were used to describe the variables. A multi-level model was fitted due to the data's hierarchical nature, whereby we needed to account for HSA-level data and state-level data. This study's outcome variable was a count variable; therefore, we selected a multi-level mixed-effects generalized linear model (using Negative Binomial regression with robust error variance) based on results from a COUNTFIT procedure. The COUNTFIT procedure examined all count models' model fit (Poisson, negative binomial, zero-inflated Poisson, zero-inflated negative binomial models, zero-truncated Poisson, and zero-truncated negative binomial models) using model parameters and fit such as residuals, county by residuals, and log-likelihood. We checked clustering effect and variability using

Intra-class Correlation Coefficient, the Proportional Change in Variance, and the Incident Rate Ratio (IRR). We adjusted for population density as an exposure term in the model.

RESULTS

The summary statistics for both the outcome variable and covariates are provided in Table 1. Most of the covariates demonstrated low to medium variance with the coefficient of variation less than or equal to 1. The population- related covariates demonstrated high variance, so did the outcome variable (number of deaths).

Table 1. Descriptive Summary of Study Variables within Hospital Service Area (N=2,514**)**

	Mean	Standard Deviation
Community Characteristics (2013-2018)		
Number of Health Professional Shortage Areas	1.41	1.56
Average Uninsured Percentage	12.44	4.75
Average Diabetes Mellitus Prevalence Percentage	9.95	3.23
Average Adults 65 and older Percentage	17.76	4.23
Average Diversity Score	0.59	0.30
Average Market Competition	0.69	0.34
Average Total Population per 100,000	3.65	11.91
Average Population Density	479.12	2085.92
Average Number of Counties	1.55	0.03
Hospital Characteristics (2013-2018)		
Average Number of Intensive Care Unit Beds	11.57	15.79
Average Number of System Hospitals	1.04	1.36
Average Number of Teaching Hospitals	0.66	1.33
Average Number of Not-For-Profit Hospitals	0.98	1.26
Hospitals' Average Medicare Percentage	53.10	16.22
Average Number of Hospitals	1.55	1.53
COVID-19 (2020)		
Deaths	259.70	900.52
Incidence Rate (per million???)	1985.78	1282.63
Social Distancing Mitigation Score	56.40	26.45

The IRR estimates from the negative binomial model are provided in Table 2. The dispersion parameter estimate is significantly greater than zero at 0.58 with a 95% confidence interval (0.54, 0.62), which justifies that the negative binomial regression model provided a better fit than Poisson regression. It was discovered that the significant covariates were all from the community characteristics: uninsured percentage, adults 65 and older percentage, diversity score, market competition, total population per 100,000, COVID-19 incidence rate, and region. None of the hospital characteristics were significant in predicting the number of deaths from COVID-19.

Specifically, given the other variables held constant in the model: the rate for deaths would be expected to increase by a factor of 1.03 with one unit increase in the uninsured percentage ($p<0.001$); increase by a factor of 1.01 with one unit increase in the adults 65 and older percentage ($p<0.05$); increase by a factor of 1.25 with one unit increase in the diversity score ($p<0.05$); increase by a factor of 1.01 with one unit increase in total population per 100,000 ($p<0.001$); and decrease by a factor of 0.62 as markets become more monopolistic (that is an HHI score closer to 1) ($p<0.001$). Compared with the Northeast region, the rate of deaths in the West region would be expected to increase by a factor of 2.86 ($p<0.01$). In contrast, the death rates in the Midwest and South regions were slightly lower, but the differences were not significant. The impact of the COVID-19 incidence rate in the area was marginal.

Table 2. Multilevel Generalizes Linear Regression of COVID-19 Death and Hospital Service Area Characteristics

(N=2,514)

	Incident Rate Ratio	95% Confidence Interval
Community Characteristics (2013-2018)		
Number of Health Professional Shortage Areas	1.0045	[0.9224,1.0938]
Uninsured Percentage	1.0332***	[1.0159,1.0507]
Diabetes Mellitus Prevalence Percentage	1.0094	[0.9958,1.0231]
Adults 65 and older Percentage	1.0148*	[1.0035,1.0263]
Diversity Score	1.2511*	[1.0034,1.5600]
Market Competition	0.6164***	[0.5370,0.7076]
Total Population per 100,000	1.0088***	[1.0048,1.0127]
Region (Reference: Northeast)		
Midwest	0.9082	[0.4289,1.9228]
South	0.8546	[0.4289,1.7029]
West	2.8641**	[1.4185,5.7827]
Hospital Characteristics (2013-2018)		
Intensive Care Unit Beds	1.0003	[0.9976,1.0029]
System Hospitals	0.9615	[0.9103,1.0156]
Teaching Hospitals	0.9908	[0.9366,1.0481]
Not-For-Profit Hospitals	0.9595	[0.9109,1.0106]
Hospitals' Average Medicare Percentage	1.0013	[0.9988,1.0038]
Number of Hospitals	1.0386	[0.9370,1.1511]
COVID-19 (2020)		
Incidence Rate	1.0004***	[1.0004,1.0005]
Social Distancing Mitigation Score	1.0018	[0.9920,1.0116]
Alpha	0.5765***	[0.5399,0.6156]

Exponentiated coefficients; 95% confidence intervals in brackets
$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

DISCUSSION

Long-standing systemic health and social inequities have put many people, particularly racial and ethnic minority groups, at an increased risk of becoming ill or dying from COVID-19. Social determinants of health have historically contributed to healthcare inequity.[11] Our study's findings demonstrate that community characteristics play a significant role in determining the total deaths of COVID-19 in 2020, while the hospital characteristics measures do not. Specifically, we found that people who live in communities with a higher uninsured population, a higher percentage of the elderly population, and a more diversified population have a higher COVID-19 mortality.

It is very concerning that communities with a higher uninsured population have higher COVID-19 mortality. The pandemic has resulted in more than 20 million workers losing their jobs, and correspondingly, many of those have lost their employer-sponsored health insurance.[13] As such, it is not clear to what degree pandemic-related job loss and corresponding health insurance loss have attributed to additional COVID-19 deaths. However, it is clear from this analysis that having the ability to access healthcare, either for actual COVID-19 infection or worse health due to higher disease burden and worse underlying health conditions, is strongly associated with COVID-19

deaths.

The CDC reports that age increases the risk for hospitalizations and deaths related to COVID-19—eight out of ten COVID-19 deaths reported in the U.S. have been in adults 65 years of age and older.[14] Additionally, a study of COVID-19 mortality at the county level demonstrated that a higher percentage of residents living in poverty, higher density, higher population, and a higher percentage of residents over the age of 65 were all significantly associated with a higher number of deaths in a county.[15] Our study further supports these findings and extends them by considering both the influence of hospital characteristics and adjusting for population density as an exposure term in our multivariable models.

About diversity, our findings add to the current knowledge as they suggest that increased diversity (decreased homogeneity) within a hospital service area is more likely to be associated with an increased number of COVID-19 related mortality. This is consistent with Sze, Pan, Nevill, Gray, Martin, Nazareth, Minhas, Divall, Khunti, Abrams [16]'s results that individuals of African American and Asian ethnicities were at an increased risk of COVID-19 infection compared to White individuals, with Asians having a higher risk of death. Furthermore, another study has illustrated the strong association between race, ethnicity, culture, socioeconomic status, and health outcomes.[17] Compared to Whites, African Americans were four times more likely to die from complications from COVID-19. Similarly, Asians and mixed-ethnic groups were found to be about 1.8 times more likely to die from the COVID-19 complications.[18] These findings are of critical public health importance regarding informing the design of interventions, specifically aimed at reducing morbidity and mortality amongst ethnic minority groups. Urgent actions that are likely to reduce these inequities such as ensuring adequate income protection, reducing barriers in accessing healthcare, and providing culturally and linguistically appropriate public health communications should be taken. While our study examines community diversity and its association with COVID-19 mortality, the previous study lends to the idea that future research may be pertinent to examine what factors within diverse communities are impacting COVID-19 mortality.

The current study also indicated that areas with more monopolistic hospital markets had significantly lower COVID-19 deaths. This is an interesting finding since it would suggest an association with fewer hospitals and a reduced mortality. This may also be attributed to the lower population density since hospitals are more likely to locate in areas with more populations. Further health utilization among HSAs provides valuable information for health care planning for communities.[19] Another finding of this study is that compared to the Northeast region, the West region was almost three times more likely to die from COVID-19. Out of the 11 states located in the west region, 6 states (California, Hawaii, Nevada, Alaska, Colorado, Washington) were on the top 18 most diverse states in the U.S.[20] A more diversified community means more minorities, and therefore, worse outcomes.[21]

Understandably, the COVID infection rate is highly correlated with the total deaths of COVID. Interestingly, the social distancing mitigation factors (school closures, limits on mass gatherings, shelter-in-place orders, travel restrictions, and bans on non-essential commercial activities) do not significantly impact COVID-related total deaths, which contradicts with other studies that higher social distancing was associated with a 29% reduction in COVID-19 incidence and a 35% reduction in COVID-19 mortality.[22] Therefore, the impact of social distancing on total COVID deaths still needs further exploration.

We also found that none of the six-hospital characteristics were significantly related to the total COVID-19 deaths, further demonstrating the importance of social and community characteristics to the pandemic and the total deaths. Hospitals are an essential part of the entire system to treat COVID patients; however, the community characteristics surrounding a hospital have a more significant impact on COVID deaths than hospital characteristics.

Limitations

There are several limitations to our study. First, the pandemic has resulted in millions of workers losing their jobs and health insurance.[13] However, this study's data did not consider the most recent (pandemic-related) uninsured population statistics due to data unavailability.[23] Nevertheless, the effect of the uninsured population on total COVID-19 deaths would be even greater. Second, this study only examined COVID-19 data from March 2020 to October 2020. While many states experienced a significantly long winter from November 2020 to February 2021, the effect of COVID-19 may be biased in this study due to the missing winter data. However, community characteristics such as the elderly, diversity, competition should still show a similar effect or even bigger effect with more complete data. Third, this study included the total number of days a mitigation policy has been in place and doesn't account for when the policy was first enacted. Studies suggest that the enactment of non-pharmaceutical policies earlier during the pandemic is positively correlated to a lower death rate.[24]

Policy and practical implications

Results from this study provide a clear indication that community characteristics are critical drivers of COVID-19 mortality. The lack of difference regarding mortality when considering hospital characteristics provides evidence that public health, as opposed to acute care provision, is more strongly associated with community health and, ultimately, the COVID-19 mortality. This emphasis on public health efforts vs the provision of care impacting mortality was also experienced during the Acquired Immunodeficiency Syndrome (AIDS) epidemic. Due to the incurability of the disease, public health policy emphasized education as a prevention effort over disease control efforts.[25]

The U.S. has historically placed the heaviest funding and policy emphasis on acute care delivery. In 2012, the Institutes of Medicine published a report title "For the Public's Health: Investing in a Healthier Future".[26] This report emphasized the need for sustainable funding to provide for the country's public health needs adequately.

However, while there has been improved public health funding,[27] current events identify a significant COVID-19 response gap. Further, the COVID-19 pandemic has continued to highlight the lack of public health infrastructure in multiple areas, including the risk of chronic disease,[28] immunizations,[29] and among social determinants of health such as lack of adequate housing,[30] lack of clean water,[31] and poor health literacy,[32] among others. Ultimately these outcomes provide evidence that we have a population that is often not at an optimal health status because we have failed to focus on preventative strategies and instead have focused on reactionary clinical care—in the case of chronic diseases, this is not due to a lack of education on preventative strategies but rather due to financial incentives to prioritize the delivery of clinical care.[33]

Population-based activities are needed more than ever, and the COVID-19 virus has provided ample evidence regarding the fragmentation of care available to the poor, underserved, and those from diverse communities. As evidenced by our continued spending on acute care for chronic conditions,[33] we also have ample opportunity to intervene in a person's health much earlier through population-based approaches to reduce risks associated with poor health behaviors.[34] These are not new concepts, as there is plenty of research promoting public health intervention benefits. However, the repercussions of failing to address those needs continue to become more evident as our COVID-19 mortality continue to climb.

REFERENCES

1. Nuclear Threat Initiative, Johns Hopkins Center for Health Security and Economist Intelligence Unit. *The Global Health Security Index.* 2019.

2. Adams ML, Katz DL, Grandpre J. Population-Based Estimates of Chronic Conditions Affecting Risk for Complications from Coronavirus Disease, United States. *Emerg Infect Dis.* 2020;26(8).

3. Mallow PJ, Belk KW, Topmiller M, Hooker EA. Outcomes of Hospitalized COVID-19 Patients by Risk Factors: Results from a United States Hospital Claims Database. *Journal of health economics and outcomes research.* 2020;7(2):165.

4. Price-Haywood EG, Burton J, Fort D, Seoane L. Hospitalization and Mortality among Black Patients and White Patients with Covid-19. *N Engl J Med.* 2020;382(26):2534-2543.

5. Centers for Disease Control and Prevention. Health Equity Considerations and Racial and Ethnic Minority Groups. https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html. Published 2020. Accessed.

6. Hamadi H, Apatu E, Loh CA, Farah H, Walker K, Spaulding A. Does level of minority presence and hospital reimbursement policy influence hospital referral region health rankings in the United States. *Int J Health Plann Manage.* 2019;34(1):e354-e368.

7. Li R, Rivers C, Tan Q, Murray MB, Toner E, Lipsitch M. The demand for inpatient and ICU beds for COVID-19 in the US: lessons from Chinese cities. *MedRxiv.* 2020.

8. Halpern NA, Tan KS. United States resource availability for COVID-19. *Society of Critical Care Medicine.* 2020.

9. Haley DR, Zhao M, Spaulding A, Hamadi H, Xu J, Yeomans K. The Influence of Hospital Market Competition on Patient Mortality and Total Performance Score. *Health Care Manag (Frederick).* 2016;35(3):266-276.

10. Platt L, Warwick R. Are some ethnic groups more vulnerable to COVID-19 than others. *Institute for fiscal studies.* 2020;1.

11. Office of Disease Prevention Health Promotion. Social Determinants of Health | Healthy People 2020. Office of Disease Prevention and Health Promotion. https://www.healthypeople.gov/2020/topics- objectives/topic/social-determinants-of-health. Published 2021. Accessed Januart 4, 2021.

12. Haynes AG, Wertli MM, Aujesky D. Automated delineation of hospital service areas as a new tool for health care planning. *Health Serv Res.* 2020;55(3):469-475.

13. Bureau of Labor Statistics. The Employment Situation —January 2021. U.S. Department of Labor. https://www.bls.gov/news.release/pdf/empsit.pdf. Published 2021. Accessed.

14. Centers for Disease Control Prevention. Older Adults and COVID-19 | CDC. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html. Published 2020. Accessed.

15. Fielding-Miller RK, Sundaram ME, Brouwer K. Social determinants of COVID-19 mortality at the county level. *PLoS One.* 2020;15(10):e0240151.

16. Sze S, Pan D, Nevill CR, et al. Ethnicity and clinical outcomes in COVID-19: a systematic Review and Meta-analysis. *EClinicalMedicine.* 2020:100630.

17. Yaya S, Yeboah H, Charles CH, Otu A, Labonte R. Ethnic and racial disparities in COVID-19-related deaths: counting the trees, hiding the forest. *BMJ Global Health.* 2020;5(6):e002913.

18. Office for National Statistics. Updating ethnic contrasts in deaths involving the coronavirus (COVID-19), England and Wales - Office for National Statistics. Office for National Statistics. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/updating

ethniccontrastsindeathsinvolvingthecoronaviruscovid19englandandwales/deathsoccurring2marchto28july2020. Published 2021. Accessed.

19. Yang DX, Makarov DV, Gross CP, Yu JB. Geographic-Level Association of Contemporary Changes in Localized and Metastatic Prostate Cancer Incidence in the Era of Decreasing PSA Screening. *Cancer Control.* 2020;27(1):1073274820902267.

20. McCann A. Most & Least Diverse States in America. https://wallethub.com/edu/most-least-diverse-states- in-america/38262. Published 2020. Accessed.

21. Artiga S, Orgera K, Pham O. Disparities in Health and Health Care: Five Key Questions and Answers. Issue Brief Web site. https://www.kff.org/racial-equity-and-health-policy/issue-brief/disparities-in-health- and-health-care-five-key-questions-and-answers/. Published 2020. Accessed.

22. VoPham T, Weaver MD, Hart JE, Ton M, White E, Newcomb PA. Effect of social distancing on COVID- 19 incidence and mortality in the US. *medRxiv : the preprint server for health sciences.* 2020:2020.2006.2010.20127589.

23. Heffetz O, Reeves D. *Measuring Unemployment in Crisis: Effects of COVID-19 on Potential Biases in the CPS.* National Bureau of Economic Research;2021.

24. McGrail DJ, Dai J, McAndrews KM, Kalluri R. Enacting national social distancing policies corresponds with dramatic reduction in COVID19 infection rates. *PLoS One.* 2020;15(7):e0236619.

25. National Research Council (US) Panel of Monitoring the Social Impact of the AIDS Epidemic. *The Social Impact Of AIDS In The United States.* Vol The Practice of Public Health. 2 ed. Washington, DC: National Academies Press (US); 1993.

26. Institute of Medicine. Public Health Strategies to Improve. In: *For the Public's Health: Investing in a Healthier Future.* Washington (DC): National Academies Press (US); 2012.

27. Watson CR, Watson M, Sell TK. Public Health Preparedness Funding: Key Programs and Trends From 2001 to 2017. *Am J Public Health.* 2017;107(S2):S165-S167.

29. Cockerham WC, Hamby BW, Oates GR. The Social Determinants of Chronic Disease. *Am J Prev Med.* 2017;52(1, Supplement 1):S5-S12.

30. Malik AA, McFadden SM, Elharake J, Omer SB. Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine.* 2020;26:100495.

31. Fransham M, Dorling D. Homelessness and public health. In: British Medical Journal Publishing Group; 2018.

32. Schaider LA, Swetschinski L, Campbell C, Rudel RA. Environmental justice and drinking water quality: are there socioeconomic disparities in nitrate levels in US drinking water? *Environmental Health.* 2019;18(1):1-15.

33. Abel T, McQueen D. Critical health literacy and the COVID-19 crisis. *Health Promot Int.* 2020;35(6):1612-1613.

34. Levine S, Malone E, Lekiachvili A, Briss P. Health care industry insights: why the use of preventive services is still low. *Prev Chronic Dis.* 2019;16.

35. Dieleman JL, Cao J, Chapin A, et al. US Health Care Spending by Payer and Health Condition, 1996-2016., *JAMA.* 2020;323(9):863-884.

SUBSTANCE USE DISORDERS AMONG YOUTH IN THE JUVENILE JUSTICE SYSTEM

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ABSTRACT

The presenters address how substance use disorders have become more prevalent among juvenile justice system detainees in recent years. A review of substance abuse among adolescent offenders is offered, indicating a serious need for treatment. The speakers examine the existing literature, therapies used in the past, and the barriers to youth in the juvenile justice system engaging in substance abuse treatment. Recent statistics of substance abuse disorders, barriers to treatment, detection methods and interventions, and causes of substance misuse among youth involved in the juvenile justice system are assessed. The presenters discuss the implications for young detainees to underline the critical need for attention to the subject. Recommendations to reduce high rates of substance use and enhance treatment approaches are provided.

INTRODUCTION

Substance use disorders (SUD) have become more common among juvenile justice system detainees in recent years. The high prevalence of substance misuse among juvenile offenders point to a critical need for treatment. Adolescents' participation in substance use treatment, however, is hampered by a number of obstacles. Past studies illustrate the one-of-a-kind therapies employed in the past. Many interventions use both qualitative and quantitative approaches to examine substance use problems among young offenders. Researchers identify current "best practices" in the treatment of substance use disorders among youth in the juvenile justice system, despite the fact that no single treatment technique has been proven to be the most effective.

HIGH RATES OF SUBSTANCE USE PROBLEMS AMONG YOUTH IN THE JUVENILE JUSTICE SYSTEM

Substance abuse is common among youth involved in the legal system (Johnson, Tran, 2020; Phillippi, Thomas, Lentini, 2020); up to one-third of them fit the criteria for a substance use disorder, and juvenile offenders who have substance abuse issues are more likely to re-enter the system (Kwochka, Dir, Salyers, Aalsma, 2020). Every year, more than 2 million young people are detained (Nelson, 2022), with approximately half of them having a substance use disorder (Davis, Janssen, Dworkin, Dumas, Goldbach, Monterosso, 2019). In comparison to 6%-10% in school and community samples, between 62%- 81% of youth involved in the juvenile justice system have SUDs (Davis, Janssen, Dworkin, Dumas, Goldbach, Monterosso, 2019). Early drug use is linked to later substance addiction problems, with older teens and young adults showing the most dramatic increases in harmful behavior (“Teenage Drug…”, 2022). Substance abuse problems are more common in troubled youth, including homeless youth, school dropouts, and those with mental health illnesses (McClelland, Elkington, Teplin, Abram, 2004)---many of whom are involved in the juvenile justice system. 2.08 million, or 8.33 percent, of 12 to 17-year-olds in the United States said they used drugs in the previous month (“Teenage Drug…”, 2022). When those in detention are included, over one-fifth of those entering the juvenile justice system (17%) fit criteria for substance use disorders, a figure that jumps to 39 percent (“Juvenile Drug Courts…”, n.d.). Moreover, substance abuse is so frequent among adolescents, with over two-thirds reporting alcohol usage by the 12th grade and 14% reporting illicit drug use (Sharma, 2020). There is a robust and well-established relationship between juvenile criminal offending and adolescent substance use and substance use disorders.

Of note is the LGBTQ community, a combination of groups that are diverse with respect to gender, sexual orientation, race/ethnicity, and socioeconomic status. As Winerman explains this community of people are also dealing with complex issues including substance abuse, suicide, and mental health disparities ("American Psychological Association", 2017). In addition, the article, "Preventing Substance Abuse Among LGBT Teens", the authors noted LGBTQ teens are more likely than their nonLGBTQ peers to abuse drugs and alcohol based on stigma, harassment and even rejection by their families ("Youth Report", n.d.).

Adolescents in the juvenile justice system have much greater rates of substance abuse and mental health problems than their non-offending peers in the community (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Arrested teenagers also start using drugs sooner than other adolescents, putting them at a higher risk of developing more serious addictions (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). In 2000, 56 percent of boys and 40 percent of females who were arrested for criminal offenses tested positive for drug usage (Chassin, n.d.). Though estimates vary depending on population characteristics and assessment criteria, up to 80% of justice-involved youth report lifetime substance use; additionally, up to 40% of justice-involved youth meet criteria for a substance use disorder, and a significant number of youth offenders suffer from multiple comorbid mental health and substance use disorders (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Evidently, this research shows that these rates have only increased from 2000 to 2019, indicating that this is still a public health crisis.

To date, Information about rates of arrest of LGBTQ youth in particular, for drug-related offenses is limited. Based on sources available, a correlation notes LGBTQ youth are at increased risk of arrest for these types of offenses. Also, LGBTQ youth may use substances at higher rates than their peers, possibly as a coping mechanism related to the discrimination and stigma they experience related to their sexual orientation or gender identity according to this case research ("Centers for American Progress…", n.d.).

BARRIERS TO ENGAGEMENT IN SUBSTANCE USE TREATMENT AMONG YOUTH IN THE JUVENILE SYSTEM

There are a number of impediments that prohibit juvenile justice system inmates from receiving substance abuse and behavioral therapy. For example, according to a 2008 assessment, diversion programs are underutilized due to a lack of case management and initial intake examination (Chassin, n.d.). This is a problem because if juveniles can be screened before being committed to facilities, they may be able to enter diversion programs instead, allowing them to receive treatment in the community. Similarly, according to another study from 2019 (eleven years later), there is a lack of systematic mental health and substance use screening in the juvenile justice system (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Clearly, there has been no improvement in the lack of systematic mental health and substance abuse screening throughout the years. Even if screening was provided promptly, identifying teenage substance use and substance use problems remains difficult (Chassin, n.d.). Self-report data is used in the majority of standardized tests and structured interviews, which requires youths to not only understand complicated questions but also to provide accurate and honest answers (Chassin, n.d.). Adolescents may be hesitant to confess their substance usage because it is illegal (Chassin, n.d.). Indeed, at least half of teenage cocaine users (as detected by bioassay) denied taking cocaine recently in one research of juvenile inmates; self-reports may thus be more accurate for previous use than for present use (Chassin, n.d.). Furthermore, many juvenile justice detainees have low reading skills, making self-administered questionnaires difficult for them to complete since they do not understand the questions (McClelland, Teplin, Abram, n.d.). When interviewers try to figure out what kind of treatment they need, this issue might be a roadblock for adolescents. Another problem with self-reporting is that it is difficult for young people to recollect facts. The use of drugs may impair a subject's capacity to recall exact details. When analyzing youth in the juvenile justice system, impaired recollection makes it difficult to detect trends and details of substance use (McClelland, Teplin, Abram, n.d.).

Aside from the challenges of juvenile self-reporting and screening, there are other hurdles to therapy for youth who are engaged. For example, there is a large gap between a youth's release from incarceration and their initial

interaction with a probation officer in the juvenile justice system, which causes delays in service connection and engagement (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Furthermore, while evidence-based interventions (EBI) for substance use targeting juvenile justice system adolescents exist, high-quality EBIs are frequently unavailable in community mental health clinics (CMHC) (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Aside from a lack of EBI distribution and implementation in CMHCs, there is a lack of behavioral providers and clinicians in community based settings who can deliver these services, and caseloads are sometimes too big to execute intensive treatments (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). It is critical to adopt cost-effective EBIs in community-based settings that appropriately treat substance use among youth in the juvenile justice system. For there to be a decline in substance use disorders among adolescents, the barriers that prevent youth from seeking treatment must be addressed.

DETECTION OF SUBSTANCE USE IN YOUTH IN THE JUVENILE JUSTICE SYSTEM

Researchers have discovered substance use in juvenile justice system adolescents in a variety of methods. Previous research suggests that a combination of self-reports and biological measures is likely required to fully assess young offenders' substance use problems (Chassin, n.d.). The two most popular methodologies for detecting substance use in detained populations are self-report and bioassay (McClelland, Teplin, Abram, n.d.). A mail questionnaire, a self-computerized instrument, or a face-to-face interview can all be used to collect self-report data (McClelland, Teplin, Abram, n.d.). Bioassays, also known as biological measures, can be performed on a variety of tissues and fluids (McClelland, Teplin, Abram, n.d.). Urine, hair, saliva, sweat, blood, and sperm are commonly used. The presumption that the drug or a metabolic byproduct unique to the body's digestion of the drug will be present in the fluids or tissues tested is common to all bioassays (McClelland, Teplin, Abram, n.d.). These two types of detection have been explored by researchers as the most commonly and historically employed approaches among youth in the juvenile justice system.

Similarly, prior research suggests collecting information on substance use using the Diagnostic Interview Schedule for Children (DISC 2.3). Alcohol, cannabis/hashish, uppers/speed, downers, tranquilizers, heroin and opiates, cocaine/ crack cocaine, hallucinogens, and inhalants are all measured with the DISC instrument (McClelland, Teplin, Abram, n.d.; McClelland, Elkington, Teplin, Abram, 2004). The questionnaire inquiries about lifetime usage, age at first use, frequency of use in the previous year, any use in the preceding six months, and therapy (McClelland, Teplin, Abram, n.d.; McClelland, Elkington, Teplin, Abram, 2004). Past researchers have also employed a distinct type of intervention known as Enzyme-Multiplied Immunoassay Tests (EMIT) (McClelland, Teplin, Abram, n.d.). They were utilized to determine whether or not the subjects had used illegal drugs (McClelland, Teplin, Abram, n.d.). The EMIT-10 panel tests for the presence of amphetamines, cocaine, cannabis, and more (McClelland, Teplin, Abram, n.d.). One of the oldest approaches for analyzing substance abuse in youth is to employ these two types of therapies.

Furthermore, there are newer, more current techniques of screening for detecting substance usage in juvenile justice system inmates. CRAFFT, used by trained clinicians, for example, consists of six yes or no questions about substance use (e.g., do you ever use alcohol or drugs to relax; has your family ever expressed concern about your alcohol or drug use) as well as questions about past year substance use frequency, with a higher score indicating more severe substance use problems (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). This has been shown to be a useful clinical tool for determining the risk of substance abuse in children and adolescents (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). It is similar to self-reporting in that it uses questions to detect substance abuse among teenagers.

FORMS OF INTERVENTIONS AMONG YOUTH IN THE JUVENILE JUSTICE SYSTEM

Recent research, notably, depicts more current kinds of individual interventions for juvenile justice system youngsters. Teen Intervene, for example, is based on motivational interviewing and has been shown to effectively reduce mild to moderate substance use among teenagers, particularly among juvenile justice system youngsters

(Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Teen Intervene is a three- to six-session manualized individual-based treatment for teenage substance abuse that employs motivational interviewing, cognitive-behavioral therapy, and self-change principles (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). It has been found to reduce substance usage and enhance motivation to change substance use in adolescent and court-involved teenage substance users (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). This type of intervention consists of elements that can benefit and assist adolescents who need and want to overcome their substance abuse problems.

Furthermore, for adolescents with problematic substance use and more serve substance use disorders, there are several empirically supported outpatient treatment options, including cognitive behavioral therapy (CBT), motivational enhancement treatment (MET), and contingency management (CM) (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). For example, ENCOMPASS is a manualized outpatient intervention that integrates MET, CBT, CM, and medication to treat adolescents with co-occurring drug use and common mental health issues (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). This additional intervention strategy has the potential to reduce both substance abuse and the severity of mental health disorders.

CAUSES OF SUBSTANCE ABUSE IN JUVENILE JUSTICE SYSTEM INVOLVED YOUTH

Although it is impossible to say that substance misuse in children causes delinquent behavior, there is a clear association. Although there is a clear link between the two behaviors, there are a number of factors that lead to youth with substance abuse problems ending up in the juvenile justice system. Some of the same elements that make someone vulnerable to criminal activity also make them vulnerable to substance abuse (Mulvey, Schubert, Chassin, n.d.). Parental substance use disorders, poor parenting, conflictual home situations, and dispositional characteristics like sensation seeking and behavioral disinhibition increase an adolescent's likelihood of taking drugs and alcohol and/or engaging in unlawful behaviors (Mulvey, Schubert, Chassin, n.d.). Adolescents struggling with a particularly challenging or pervasive mix of circumstances, such as academic struggles and a violent family environment, may seek solace in either substances or illicit activities, or both (Mulvey, Schubert, Chassin, n.d.). Learning difficulties, poor mental health, and childhood trauma and adversity have all been linked to an increased chance of a young person becoming involved in the criminal justice system ("Action needed…", 2020). This danger is exacerbated by socioeconomic factors such as inequality and disadvantage ("Action needed…", 2020). Additionally, many youths who are victims of early childhood or teenage violence (e.g., physical abuse, sexual assault, or witnessing interparental violence) are subsequently discovered to be in the juvenile justice system as well (Davis, Janssen, Dworkin, Dumas, Goldbach, Monterosso, 2019). Several sources also agree the LGBT group is more likely to smoke, drink alcohol or use drugs in addition to other major health concerns that include HIV/AIDS, mental illness, substance use, and sexual and physical violence ("Centers for Disease Control…", 2020). Evidently, early childhood factors can play a role among substance use in the juvenile justice system involved youth.

Furthermore, the association between substance use disorders and criminality is not just a personal one. The peer group and/or neighborhood may have a role in the co-occurrence of substance abuse and criminal behavior (Mulvey, Schubert, Chassin, n.d.). An extreme illustration of this dynamic is continued gang involvement, which raises the likelihood of crime and substance use during late adolescence (Mulvey, Schubert, Chassin, n.d.). Similarly, when compared to adolescents who live in more stable communities, youth who live in high-crime districts may be exposed to drugs or recruited for criminal activities at a disproportionate rate (Mulvey, Schubert, Chassin, n.d.). Individual, familial, and environmental factors appear to all play a part in why teenagers with substance abuse problems end up in juvenile court.

IMPLICATIONS FOR YOUTH IN THE JUVENILE JUSTICE SYSTEM

The most important conclusion across all studies is the overall confirmation of high rates of drug usage among juveniles entering custody. According to one study, all (94%) of the youth entering jail had used drugs at some

point in their lives, and 85.4 percent had used drugs in the previous six months (McClelland, Teplin, Abram, n.d.). Per another study, kids in the juvenile justice system are less likely to obtain treatment than their non-offending peers (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). According to researchers, finding adolescents who are in desperate need of help is far more challenging (McClelland, Teplin, Abram, n.d.). According to a distinct study, just one in every eight inmates had used a substance other than cannabis, and neither self-reporting nor urinalysis appear to provide an adequate assessment of such use (McClelland, Teplin, Abram, n.d.). Similarly, there have been no substantial self-reported decreases in substance use (Chassin, n.d.). Self-reporting and urinalysis (EMIT-10) should be utilized in conjunction with other resources, such as histories of substance addiction treatment, records of drug-related attests and charges, and information from families and schools on youth's drug usage, according to a previous study (McClelland, Teplin, Abram, n.d.). As a result, self-reporting and other detection procedures did not yield positive results.

Moreover, research indicates that some therapy actions are required. ENCOMPASS, for example, is required in vulnerable populations with a variety of risk behaviors and illnesses (Aalsma, Dir, Zapolski, Hulvershorn, Monahan, Saldana, Adams, 2019). Other studies indicate that services in communities should be consistent. After detention, most communities lack adequate treatment programs for teenagers, and around half of all youths who require services do not obtain them (McClelland, Elkington, Teplin, Abram, 2004). Furthermore, researchers discovered that high-risk kids without addictions should be targeted because there is a lower probability of substance use escalating into one or more substance use disorders (McClelland, Elkington, Teplin, Abram, 2004). These findings suggest that such factors can help teenagers overcome their substance abuse problems.

RECOMMENDATIONS

Researchers have made a variety of recommendations in their literature. New regulations are needed, according to the researchers, to promote the use of standardized screening procedures and to ensure that screening occurs early enough in the process so that juveniles can be redirected out of the court system and into community-based programs where suitable (Chassin, n.d.). Additional studies are needed to better include teenagers and their families in treatment, as well as to better address environmental risk factors and co-morbid illnesses, before any one treatment technique can be recommended (Chassin, n.d.). Among other literary works, this recommendation that there is no “best practice” for treating substance use among adolescents can be found. Additionally, researchers, on the other hand, make suggestions for future research as well. According to one study, identifying social, psychological, and environmental factors that contribute to the initiation, persistence, and escalation of substance use disorders among youth at risk of delinquency will help overcome them (McClelland, Elkington, Teplin, Abram, 2004). This type of research can aid in the targeting of certain treatment approaches. In addition, policy should promote the adoption of empirically validated therapies and “best practices” within existing programs (Chassin, n.d.). As a result, it should encourage the integration, continuation, and funding of these programs for young offenders both during and after their involvement with the criminal system (Chassin, n.d.).

CONCLUSION

In essence, the high prevalence of substance use problems among juvenile justice system inmates represents a public health crisis. As discussed, harassment, violence, and intolerance of the LGBT population still exists in our society and examples of such are well documented bringing attention to the issues and need for change to prevent them from entering the juvenile justice system. This research concludes there are a number of interrelated factors influencing substance use among juveniles.

The LGBTQ community represents a significant number of individuals in the prison pipeline often resulting from discrimination, homelessness or school drop-outs. A comprehensive report completed by the Gay, Lesbian, and Straight Education Network supports these findings. Moreover, geography influences the behavior and experiences of the LGBT population in addition to life experiences. Datti effectively emphasizes the impact geography could have

on LGBT youth reporting, “Especially in rural environments, LGBT persons may be considered nonexistent, go unaddressed, or, when discussed, be presented in a negative light” (p. 69-70) (“Youth Report”, n.d.). As such, this research demonstrates situations that could push the LGBTQ juveniles into substance use disorders and the criminal justice system.

Past study has revealed the identification of substance abuse, as well as interventions and the ramifications of the findings. However, as previously stated, no “best practice” has been identified for reducing substance use among juvenile justice system inmates. Yet, the unique challenges and needs of this population must be addressed. Future research ideas and recommendations on how to overcome some of the barriers encountered in this area of study are presented by a variety of researchers.

REFERENCES

1. Aalsma, M. C., Dir, A. L., Zapolski, T. C. B., Hulvershorn, L. A., Monahan, P. O., Saldana, L., & Adams, Z. W. (2019, September 6). Implementing risk stratification to the treatment of adolescent substance use among youth involved in the Juvenile Justice System: Protocol of a hybrid type I trial - addiction science & clinical practice. *BioMed Central*. Retrieved January 26, 2022, from https://ascpjournal.biomedcentral.com/articles/10.1186/s13722-019-0161-5

2. Action needed to improve poor health and disadvantage in the youth justice system: University of melbourne. (2020, Jan 17). *Targeted News Service* Retrieved from http://rose.scranton.edu/login?url=https://www.proquest.com/wire-feeds/action-needed-improve-poor-health-disadvantage/docview/2339796126/se-2?accountid=28588

3. American Psychological Association. (n.d.). In brief: June 2017. *Monitor on Psychology*. Retrieved January 26, 2022, from https://www.apa.org/monitor/2017/06/inbrief

4. Centers for American Progress, & Movement Advancement Project. (n.d.). LGBT Criminal Justice Youth - Advancement Project. *LBGT Map*. Retrieved January 26, 2022, from https://www.lgbtmap.org/file/lgbt-criminal-justice-youth.pdf

5. *Centers for Disease Control and Prevention*. (2022, January 5). CDC - BRFSS. Centers for Disease Control and Prevention. Retrieved January 26, 2022, from https://www.cdc.gov/brfss/index.html

6. Chassin, L. (n.d.). Juvenile justice and substance use - ed. Retrieved January 26, 2022, from https://files.eric.ed.gov/fulltext/EJ815080.pdf

7. Davis, J. P., Janssen, T., Dworkin, E. R., Dumas, T. M., Goldbach, J., & Monterosso, J. (2019, July 29). Influences of victimization and comorbid conditions on substance use disorder outcomes in justice-involved youth: A discrete time survival mixture analysis: Development and psychopathology. *Cambridge Core*. Retrieved January 26, 2022, from https://www.cambridge.org/core/journals/development-and-psychopathology/article/abs/influences-of-victimization-and-comorbid-conditions-on-substance-use-disorder-outcomes-in-justiceinvolved-youth-a-discrete-time-survival-mixture-analysis/E1AC371F8EB40877B2F54CB90A4A5D9C

8. Johnson-Kwochka, A., Dir, A., Salyers, M. P., & Aalsma, M. C. (2020, October 8). Organizational structure, climate, and collaboration between Juvenile Justice and Community Mental Health Centers: Implications for evidence-based practice implementation for adolescent substance use disorder treatment - BMC Health Services Research. *BioMed Central*. Retrieved January 26, 2022, from https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-020-05777-3

9. Johnson, M. E., & Tran, D. X. (2020, December 7). Factors associated with substance use disorder treatment completion: A cross-sectional analysis of Justice-involved adolescents - substance abuse treatment, prevention, and policy. *BioMed Centra*l. Retrieved January 26, 2022, from https://doi.org/10.1186/s13011-020-00332-z

10. Juvenile Drug Courts help youth dealing with trauma. *SAMHSA*. (n.d.). Retrieved January 26, 2022, from https://www.samhsa.gov/homelessness-programs-resources/hpr-resources/juvenile-drug-courts-help-youth#:~:text=Juvenile

11. McClelland , G. M., Teplin, L. A., & Abram, K. M. (n.d.). Detection and prevalence of substance use among juvenile detainees. Office of Juvenile Justice and Delinquency Prevention. Retrieved January 26, 2022, from https://ojjdp.ojp.gov/library/publications/detection-and-prevalence-substance-use-among-juvenile-detainees

12. McClelland, G. M., Elkington, K. S., Teplin, L. A., & Abram, K. M. (2004, October). Multiple substance use disorders in juvenile detainees. *Journal of the American Academy of Child and Adolescent Psychiatry*. Retrieved January 26, 2022, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2791706/

13. Mulvey, E. P., Schubert, C. A., & Chassin, L. (n.d.). Substance use and delinquent behavior among serious ... *U.S. Department of Justice*. Retrieved January 26, 2022, from https://www.ojp.gov/pdffiles1/ojjdp/232790.pdf

14. Nelson, L. F., Weitzman, E. R., Levy, S., Ng, M. Y., Harrison, A., Bath, E., Kemp, K., Galbraith, K., Brown, L. K., Tolou-Shams, M., Proctor, S. L., Kopak, A. M., Dauria, E. F., Folk, J., Shumway, M., Marshall, B. D. L., Rizzo, C. J., Messina, N., Covington, S., … Haney-Caron, E. (n.d.). *Journal of Child & Adolescent Substance Abuse*. Retrieved January 26, 2022, from https://www.tandfonline.com/doi/citedby/10.1080/1067828X.2020.1774023?scroll=top&needAccess=true

15. Phillippi, S. W., Thomas, C. L., & Lentini, K. (2020, September 3). Translation of National Juvenile Drug Treatment Court guidelines into statewide standards and practices: A case study - american journal of criminal justice. *SpringerLink*. Retrieved January 26, 2022, from https://link.springer.com/article/10.1007%2Fs12103-020-09563-z

16. Sharma, Manoj, MBBS,PhD.M.C.H.E.S®, & Su, X., PhD. (2020). Association between alcohol and drugs and juvenile delinquency: Implications for alcohol and drug education. *Journal of Alcohol and Drug Education, 64*(2), 3-7. Retrieved from http://rose.scranton.edu/login?url=https://www.proquest.com/scholarly-journals/association-between-alcohol-drugs-juvenile/docview/2507258614/se-2?accountid=28588

17. Teenage drug use statistics [2022]: Data & Trends on abuse. *NCDAS*. (2022, January 21). Retrieved January 26, 2022, from https://drugabusestatistics.org/teen-drug-use/

18. Youth report. *HRC*. (n.d.). Retrieved January 26, 2022, from https://www.hrc.org/resources/youth-report

PUBLIC HEALTH PRACTITIONERS' PURSUIT OF ANTIRACISM

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ABSTRACT

Public health practitioners at the PA Cancer Division decided that to improve situations for all we needed to examine our own thoughts toward health equity within our workplace. Antiracism is the equity piece we examined first. Due to the sensitive nature of antiracism, a toolkit was created with 4 different sections. The toolkit design allows the person to privately consider and work toward understanding his or her feelings in relation to antiracism. A survey was designed to assess the progress toward antiracism. The aim of this study was to determine if the toolkit and thoughtful reflection moved sentiments toward antiracism.

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TRACK:

STUDENT PRESENTATIONS IN HEALTHCARE

CONCERNS AND CONTROVERSIES REGARDING UNAPPROVED OFF-LABEL USE OF KETAMINE IN TREATMENT-RESISTANT DEPRESSION: A U.S PERSPECTIVE

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CONCERNS AND CONTROVERSIES REGARDING UNAPPROVED OFF-LABEL USE OF KETAMINE IN TREATMENT-RESISTANT DEPRESSION: A U.S PERSPECTIVE

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ABSTRACT

In 2021, about 2.8 million adults in the U.S had treatment-resistant depression. Ketamine, an FDA-approved anesthetic, is used in the operating room as an anesthetic. A systematic review of the literature was done by two reviewers searching multiple literature databases. A total of 67 articles met the search criteria. Reviewed evidence indicates that ketamine is quite effective for TRD therapy, but the literature lacks discussions of risk/benefit analysis of the new treatment approach for long-term and repeated use. Any future treatment recommendations with ketamine for mood disorders should consider the infrastructural and cardiorespiratory monitoring aspects of the drug's potential for causing long-term adverse events and abuse.

INTRODUCTION

In the United States of America, there are 8.9 million adults treated for depression. Of the 8.9 million adults, about 2.8 million adults had treatment-resistant depression. Ketamine, an FDA-approved dissociative anesthetic, is used in the operating room and in battlefields. However, physicians use off-label ketamine to treat symptoms of mood disorders in treatment-resistant depression (TRD), bipolar disorder (BD), suicidal ideations(SI), post-traumatic stress disorder (PTSD), borderline personality disorder (BPD), and schizophrenic depression (SCHIZ). Nonetheless, concerns remain regarding the safety and efficacy of off-label use of ketamine for treating mood disorders. The objective of the current study was to examine the extent of off-label use of ketamine, assess the quality of evidence available supporting such use, and document concerns and controversies surrounding the new treatment approach.

Treatment-Resistant Depression

Major depressive disorder (MDD) is a mental medical illness that affects about 6.7% of adults (an estimated 16 million) each year. (MHA, 2022) Depression can be caused by several factors including but not limited to genetics, biochemistry, personality, and/or environmental factors. (MHA, 2022) Treatment-Resistant Depression (TRD) occurs when the insufficient response to two or more anti-depressants (with adequate dose + duration) and psychological counseling do not decrease or ease symptoms. Treatment-Resistant Depression symptoms include but are not limited to severe suicidal thoughts, severe hopelessness, high anxiety, extreme mood swings, increased isolation, and increased depression. (Collins, 2021)

Treatment Approaches in Traditional Depression Management

Selective serotonin reuptake inhibitors (SSRIs) are commonly prescribed for depression. Other agents such as serotonin and norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors (MAOIs) may be prescribed as well. The most commonly prescribed anti-depressants are Prozac, Pristiq, Asendin, and Ensam.(Staff, 2019) Psychotherapy or "speak therapy" along with cognitive behavioral therapy is combined with antidepressants often to treat major depressive disorder (MDD). However, for 70% of treatment-resistant depression (TRD) patients, combining antidepressants, cognitive behavioral therapy, and electroconvulsive therapy (ECT) can often lead to recovery. (Psycom, 2022)

Ketamine - An Overview

Ketamine is an anesthetic with the primary purpose of inducing the loss of consciousness during surgeries. It is also used extensively in veterinary medicine worldwide and has limited use as analgesia. Ketamine belongs to a class of cyclohexanones that allows it to be an intravenous anesthetic, N-methyl-D-aspartate (NMDA) receptor antagonist, analgesic, neurotoxin, environmental contaminant, and xenobiotic. Moreover, ketamine is a controlled substance and a Schedule III non-narcotic substance. As a recreational street drug, ketamine is often called Special K, Purple, Jet, Vitamin K, or Kit Kat. Due to the properties of ketamine, it may be used to facilitate sexual assault. (Drug fact sheet: Ketamine, 2020)

There are four types of ketamine: intravenous ketamine, nasal ketamine, lozenges ketamine, and transmucosal ketamine. However, intravenous ketamine is the most relevant for TRD management and was the focus of our study.

Intravenous (IV) ketamine is administered *directly* into the patient's bloodstream. IV-K effects last from days to weeks. IV-K is *only* administered in an inpatient setting with a physician being present at all times. However, *Nasal Ketamine* or Esketamine is FDA approved with the use of an oral antidepressant for TRD as well and is the only FDA approved drug for such use (Fig.1). (Chen, 2022) The nasal form can be taken, however, in an outpatient treatment setting which makes it more accessible to the public. (FDA, 2019) Patients take a lower dose of esketamine than IV-K in designated and specially equipped clinical facilities. Since Esketamine is a relatively new treatment approach, limited data is available regarding its efficacy in TRD. Available data shows IV-K has added benefits over Esketamine. (Pogored, 2021) (FDA, 2019)

FDA Approval Status & Off-Label Status for Ketamine

Type of Ketamine	Approved For?	FDA Approval for TRD?	Off-Label?
Intravenous Ketamine	Approved as ***Anesthetic***	☒	☑
Nasal Ketamine	Approved as ***TRD Treatment***	☑	☒
Lozenges Ketamine	Approved as ***Anesthetic***	☒	☑
Transmucosal Ketamine	Approved as ***Anesthetic***	☒	☑

Figure 1. FDA approval status of four currently marketed Ketamine types.

The Extent of Non-Medical use of Ketamine

Being a controlled substance and a Schedule III non-narcotic, in 2016 the WHO expert committee declared ketamine should not remain a controlled substance due to its essential role in surgery in developing countries and during emergencies. (U.S National Library, 2020) In 2000,74% of individuals (aged 12 to 25) were in the emergency room due to ketamine-related adverse events. In the United States, the highest abuse of 0.9% occurred due to the use of recreational ketamine in the year 2019. (Palmer, 2021) Moreover, a survey conducted by the University of Michigan ("Monitoring the Future") showed that 3% of high school seniors had used ketamine at least *once* in 2006. The drug has generated much controversy over the years due to its illicit transportation and its uses across international borders and its nonmedical use continues to grow. (Juergens, 2022)

Off-Label Ketamine Usage- Approval Status

The term *Off-Label* is used when a prescription drug is used for *other* means than the officially FDA-approved indication for it. Intravenous ketamine is only approved as an anesthetic by the FDA. This makes IV ketamine use off-label when used to manage treatment-resistant depression and migraines. Off-label use is not illegal but can complicate problems for a drug like IV-K which also has substantial potential for abuse. Drug companies often forgo formal FDA approval pathways for added indications either due to the high cost of development and testing, or lack of available but conclusive evidence. It should be noted that none of the available ketamine types is the first line of treatment for treatment-resistant depression. (Bodie, 2021)

Ongoing Controversies

The major controversy, besides its off-label status, is the abuse potential or the street value of ketamine which creates a problem for approval. Lack of FDA approval leads to prescribers and users avoiding the drug due to a lack of evidence supporting the drug's efficacy for TRD. The limited knowledge and gaps in guidelines regarding IV-K treatment protocols makes it harder for insurers to cover it in their health plans. Lack of insurance coverage can also lower formulary uptake of the drug and discourage adoption by the larger healthcare community. Lastly, there is a shortage of registered facilities with approved mechanisms for therapy implementation and patient monitoring, particularly for longer-term TRD management which can further limit access. In summary, lack of formal approval status, nonmedical & illicit use, infrastructural limitations, uncertainties and variations associated with recommended practice guidelines, ambiguities in administration protocols, lack of consumer awareness, etc. continue to create controversies for a depression treatment that otherwise seems to hold a lot of potential and promise.

The Treatment Process

Recommended administration protocols (Fig.2) for intravenous ketamine require the physician to carefully weigh the benefits from the risks and receive informed consent from the patient and Institutional Review Board (IRB). Once consent is received, medical assessments, toxicology screenings, and vital signs must be assessed before the ketamine administration. IV Ketamine must be administered in a hospital setting with an anesthesiologist, psychiatrist, and clinician present with proper training and education to handle imminent risks and emergencies. Lastly, vital signs must be monitored before, during, and after each infusion. (Serani Psy.D., 2019)

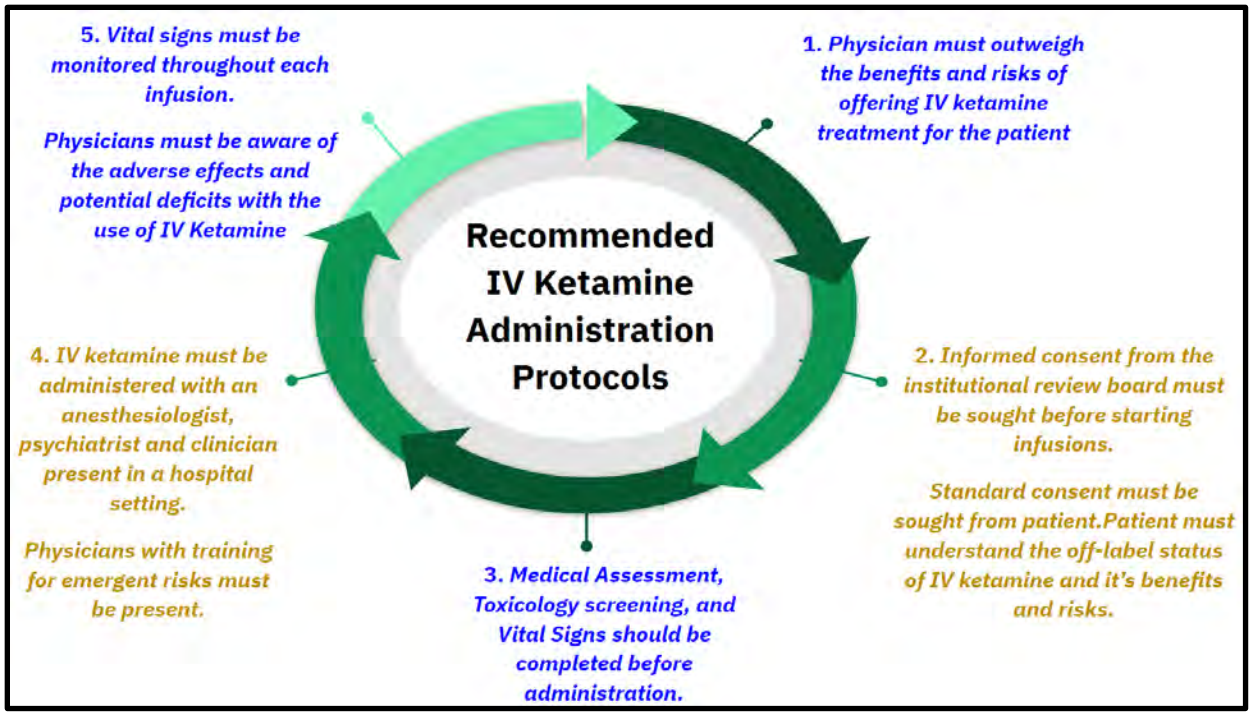

Figure 2. Generally accepted IV-Ketamine treatment protocol in TRD.

Efficacy Advantages and Safety Concerns

Efficacy or the effectiveness of a medical intervention is measured by calculating the desired positive effect. Intravenous ketamine has proven to have rapid efficacy when treating treatment-resistant depression. With the use of IV ketamine, acute and episodic care for treatment-resistant patients is also an option. However, IV Ketamine may have side effects including but not limited to hallucinations, hypertension, dizziness, dissociation, and manic episodes.

METHODOLOGY

A systematic review of the literature (2009-present) was done by two reviewers searching Embase, PubMed/Medline, EBSCO, PsycINFO, ScienceDirect, and Cochrane Library databases. Search terms and screening criteria for article selection included 'treatment-resistant depression', 'ketamine', and 'off-label'. Selected articles were classified and rated according to the type of data source, type of mood disorder, and effectiveness of ketamine use (Fig.3).

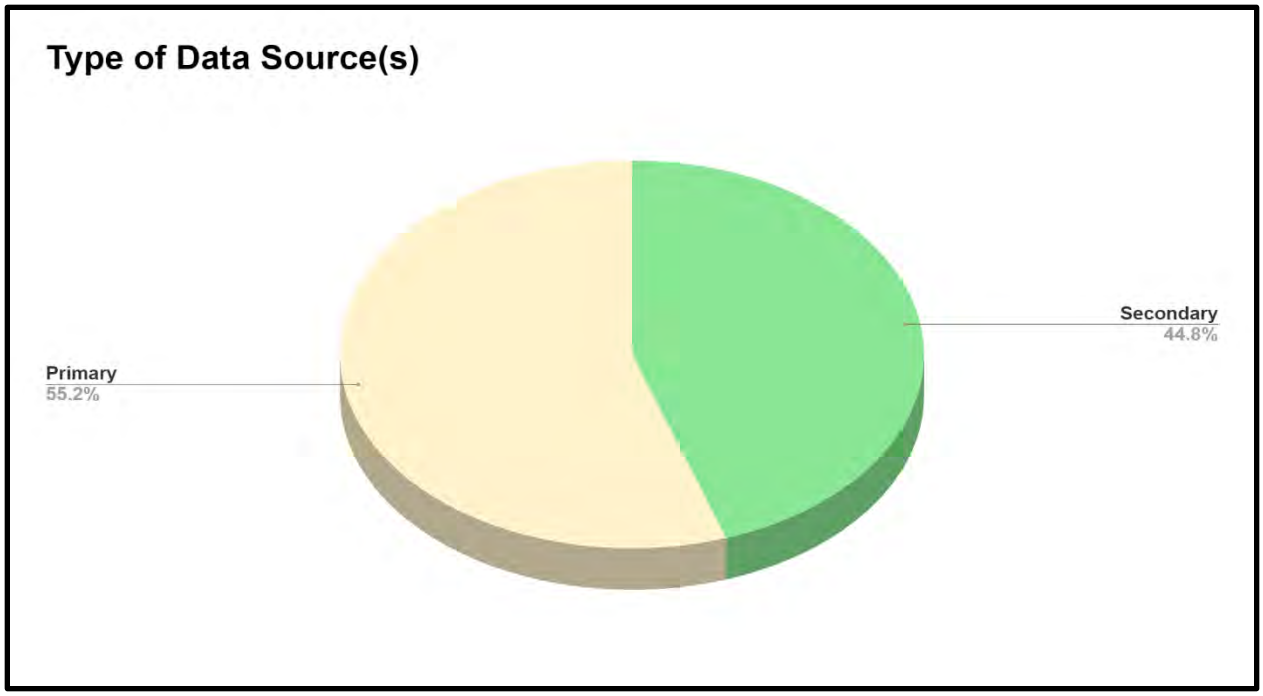

Figure 3. *Primary data* sources include but are not limited to surveys., interviews, experiments, and any data gathered by researchers themselves. *Secondary data* sources included other studies, literature, databases, patient charts, etc.

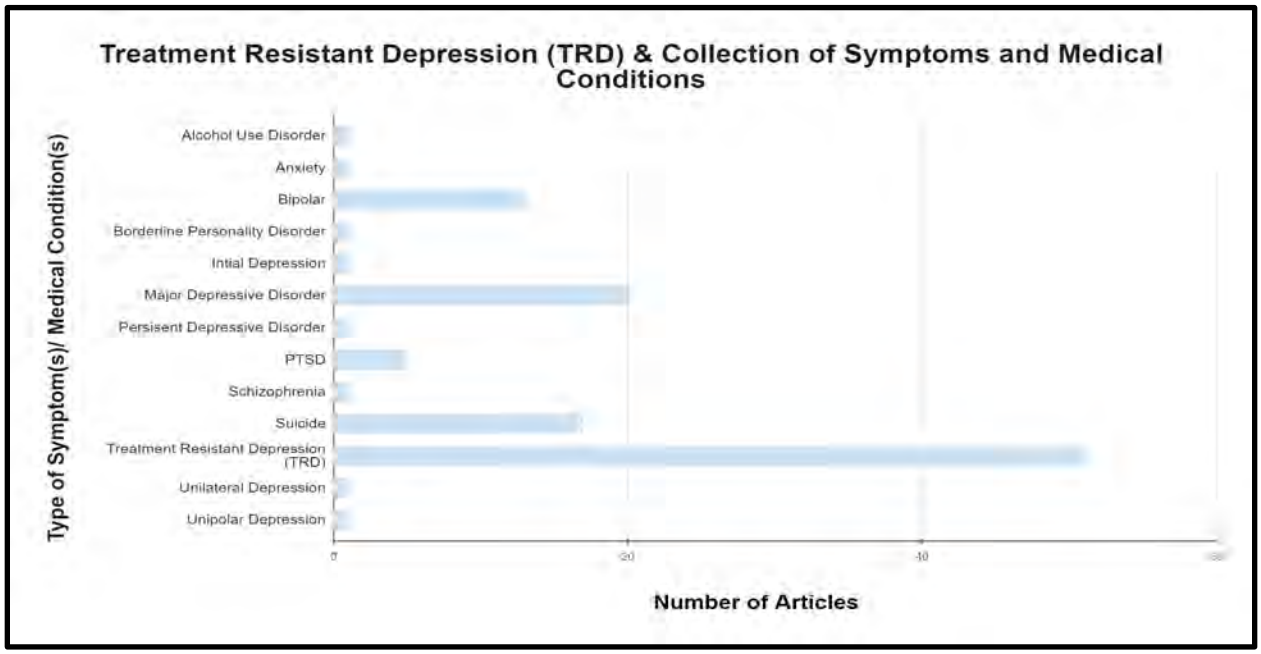

Figure 4. Symptoms monitored, and medical conditions reported along with a diagnosis of Treatment-Resistant Depression (TRD).

RESULTS

The data elements covered in the systematic review included the following.

Relapse, Adverse Effects & Decrease Symptoms

A good number of studies (n=15) reported relapse rates among TRD patients with ketamine treatment. Relapse to IV ketamine after a single infusion was estimated to be about 7 days. Relapse to IV Ketamine after a repeated infusion was estimated to be 14-19 days after a final infusion (Fig. 6). Studies showed a loss of ketamine-related benefits were noted within 3-12 days with a follow-up infusion needed before effects diminished to maintain TRD-related symptoms. Studies (n=5) noted an increase in blood pressure and heart rate after ketamine infusions with systolic blood pressure increasing 20 mm Hg and 13 mm Hg for diastolic averaging above >180 systolic, >110 diastolic, with a heart rate ≥ 110 bpm. Studies also show adverse effects peaked within 1- 2 hours of IV ketamine infusions (Fig 5). Stabilization of Adverse Events occurred between 4-24 hours, depending on the condition severity. Most studies show that a strong effect of a single infusion of IV ketamine was noted within 4-72 hours impacting suicidal ideation symptoms the most. The onset of action was recorded (n=52) to show efficacy effects within 40 minutes of administration, with diminished symptom stability for a maximum of 72 hours, especially with respect to suicidal tendencies. MADRS, MADRS-SI, and HAM-D (Fig.7) were used significantly more times than other rating scales in studies to assess depression levels before and after. Studies also reported several ketamine adverse effects including drowsiness, dizziness, poor coordination, blurred vision, feeling strange/unreal, derealization, dissociation, delusions, hallucinations, and increased hemodynamic changes.

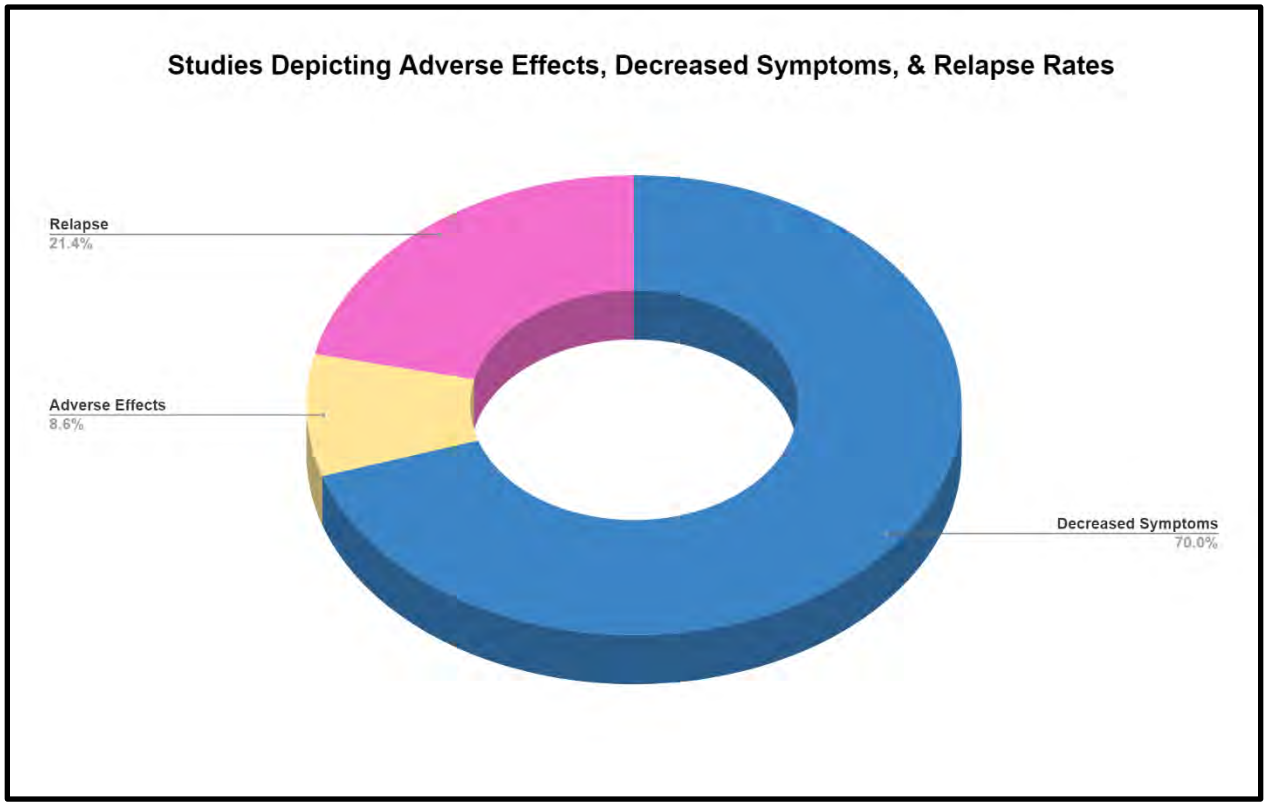

Figure 5. Ketamine impact on TRD symptom reduction, adverse effects, and condition relapse.

Dose Administration and Infusion Rate

Studies (n= 21) used an interval of 0.5 mg/kg dose administration rate. Dose administration varied from 0.1 mg/kg - 3 mg/kg with 0.5 mg/kg being the most successful. Suicidal patients received the highest dose of 3mg/ kg. Infusion rates varied between 2 minutes to 120 minutes with 40 minutes being the most administered and successful, and 2 minutes to 5 minutes being the least successful.

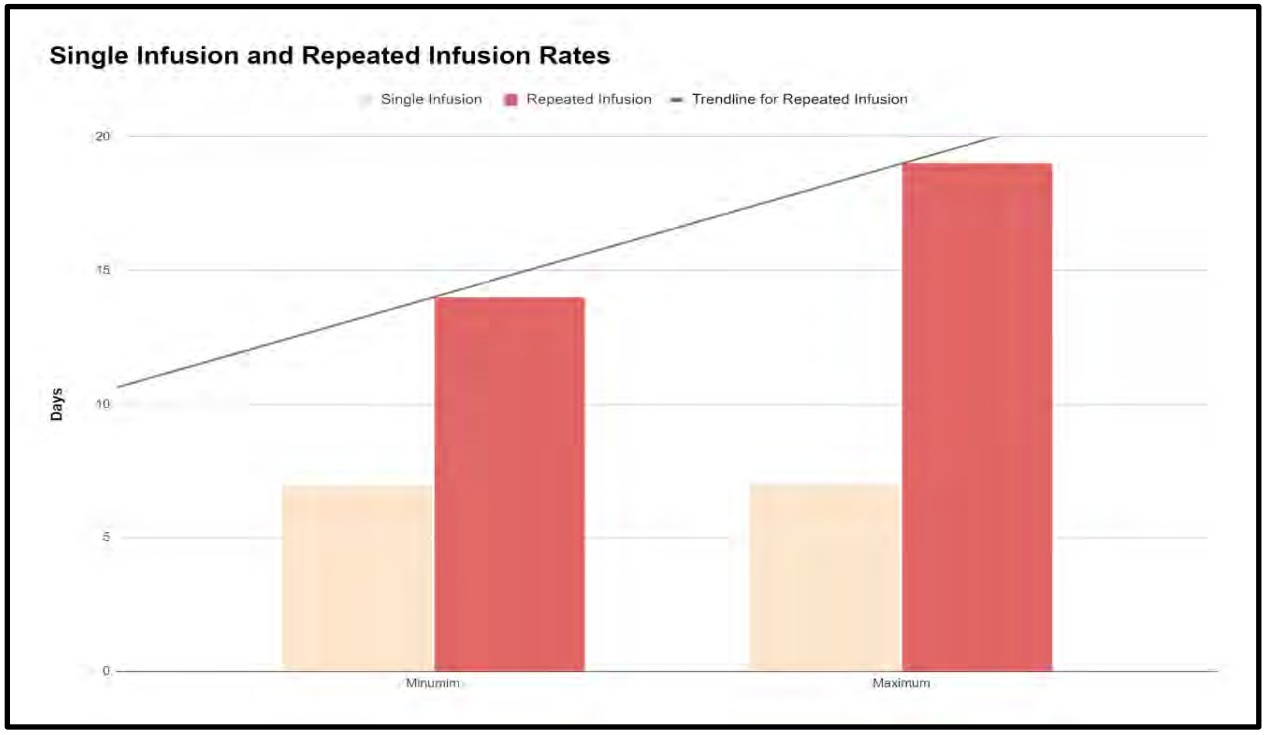

Figure 6. Relapse rates following single & multiple Ketamine infusions (Observed range for relapse day: 7 & 18 days, for single and multiple infusions, respectively)

Rating Scales Used to Measure Treatment Progress and/or Outcomes

Studies (n=28) utilized a variety of rating scales including: *Antidepressant Treatment History Questionnaire (ATHQ),Beck Scale for Suicidal Ideation (BSS),Brief Psychiatric Rating Scale (BPRS),Children's Depression Rating Scale-Revised (CDRS-R),Clinician-Rated Scale for Assessing Childhood Depression (CDRS-R),Clinician-Administered Dissociative States Scale(CADSS),Columbia-Suicide Severity Rating Scale (C-SSRS),General Anxiety Disorder-7 (GAD-7),Hamilton Depression Rating Scale (HAM-D), Implicit Association Test (IAT),InterSePT Scale for Suicidal Thinking (ISST),Montgomery Asberg Depression Rating Scale (MADRS),Montgomery Asberg Depression Rating Scale-Suicide Ideation (MADRS-SI),Quick Inventory for Depressive Symptomatology-Self Report (QIDS-SR-16),Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SI),Schedule for Affective Disorders and Schizophrenia for School-Age Children- Present and Lifetime Version (K-SADS-PL),Sheehan Disability Scale (SDS),Structured Clinical Interview DSM-5 (SCID),Tucker-Lewis Index, and Young Mania Rating Scale.*

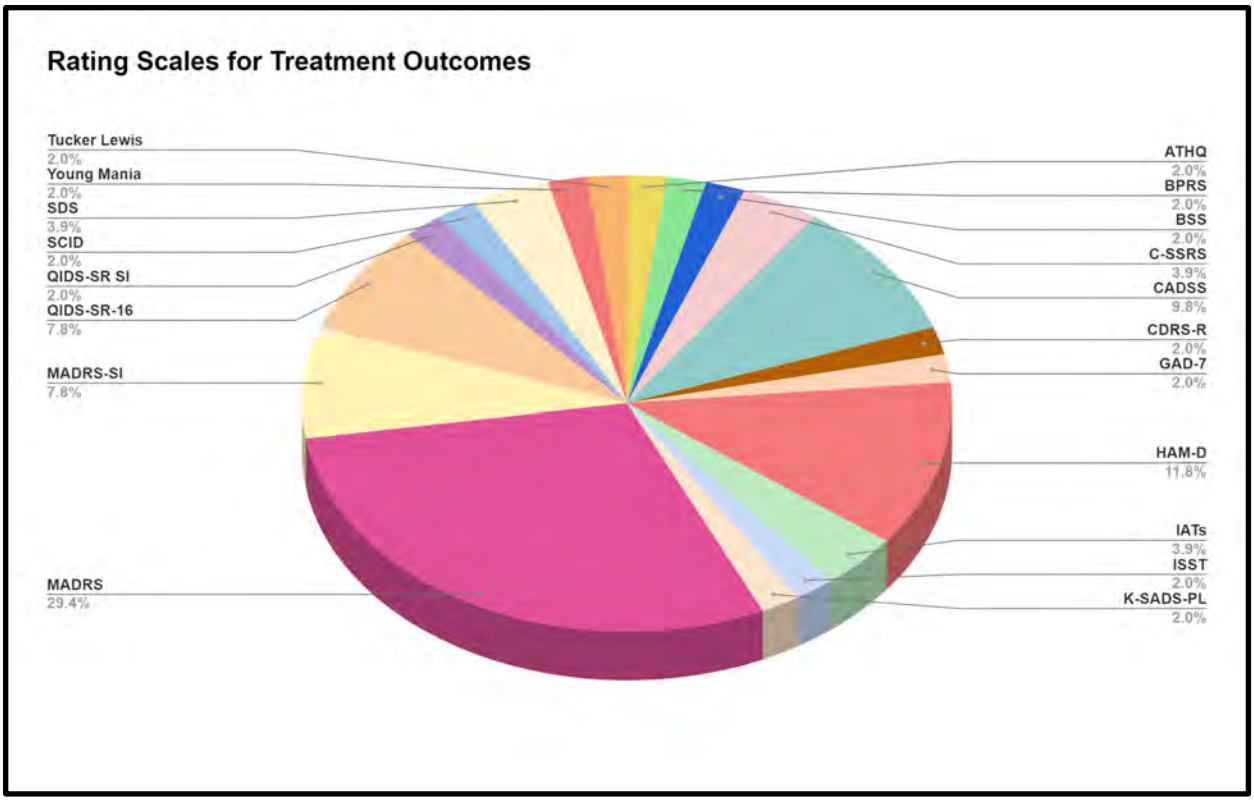

Figure 7. Frequency of rating scale use to track treatment progress.

DISCUSSION

The available evidence shows that IV Ketamine is quite effective in TRD management, despite a wide range of administration protocols used by many studies and a lack of uniformity in the application of treatment guidelines. Standardized, peer-reviewed, and consensus-driven treatment guidelines are necessary before conclusive remarks may be drawn regarding off-label ketamine effectiveness. Due to restrictions related to physician monitored use, and scarcity of resources such as specially designed facilities (ex: inpatient settings), patients are unable to access ketamine treatment broadly. Besides, less is known about the presence of comorbidities and their influence on achieving ketamine efficacy, or about drug interactions that can significantly affect treatment progress. Evidence shows that patients with diabetes mellitus, hyperlipidemia, and post-stroke patients had progressively higher blood pressure and heart rates compared to those without such conditions when they were given Ketamine. None of the studies we reviewed investigated this possibility or assessed the independent effect of comorbidities on depression symptoms after ketamine administration (See Fig. 4).

Implications

Additional treatment success and outcomes data regarding IV Ketamine could spur industry interest in the novel treatment and expedite FDA approval for IV-K's on-label use. There is a need to commit more pharma and healthcare industry resources to promote and ensure success of TRD ketamine therapy. An effective framework for developing consensus clinical guidelines and payment standards is needed for broader industry participation in the process. Collaboration between key industry participants, such as clinical providers, formulary managers and payers are necessary to ensure broader adoption of this treatment modality. Another area that needs added attention is the consumer awareness regarding new therapeutic options for depression and their willingness to participate in treatment programs, as well as insurance coverage for the same with fewer restrictions for payment.

Limitations

A major limitation of a study of this kind has to do with a dearth of real-world efficacy data for IV Ketamine in TRD. Most primary studies reviewed lacked validated treatment procedures and framework for clinical assessment and patient follow-ups. The absence of FDA approval for TRD ketamine further adds to the shortage of industry-generated knowledge regarding overall treatment success. Moreover, none of the selected studies examined IV Ketamine's abuse potential. Most evidence regarding treatment success currently available is not only limited but focuses on short-term use. Owing mainly to a short span of use and history, conclusive evidence documenting IV-K's long-term benefits compared to risks is currently unavailable.

CONCLUSION

The off-label use of ketamine continues to grow. Although the reviewed evidence indicates that ketamine is quite effective in the treatment of TRD, the literature lacks meaningful discussion of risk/benefit analysis of the new treatment approach for long-term use. The lack of availability of consensus guidelines for implementing treatment, assessment, and monitoring methodologies further compounds the problem. Besides the off-label status, restricting drug administration to registered clinical facilities only may further limit access to a promising treatment for depression. Any future treatment recommendations with ketamine for mood disorders should also consider the infrastructural and cardiorespiratory monitoring aspects of drug delivery and the drug's potential to lead to abuse and cause long-term adverse effects.

REFERENCES

1. Bodie, A. (2021). *Off-label use of prescription drugs*. Retrieved from https://sgp.fas.org/crs/misc/R45792.pdf

2. *Basic Facts About Depression*. Mental Health America. (2022). Retrieved from https://www.mhanational.org/conditions/depression

3. Chen, J. (2022). *How ketamine drug helps with depression*. Retrieved from https://www.yalemedicine.org/news/ketamine-depression

4. Collins, S. (2021). *What is ketamine? How it works and helps severe depression?* Retrieved from https://www.webmd.com/depression/features/what-does-ketamine-do-your-brain

5. DEA. (2020). *Drug fact sheet: Ketamine* . Retrieved from https://deagovdev.dea.gov/sites/default/files/2020-06/Ketamine-2020.pdf

6. FDA. (2019). *FDA approves new nasal spray medication for treatment-resistant depression; available only at a Certified Doctor's Office or clinic*. U.S. Food and Drug Administration. Retrieved from https://www.fda.gov/news-events/press-announcements/fda-approves-new-nasal-spray-medication-treatment-resistant-depression-available-only-certified

7. Hollingsworth, D. J. (2022, February 23). *What is IV ketamine infusion therapy?* Retrieved from https://pacificpsychcenters.com/general-mental-health/what-is-iv-ketamine-infusion-therapy/

8. Juergens, J. (2022). *Ketamine addiction and abuse*. Retrieved from https://www.addictioncenter.com/drugs/hallucinogens/ketamine/

9. Mammoser, G. (2019). *Ketamine nasal spray reduces depression in 24 Hours*. Retrieved from https://www.healthline.com/health-news/ketamine-nasal-spray-can-help-reduce-depression-in-24-hours

10. Palmer. (2021). *Study Explores Trends in Non-Medical Ketamine Use, Poisonings, and Seizures in United States*. Retrieved from https://www.nyu.edu/about/news-publications/news/2021/october/recreational-ketamine-

use.html

11. Pogored. (2021). *What is a ketamine nasal spray?* Retrieved from https://health.clevelandclinic.org/a-new-ketamine-nasal-spray-has-been-approved-for-depression-but-its-not-for-everyone/

12. Psycom.net - Mental Health Treatment Resource Since 1996. (2022, January). *Treatment-resistant depression: Why depression meds don't always work* . Retrieved from https://www.psycom.net/treatment-resistant-depression

13. Psycom.net - Mental Health Treatment Resource Since 1996. (2022, March 15). *Treatment-resistant depression: Why depression meds don't always work* . Retrieved from https://www.psycom.net/treatment-resistant-depression

14. Sack, D. (2018). *How can I tell if I have treatment-resistant depression?* Retrieved from https://www.psychologytoday.com/us/blog/where-science-meets-the-steps/201802/how-can-i-tell-if-i-have-treatment-resistant-depression#:~:text=Some%20of%20the%20defining%20characteristics,with%20each%20failed%20treatment%20attempt

15. Schimelpfening , N. (2020). *6 Types of Psychotherapy for Depression*. Retrieved from https://www.verywellmind.com/types-of-psychotherapy-for-depression-1067407

16. Serani Psy.D., D. (2019). *Ketamine vs. Esketamine for depression*. Psychology Today. Retrieved from https://www.psychologytoday.com/us/blog/two-takes-depression/201904/ketamine-vs-esketamine-depression

17. Staff, M. C. (2019). *Selective serotonin reuptake inhibitors (SSRIs)*. Retrieved from https://www.mayoclinic.org/diseases-conditions/depression/in-depth/ssris/art-20044825

18. Staff, M. C. (2021). *Treatment-resistant depression*. Retrieved from https://www.mayoclinic.org/diseases-conditions/depression/in-depth/treatment-resistant-depression/art-20044324

19. Torres, F. (2020). *What is depression?* Retrieved from https://www.psychiatry.org/patients-families/depression/what-is-depression

20. U.S. National Library of Medicine. (n.d.). *Compound Ketamine*. National Center for Biotechnology Information. PubChem Compound Database. Retrieved from https://pubchem.ncbi.nlm.nih.gov/compound/Ketamine

21. WHO. (2016). *Fact file on ketamine - world health organization*. Retrieved from https://www.who.int/medicines/news/20160309_FactFile_Ketamine.pdf

MALNUTRITION CODING FOR THE HOSPITALIZED PATIENT: IN PURSUIT OF CONSENSUS

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MALNUTRITION CODING FOR THE HOSPITALIZED PATIENT: IN PURSUIT OF CONSENSUS

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ABSTRACT

Protein calorie malnutrition (PCM) is a global health concern that imposes a significant burden on healthcare costs. Given these compounded costs, it is important to accurately diagnose and treat malnutrition and capture reimbursement for the associated direct and indirect costs incurred.

Although widely accepted that PCM causes adverse clinical outcomes, there is a lack of industry consensus for diagnosing malnutrition. This lack of consensus has led to inconsistencies in coding of PCM resulting in increased scrutiny from CMS auditors and fines for overpayments to hospitals for malnutrition reimbursement.

This paper reviews historical definitions of malnutrition and examines how recent initiatives to validate diagnostic criteria can aid consensus and benefit multiple stakeholders.

INTRODUCTION

Recently, the diagnosis of protein calorie malnutrition (PCM) for hospitalized patients has come under close scrutiny by the Centers for Medicare and Medicaid Services (CMS) and the U.S. Department of Health and Human Services (HHS) Office of Inspector General (OIG). In January 2018, the OIG announced their intent to audit Medicare payments for accurate reimbursement of treatment for moderate and severe malnutrition. These claims were scrutinized since a diagnosis of malnutrition is considered a co-morbid condition that, when applied to a hospital's base diagnosis-related group (DRG) rate, can substantially increase reimbursement from Medicare (AND 1, 2021). In addition to the financial impact to CMS, a diagnosis of moderate or severe malnutrition can have broad repercussions on several CMS quality metrics. For instance, a diagnosis of severe malnutrition can be used for risk adjustment for CMS quality programs such as mortality and readmission penalties as well as several patient safety indicators (Cortazzo, 2018). Because of its sizeable impact for CMS programs, accurate diagnosis and coding of malnutrition has become a priority for the OIG in order to avert potential fraud and abuse.

In July of 2020, the OIG published a report of findings from an audit of hospital inpatient claims for malnutrition diagnosis in fiscal years (FY) 2016 and 2017. The intent of this audit was to determine compliance with billing requirements when coding for severe malnutrition for Medicare reimbursements. As a result of this audit, the OIG found evidence that 173 of 200 claims evaluated from Vidant Medical Center, the University of Wisconsin Hospital System, and Northside Medical Center incorrectly billed Medicare for severe malnutrition diagnosis codes E41 (Marasmus) and E43 (other severe protein-calorie malnutrition). These claims resulted in estimated overpayments of $1 billion for FYs 2016 and 2017. In audit findings, the OIG recommended that CMS attempt to recover overpayments from the hospitals audited and further recommended examining all claims submitted during the reopening period, beyond the audit sample, to determine the full extent of overpayment (HHS OIG, 2020). As a result of this audit, the University of Wisconsin Hospital System was fined $2.4 million for overpayments on malnutrition diagnoses. In response, the University defended their use of the malnutrition diagnosis codes as secondary diagnoses and argued that the OIG provided no specific guidance for hospitals to use in diagnosing malnutrition (Cortazzo, 2018).

Following the OIG report, the Malnutrition Coding and Education Task Force, comprised of representatives from the American Society for Parenteral and Enteral Nutrition (ASPEN), the Academy of Nutrition and Dietetics (the Academy), the American Society for Nutrition (ASN), and the Association of Clinical Documentation Integrity Specialists (ACDIS) released a memorandum to the Acting Director of the Provider Compliance Group, Center for Program Integrity refuting the audit findings based on inconsistencies in how the reviews were conducted and which malnutrition criteria were applied (AND 2, 2020). This document also echoed previous concerns related to the ambiguity of criteria used by both the OIG and CMS auditors in determining the validity of these claims. The document further recommended use of a standardized malnutrition diagnostic tool for reviewing billing claims versus use of non-evidence-based methods such as the World Health Organization's (WHO) definition of adult malnutrition, body mass index (BMI), or serum protein markers (AND 2, 2020).

Inaccuracies in coding of malnutrition such as those identified by the OIG audit arise from a multitude of factors including a lack of consensus on how malnutrition is defined and a lack of standardized criteria for diagnosing and documenting malnutrition rather than overt misuse of diagnostic codes. The goal of this paper is to review historical definitions of malnutrition, examine ongoing measures to achieve consensus for diagnosis, and explore how recent initiatives to validate diagnostic criteria can benefit multiple stakeholders.

ETIOLOGY AND EFFECTS OF MALNUTRITION

Protein calorie malnutrition (PCM) is a global health concern that affects both adults and children and generates significant burden on health care costs, especially when left unrecognized and untreated (Jensen, et al., 2010). Characteristics of PCM include loss of subcutaneous fat and/or muscle, presence of unintentional weight loss or low weight status, diminished growth, functional impairment, and/or micronutrient deficiencies (Drake, et al., 2017). In undeveloped countries, malnutrition is often caused by famine secondary to natural disasters or conflict, which remains a prominent contributor to malnutrition today. In developed countries, however, the etiology of PCM is more complex resulting from a combination of decreased intake or impaired utilization of nutrients and acute or chronic medical conditions that result in inflammation, hypermetabolism, or malabsorption known as disease-related malnutrition (Jensen, et al., 2010, Jensen, et al., 2009). Advances in research and healthcare technology have led to a greater understanding of the scope of nutrition disorders, which include specific micronutrient deficiencies, obesity, cachexia, sarcopenia, and inflammation. Malnutrition related to disease or injury is associated with adverse clinical and functional outcomes that lead to extended hospital length of stay (LOS), higher hospital readmission rates, and increased need for rehabilitation following hospitalization, thus contributing substantially to higher healthcare costs (Corkins, 2013). Given these compounded costs, it is important to not only accurately diagnose and treat malnutrition for improved patient outcomes, but equally important for providers to capture reimbursement from insurers for the additional direct and indirect costs of care provided. In order to capture this reimbursement, hospital systems must adopt a specific system-wide, evidence-based definition of malnutrition and must ensure that documentation consistently supports the diagnosis. Medical coders must also stay well informed of updates from CMS, OIG audits, and other external stakeholders to reduce the risk of mis-coding malnutrition and should continually educate physicians and other providers on the importance of detailed documentation to support diagnosis and severity of malnutrition (Mack, 2016).

PREVALENCE AND COST OF MALNUTRITION

The prevalence of malnutrition reported in hospitalized patients varies widely and is dependent in part on how malnutrition is defined. In medical literature, the incidence of adult PCM has been reported to range from 15% to 60% (Mueller, et al., 2011), whereas pediatric PCM has been reported from 6% to 51% (Pawellek, et al., 2008). Patients may exhibit evidence of malnutrition upon admission or may develop malnutrition throughout the course of their hospitalization caused by factors such as diminished appetite, gastrointestinal symptoms that limit or preclude intake, impaired ability to chew and swallow, encephalopathy, and diagnostic tests or procedures resulting in prolonged nothing by mouth status. Furthermore, these high-risk individuals may also have increased requirements

for energy, protein, and micronutrients due to inflammation, infection, wounds, and other catabolic conditions that exacerbate nutrition deficits (Guenter, et al., 2015).

The incidence of malnutrition has been found to increase in proportion to hospital LOS. A significant decline in nutrition status during hospitalization has been reported in as many as 75% of patients (Seres, 2005). Nutrition deficits can contribute to muscle loss and weakness, which in turn, can exacerbate complications such as fall risk, impaired immunity, pressure ulcer development or delayed wound healing, and increased hospital readmission rates that compound health care costs due to extended LOS and higher resource utilization (Guenter, et al., 2021). For example, in a 2013 study of hospitalized patients, Corkins, et al. found a threefold increase in hospital costs and LOS in patients diagnosed with malnutrition compared to those without this diagnosis (Corkins, et al., 2013). In a study by Hiura, et al., 5606 ICU patients were assessed and 13% were identified as having severe malnutrition. For these patients, hospital LOS and ICU LOS were more than twice as long as those without severe malnutrition (Hiura, et al., 2019). In an epidemiologic analysis of data from surgical cases included in the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), researchers found a positive association between malnutrition and the risk of severe events. This analysis revealed that patients with diagnoses of malnutrition were four times more likely to develop pressure ulcers, two times more likely to develop surgical site infections, sixteen times more likely to develop intravascular device infections, and five times more likely to develop catheter-associated urinary tract infections (AHRQ, 2016). In a value analysis review of the impact of nutrition therapy on hospital acquired infections (HAI), Bechtold, et al. revealed nutrition intervention has the potential of saving at least $104 million annually in Medicare patients with HAIs (Bechtold, et al., 2021). The prevalence of malnutrition is higher in adults with almost one-third of the associated costs of malnutrition occurring in persons 65 and older (Fingar, et al., 2013). The 2016 HCUP report estimated annual healthcare costs related to malnutrition to be $49 billion (AHRQ, 2016) while other sources estimate annual US healthcare costs attributed to malnutrition to be between $147 and $157 billion (Snider, et al., 2014).

HISTORICAL METHODS TO IDENTIFY MALNUTRITION

Although malnutrition is a global health concern associated with higher morbidity, mortality, and cost, there is currently no universally accepted definition of malnutrition nor symptomatic parameters to classify malnutrition severity (Phillips, 2014). Several non-evidence-based definitions for adult malnutrition are found in the nutrition and medical literature resulting in inconsistent diagnosis among practitioners. Historically, two conventional categories of malnutrition known as kwashiorkor and marasmus, used mainly to describe pediatric malnutrition syndromes found in less developed countries, were also used to diagnose adult malnutrition (Fuhrman, et al., 2004). Kwashiorkor refers to a malnutrition syndrome occurring under extreme nutrition conditions as witnessed in less developed areas of the world. It is characterized by edema, enlarged liver, hypoalbuminemia, and muscle wasting and attributed to insufficient or poor-quality protein intake in the setting of adequate calorie consumption. In contrast, Marasmus refers to chronic deprivation of both calories and protein and is characterized by extreme weight loss and cachexia (Krawinkel, 2003). Logically, these definitions should rarely be applied to adult patients in modern healthcare institutions as the characteristics are largely unique to pediatric growth and development under specific circumstances of deprivation.

More recently, the use of hepatic proteins such as albumin, prealbumin, and transferrin were widely used to assess the adequacy of nutrition intake, including the presence of malnutrition. These serological values were previously thought to correlate directly with the amount of dietary protein consumed. However, since the 1990s, several studies have identified poor reliability of these markers for identifying malnutrition, recognizing that the inflammatory response, such as that found in acute and chronically ill patients, results in inconsistencies in their predictive value (Seres, 2005). Serum levels of these proteins are known to decrease during periods of stress and increase with recovery, independent of the provision of nutrition support. It is now widely recognized that these hepatic proteins reflect the body's physiological response to injury, infection, or inflammation rather than a state of malnutrition (Fuhrman, 2004); therefore, the use of these markers in the identification of malnutrition is no longer advised. These hepatic proteins, however, do correlate with outcomes and continue to be used as predictors of morbidity and mortality.

In 1999, the WHO published the resource "Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers" that provided guidance for practitioners to identify and treat malnutrition in children and adults (WHO, 2015). In this document, the WHO recommended assessment of clinical factors such as presence of edema and comparison of anthropometric data to the National Center for Health Statistics reference population for identification of malnutrition. According to this resource, severe malnutrition is based on evaluation of criteria such as edema, wasting, stunting, and anthropometric data compared to the National Center for Health Statistics reference population. Although intended to clarify guidelines for identifying malnutrition, the WHO resource does not provide specific criteria for assessing degree of edema, wasting, and stunting and also lacks criteria to distinguish malnutrition related to acute illness or inflammation. The WHO publication also uses BMI as the primary method to categorize malnutrition. Since the WHO criteria is most applicable to circumstances in developing countries, it is not endorsed for identifying malnutrition in the United States where the supply of food and healthcare systems are both significantly higher (Phillips, et al., 2019).

Another limitation for diagnosing malnutrition includes reliance on diagnostic criteria that have not been validated resulting in poor specificity. For example, BMI is a ratio of weight to height designed to quickly estimate body fat and subsequent risk for developing chronic disease. In general, a higher BMI correlates with a higher risk for obesity-associated conditions such as heart disease, certain cancers, and diabetes (NHLBI, 2018). BMI, however, does not correlate with malnutrition as this condition can occur at any BMI, including obesity, due to overconsumption of calorie dense, low nutrient value foods, reduced intake, significant weight loss, or poor assimilation of nutrients during acute illness (Tappenden, et al., 2013). Accuracy of BMI may also be skewed in individuals with high or low muscle mass regardless of nutritional status and individuals with a genetic predisposition to be thin may have a low BMI without being malnourished. For these reasons, the use of BMI as a diagnostic criterion for malnutrition is not recommended (Phillips, et al., 2019).

HOSPITAL REIMBURSEMENT FOR MALNUTRITION

Medicare Part A pays for hospital inpatient stays under the Hospital Inpatient Prospective Payment System (IPPS) using predetermined rates for hospital discharges titled Medicare Severity Diagnosis Related Groups (MS-DRG) rather than an actual fee-for-service system. Under this system, payment rates vary based on severity-adjusted diagnosis-related groups that are used to classify hospital cases according to clinical characteristics. Patients in each DRG category are similar clinically and are expected to have similar hospital resource use. In addition to the principal diagnosis, patients may have other conditions that increase resource utilization. These secondary diagnoses are designated as complications/co-morbidities (CCs) or major complications/co-morbidities (MCCs) and may result in a higher Medicare payment to account for more intensive levels of care or longer lengths of stay (CMS 2, 2021). Hospitals are permitted to bill for the treatment of malnutrition based on the severity of the condition and may qualify for increased reimbursement from Medicare when malnutrition CCs or MCCs are applied to the base DRG rate. This system is also used to determine the hospital's overall case-mix index (CMI) which reflects the diversity, complexity, and severity of patients treated at a given healthcare facility. CMI is used by CMS to determine an institution's base reimbursement rate; higher CMI values indicate a greater number of complex, resource-intensive patients, which result in an overall higher base DRG rate. CCs or MCCs are then applied to the base DRG rate to increase the relative weight, which determines overall reimbursement (Doley and Phillips, 2019). Only one CC or MCC is required to increase the relative weight of the MS-DRG; therefore, a malnutrition diagnosis may not impact reimbursement or CMI if other CCs or MCCs exist. To qualify for increased reimbursement related to malnutrition, the medical diagnosis must be determined by the physician and a plan of care specifying nutrition interventions must be documented to address the diagnosis during the hospitalization (Phillips, et al., 2017).

The following International Classification of Diseases, 10th edition (ICD-10-CM) codes for malnutrition have been designated as either a CC or a MCC under the MS-DRG system:

E40 - Kwashiorkor (MCC)
E41 – Nutritional Marasmus (MCC)
E42 – Marasmic kwashiorkor (MCC)
E43 – Unspecified severe protein-calorie malnutrition (MCC)

E44.0 – Moderate protein-calorie malnutrition (CC)
E44.1 – Mild protein-calorie malnutrition (CC)
E45 – Retarded development following protein-calorie malnutrition (CC)
E46 – Unspecified protein-calorie malnutrition (CC)
E64 – Sequelae of protein-calorie malnutrition (CC) (CMS 1, 2021)

The ICD-10 includes definitions for some malnutrition codes but does not provide objective assessment criteria or signs/symptoms required for diagnosis, nor has any previous ICD version. For example, E43 – other severe protein-calorie malnutrition is described as "nutritional edema without mention of dyspigmentation of skin and hair" and E46 – unspecified protein-calorie malnutrition is described as "a disorder caused by lack of proper nutrition or an inability to absorb nutrients from food. An imbalanced nutritional status resulted from insufficient intake of nutrients to meet normal physiological requirement" (CMS 1, 2021). Kwashiorkor and E41- Nutritional Marasmus have well established definitions in ICD terminology but are unlikely to occur in the United States and should seldomly be utilized (Mack, 2016). No definition or diagnostic criteria are provided for malnutrition codes E42, E44, E44.1, E45, and E64 rendering their use completely subjective.

MEASURES TO ACHIEVE CONSENSUS

In 1996, The Joint Commission mandated that all patients have nutrition risk screening within 24 hours of hospital admission but did not specify a method of screening to be used. This mandate resulted in the implementation of many different approaches to the identification of malnutrition that were not always evidence-based and led to increased inconsistencies in documentation of malnutrition (White, et al., 2012).

To remedy this disparity, the Academy and ASPEN began working in 2009 to standardize diagnosis and documentation of malnutrition. Primary goals of this joint task force were to develop assessment criteria to account for the impact of the inflammatory response on nutritional status, which had previously not been recognized in ICD terminology and to facilitate standardized recognition and documentation of malnutrition by Registered Dietitian Nutritionists (RDNs), Licensed Independent Providers (LIPs), Physicians, and other members of the health care team (White, et al., 2012). In 2012, the Academy and ASPEN published a consensus statement that delineated a set of criteria important in assessing and classifying the degree of malnutrition. In the statement, malnutrition is defined in the setting of three basic causes: acute illness or injury, chronic health conditions, and social/environmental circumstances. Six malnutrition clinical characteristics are defined: insufficient energy intake, significant weight loss, loss of subcutaneous fat, loss of muscle, presence of edema that can sometimes mask weight loss, and diminished functional status as measured by hand grip strength (White, et al., 2012). These characteristics are identified by obtaining a detailed nutrition intake and weight history and by conducting a nutrition-focused physical exam (NFPE). Presence of two or more of the characteristics is required for a diagnosis of malnutrition and severity of malnutrition is determined by degree of each characteristic, either moderate or severe. Mild malnutrition is currently not specified due to a lack of sufficient data to distinguish between mild and moderate malnutrition although mild malnutrition is identified by ICD-10 codes (White, et al., 2012).

To be recognized as a medical diagnosis used by clinical documentation specialists (CDSs) for coding and billing purposes, the diagnosis of malnutrition currently must be documented by the physician or other LIP in addition to documentation by the RDN. However, under the CMS 2014 Final Rule on Regulatory Provisions to Promote Program Efficiency, Transparency, and Burden Reduction, the RDN is considered the provider most qualified to conduct nutrition assessment and prescribe interventions, and as such, can document a nutrition diagnosis of malnutrition that includes identified characteristics that can then be incorporated into physician documentation to support the medical diagnosis. Malnutrition should be included in physician progress notes and in the discharge summary list of diagnoses to ensure its application as a CC or MCC.

Since the publication of the consensus statement in 2012, several studies have verified the predictive validity of the malnutrition clinical characteristics on patient outcomes leading to widespread adoption of their use to ensure diagnostic consistency among clinicians and institutions (Drake, et al., 2017, Hudson, et al., 2018). Surveys in 2017 and 2018 of Academy and ASPEN members indicated that 71-87% of respondents were utilizing these characteristics to diagnose malnutrition, which increased from 57% use reported in 2014 (Modarski, et al., 2019, Mogensen, et al., 2018). Despite widespread adoption of the malnutrition clinical characteristics, CMS has not formally accepted this classification system nor any other official definition for identification and coding of malnutrition. In a statement released in July 2021 by The Malnutrition Coding and Education Task Force regarding follow up with CMS on severe malnutrition claims, ongoing efforts to emphasize key points from previous communications continue. These topics include: concern for misuse of outdated malnutrition diagnostic criteria by CMS contractors; misapplication of current approaches that do have validity; recommended use of the Academy/ASPEN clinical characteristics; recognition of documentation by the RDN as sufficient for reporting the diagnosis of malnutrition; and acceptance of treatment modalities prescribed by the RDN as sufficient for nutrition intervention, beginning with the least invasive interventions that are escalated in accordance to therapeutic response (AND 3, 2021).

BENEFITS OF CONSENSUS

Currently, a large-scale validation study is being conducted by the Academy's Nutrition Research Network to validate the clinical characteristics from the Academy/ASPEN consensus statement and to examine the appropriate level of RDN care required to improve patient outcomes. Evidence from this validation study will be presented to CMS by the Malnutrition Coding and Education Task force in the post OIG report supplementary review.

Widespread adoption of these malnutrition characteristics will benefit many stakeholders. Since the prevalence of malnutrition is increased in adults with one third of the costs associated with the condition occurring in those over 65, standardization of malnutrition diagnosis would benefit CMS by increasing identification and earlier treatment of the condition, thereby reducing overall costs. Data on the increased prevalence of malnutrition in older adults may also be useful in determining future CMS quality improvement efforts such as reduction of HAIs or 30-day readmission rates. Through nutrition intervention, increased costs associated with malnutrition such as longer LOS, higher readmission rates, higher infection rates, higher resource utilization, increased frequency of emergency department admission, lower routine discharges, and higher in-patient mortality can be minimized (Guenter, et al., 2021).

A potential benefit for hospital systems from validation of these characteristics is to provide a standardized approach to malnutrition recognition and documentation to ensure that adequate human and financial resources are available to optimize the identification of and care for malnourished individuals. Through the consistent application of these criteria, hospitals can reduce denials for coding of malnutrition based on claims that the diagnosis did not meet reportability standards, thereby capturing lost revenue due to missed opportunities to identify severity of illness or risk of mortality (Doley, et al., 2019).

Acceptance of the clinical characteristics and recognition of RDN documentation as sufficient to diagnose and treat malnutrition also holds several benefits for clinical dietitians. Under current CMS guidelines, the services of clinical RDNs are not reimbursable in the inpatient setting. Instead, RDN services such as nutrition assessment, intervention, monitoring, and education are included in the base rate payment for "room and board" and, as such, are viewed as an expense for hospital systems. This scenario incentivizes hospital systems to reduce costs by maintaining lowest RDN staffing levels, which in turn increases RDN to patient ratios limiting opportunities to identify and treat malnutrition. Since the RDN influences reimbursement by diagnosing and documenting PCM, standardization of malnutrition diagnosis and acceptance of RDN documentation as sufficient for reporting PCM could elevate the role of the clinical dietitian and increase staffing levels furthering opportunities for interventions to achieve improved outcomes.

CONCLUSION

Publication of Dr. Charles Butterworth's 1974 sentinel article, "The Skeleton in the Hospital Closet", sparked a growing awareness in the healthcare community of the need to address malnutrition in hospitalized patients. This article revealed how hospital practices intended for examination and treatment can actually exacerbate protein and energy deficits in acute and chronically ill patients leading to further decline in overall status (Butterworth, 1974). Subsequent research has not only led to a greater understanding of iatrogenic malnutrition, but also to malnutrition caused by metabolic changes associated with acute and chronic inflammatory illnesses (Corkins, et al., 2013, Jensen, et al., 2010). Although it is now widely accepted that PCM leads to adverse clinical and functional outcomes and substantially higher healthcare costs, there continues to be a lack of consensus for defining malnutrition or symptomatic parameters for its diagnosis. This lack of consensus has led to inconsistencies in diagnosis and coding of PCM resulting in increased scrutiny from CMS and fines for overpayments related to hospital reimbursement for malnutrition diagnoses (Hiura, et al., 2019, AND 2, 2020). In an attempt to standardize diagnostic criteria, the Academy and ASPEN published a consensus statement in 2012 detailing malnutrition clinical characteristics that are currently under investigation for validation in a large-scale, multiorganizational study. Representatives from the Academy, ASPEN, ASN, and ACDIS are also working on strategy to help CMS, the OIG, and DHS understand best practices for diagnosing, documenting, and coding malnutrition (AND 2, 2020, AND 3, 2021). Since the publication of the clinical characteristics, there has been widespread adoption of their use among the medical and nutrition communities but no determination from CMS for their official use. Achieving consensus for diagnosis and treatment of malnutrition can have significant benefits for all stakeholders including improved quality measures, better patient outcomes, increased reimbursement to account for higher resource use, reduced healthcare costs, and heightened value for the role of clinical RDNs in healthcare systems.

REFERENCES

1. AND 1. (2021). "Malnutrition Codes - Characteristics and Sentinel Markers." *Academy of Nutrition and Dietetics*, Retrieved July 25, 2021, from https://www.eatrightpro.org.

2. AND 2. (2020). "Response to the Center for Medicare and Medicaid Services about Recommendations from the Office of Inspector General Report." Memorandum to Connie Leonard, Acting Director, Provider Compliance Group, Center for Program Integrity. *Academy of Nutrition and Dietetics*, Retrieved October 14, 2021, from https://www.eatrightpro.org.

3. AND 3. (2021). "The Malnutrition Coding and Education Task Force Joint Statement: Follow up Communication with Center for Medicare and Medicaid Services on Hospital Inpatient Billing for Severe Malnutrition." *Academy of Nutrition and Dietetics*, Retrieved July 19, 2021, from https://www.eatrightpro.org.

4. AHRQ. (2016). "Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS)." *Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets (CDOM)*, Retrieved August 14, 2021, from https://www.hcup-us.ahrq.gov/nisoverview.jsp.

5. Bechtold, Matthew L, et al. (2021). "Impact of a Nutrition Support Therapy on Hospital-Acquired Infections: A Value Analysis." *Nutrition in Clinical Practice*, vol. 36, no. 5, 10 July 2021, pp. 1034–1040., https://doi.org/10.1002/ncp.10729.

6. Butterworth, Charles E. (1974). "The Skeleton in the Hospital Closet." *Nutrition Today*, vol. 9, no. 2, 1974, pp. 4–8., https://doi.org/10.1097/00017285-197403000-00001.

7. CMS 1. (2021). "2021 ICD-10." *Center for Medicare and Medicaid Services*, Retrieved September 19, 2021, from https://www.cms.gov/medicare/icd-10/2021-icd-10-cm.

8. CMS 2. (2021). “Prospective Payment Systems - General Information | CMS.” *Center for Medicare and Medicaid Services*, Retrieved July 29, 2021, from https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ProspMedicareFeeSvcPmtGen.

9. Corkins, Mark R, et al. (2013). “Malnutrition Diagnoses in Hospitalized Patients.” *Journal of Parenteral and Enteral Nutrition*, vol. 38, no. 2, 2013, pp. 186–195., https://doi.org/10.1177/0148607113512154.

10. Cortazzo, Megan. (2018). “Severe Protein Calorie Malnutrition in the OIG Crosshairs.” *ICD10monitor*, ICD10monitor, 20 Aug. 2018, Retrieved July 29, 2021, from https://www.icd10monitor.com/severe-protein-calories-malnutrition-in-the-oig-crosshairs.

11. Doley, Jennifer, and Wendy Phillips. (2019). “Coding for Malnutrition in the Hospital: Does It Change Reimbursement?” *Nutrition in Clinical Practice*, vol. 34, no. 6, 2019, pp. 823–831., https://doi.org/10.1002/ncp.10426.

12. Drake, Rachel, et al. (2017). “Hospital Inpatient Admissions with Dehydration and/or Malnutrition in Medicare Beneficiaries Receiving Enteral Nutrition: A Cohort Study.” *Journal of Parenteral and Enteral Nutrition*, 2017, p. 014860711771347., https://doi.org/10.1177/0148607117713479.

13. Fingar, K R, et al. (2013). “HCUP Statistical Brief #218.” *All-Cause Readmissions Following Hospital Stays for Patients with Malnutrition, 2013 #218*, https://hcup-us.ahrq.gov/reports/statbriefs/sb218-Malnutrition-Readmissions-2013.jsp.

14. Fuhrman, Patricia, et al. (2004). “Hepatic Proteins and Nutrition Assessment.” *Journal of the American Dietetic Association*, vol. 104, no. 8, 2004, pp. 1258–1264., https://doi.org/10.1016/j.jada.2004.05.213.

15. Guenter, Peggi, et al. (2015). “Addressing Disease-Related Malnutrition in Hospitalized Patients: A Call for a National Goal.” *The Joint Commission Journal on Quality and Patient Safety*, vol. 41, no. 10, 2015, pp. 469–473., https://doi.org/10.1016/s1553-7250(15)41061-x.

16. Guenter, Peggi, et al. (2021). “Malnutrition Diagnoses and Associated Outcomes in Hospitalized Patients: United States, 2018.” *Nutrition in Clinical Practice*, vol. 36, no. 5, 6 Oct. 2021, pp. 957–969., https://doi.org/10.1002/ncp.10771.

17. HHS OIG. (2020). “Hospitals Overbilled Medicare $1 Billion by Incorrectly Assigning Severe Malnutrition Diagnosis Codes to Inpatient Hospital Claims.” *Health and Human Services, Office of Inspector General. A-03-17-00010 07-13-2020*, 13 July 2020, Retrieved July 29, 2021, from https://www.oig.hhs.gov/oas/reports/region3/31700010.asp.

18. Hiura, Grant, et al. (2019). “Malnutrition Diagnosis in Critically Ill Patients Using 2012 Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition Standardized Diagnostic Characteristics Is Associated with Longer Hospital and Intensive Care Unit Length of Stay and Increased in-Hospital Mortality.” *Journal of Parenteral and Enteral Nutrition*, vol. 44, no. 2, 2019, pp. 256–264., https://doi.org/10.1002/jpen.1599.

19. Hudson, Lauren, et al. (2018). “Malnutrition Identified by Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition Is Associated with More 30-Day Readmissions, Greater Hospital Mortality, and Longer Hospital Stays: A Retrospective Analysis of Nutrition A.” *Journal of Parenteral and Enteral Nutrition*, vol. 42, no. 5, 2018, pp. 892–897., https://doi.org/10.1002/jpen.1021.

20. Jensen, Gordon L., et al. (2010). “Adult Starvation and Disease-Related Malnutrition: A Proposal for Etiology-Based Diagnosis in the Clinical Practice Setting from the International Consensus Guideline Committee.” *Clinical Nutrition*, vol. 29, no. 2, 2010, pp. 151–153., https://doi.org/10.1016/j.clnu.2009.11.010.

21. Jensen, Gordon L., et al. (2009). “Malnutrition Syndromes: A Conundrum vs Continuum.” *Journal of Parenteral and Enteral Nutrition*, vol. 33, no. 6, 2009, pp. 710–716., https://doi.org/10.1177/0148607109344724.

22. Krawinkel, M. (2003). “Kwashiorkor Is Still Not Fully Understood.” *Bulletin of the World Health Organization*, U.S. National Library of Medicine, 2003, Retrieved July 29, 2021 from https://pubmed.ncbi.nlm.nih.gov/14997244.

23. Mack, Rachel. (2016). “Hungry for Accuracy on Malnutrition.” *ICD10monitor*, 28 Nov. 2016, https://www.icd10monitor.com/hungry-for-accuracy-on-malnutrition.

24. Mogensen, Kris M., et al. (2018). “Hospital Nutrition Assessment Practice 2016 Survey.” *Nutrition in Clinical Practice*, vol. 33, no. 5, 2018, pp. 711–717., https://doi.org/10.1002/ncp.10179.

25. Mordarski, Beth A., and Rosa K. Hand. (2019). “Patterns in Adult Malnutrition Assessment and Diagnosis by Registered Dietitian Nutritionists: 2014-2017.” *Journal of the Academy of Nutrition and Dietetics*, vol. 119, no. 2, 2019, pp. 310–322., https://doi.org/10.1016/j.jand.2018.07.010.

26. Mueller, Charles, et al. (2011). “A.S.P.E.N. Clinical Guidelines.” *Journal of Parenteral and Enteral Nutrition*, vol. 35, no. 1, 2011, pp. 16–24., https://doi.org/10.1177/0148607110389335.

27. NHLBI. (2018). “Assessing Your Weight and Health Risk.” *National Heart Lung and Blood Institute, U.S. Department of Health and Human Services*, Retrieved October 3, 2021, from https://www.nhlbi.nih.gov/health/educational/lose_wt/risk.htm.

28. Pawellek, Ingrid, et al. (2008). “Prevalence of Malnutrition in Paediatric Hospital Patients.” *Clinical Nutrition*, vol. 27, no. 1, 2008, pp. 72–76., https://doi.org/10.1016/j.clnu.2007.11.001.

29. Phillips, Wendy, et al. (2017). “A Step-by-Step Guide to Implementing a Malnutrition Coding Program for Adult Inpatients.” *Support Line*, Dietitians in Nutrition Support, June 2017, http://oknutrition.org/images/A_Step-By-Step_Guide_to_Implementing_a_Malnutrition_Coding_Program_for_Adult_Patients.pdf.

30. Phillips, Wendy. (2014). “Coding for Malnutrition in the Adult Patient: What the Physician Needs to Know.” *Nutrition Issues in Practical Gastroenterology*, 2014, https://med.virginia.edu/ginutrition/wp-content/uploads/sites/199/2014/06/Parrish-Sept-14.pdf.

31. Phillips, Wendy, et al. (2019). “Malnutrition Definitions in Clinical Practice: To Be E43 or Not to Be?” *Health Information Management Journal*, vol. 49, no. 1, 2019, pp. 74–79., https://doi.org/10.1177/1833358319852304.

32. Seres, David S. (2005). “Surrogate Nutrition Markers, Malnutrition, and Adequacy of Nutrition Support.” *Nutrition in Clinical Practice*, vol. 20, no. 3, 2005, pp. 308–313., https://doi.org/10.1177/0115426505020003308.

33. Snider, Julia Thornton, et al. (2014). “Economic Burden of Community-Based Disease-Associated Malnutrition in the United States.” *Journal of Parenteral and Enteral Nutrition*, vol. 38, no. 2_suppl, 2014, pp. 715–855., https://doi.org/10.1177/0148607114550000.

34. Tappenden, Kelly A., et al. (2013). “Critical Role of Nutrition in Improving Quality of Care.” *Journal of Parenteral and Enteral Nutrition*, vol. 37, no. 4, 2013, pp. 482–497., https://doi.org/10.1177/0148607113484066.

35. White, Jane V., et al. (2012). “Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition).” *Journal of the Academy of Nutrition and Dietetics*, vol. 112, no. 5, 2012, pp. 730–738., https://doi.org/10.1016/j.jand.2012.03.012.

36. World Health Organization. (2015). “Management of Severe Malnutrition: A Manual for Physicians and other Senior Health Workers.” *World Health Organization*, Retrieved October 3, 2021, from https://www.who.int/nutrition/publications/severemalnutrition/9241545119/en/.

PRICE TRANSPARENCY AND THE USE OF SOCIAL MARKETING

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ABSTRACT

The Price Transparency Final Rule by CMS has been in effect since January 1, 2021, and it requires hospitals to publish their pricing information in a consumer friendly shoppable format. However, so far there has not been full compliance with the rule and there have been questions raised as to the effectiveness of making the charges transparent to the end consumer who may not even be aware of these listings. This session offers a model of change to the Price Transparency initiatives to improve consumer awareness and understanding of the need to research pricing during shopping for services. Consumer awareness can lead to increased utilization of healthcare pricing. Price Transparency should increase healthcare competition and reduce costs for patients in general.

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THE ORIGINS OF PROFESSIONAL RESPONSIBILITY: MALPRACTICE, MEDICAL ETHICS, AND LIABILITY IN ANCIENT ROMAN LAW

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ABSTRACT

Infrequently is the modern law or medical student schooled in legal history or ancient origins, but where Rome is unexpectantly revived is within healthcare. As concepts of professional responsibility, quality, and the value of care are central provisions of the modern practice of medicine and increasingly emphasized in healthcare reforms, it is a valuable time to evaluate where these aspects originate in our healthcare and medico-legal systems. For professional responsibility and liability in medicine, we follow the paved roads back to Rome. Going back to the earliest legal document of Roman law, the Law of Twelve Tables (*lex duodecium tabularum)*, we see the establishment of private law and torts that placed a specific emphasis on the legal responsibility of individuals in positions of power (guardianships), legal courses of action for injuries, and even provisions regarding the regulation of drugs. One-thousand years of judicial edicts after the Twelve Tables built a strong common law (*ius honorarium*), especially surrounding issues of the modernizing empire such as the professionalization of medicine. By 535 AD, Emperor Justinian had secured the medical common law in statute by ordering the rewrite and abbreviation of Roman civil law to be published as the *Corpus Iuris Civilis*. The *Digest*, part of the *Corpus Iuris Civilis*, included defined statutes focused on physicians and the practice of medicine including establishing liability in the death of a patient, medical necessity, regulations for controlled substances, the payment of attorney's fees when a physician needed legal counsel, the role of the physician as an expert witness, and how physicians could recruit patients and receive payment. This research, unlike any existing literature, traces our current medico-legal jurisprudence back to its Roman origins where one thousand years of empire facilitated the application of emerging general legal principles to the distinctive and murky corners of healthcare.

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COVID-19 MENTAL HEALTH AND UNHEALTHY COPING MECHANISMS FOR UNIVERSITY STUDENTS

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ABSTRACT

The COVID-19 pandemic has created unique challenges for college students. This subsection of the population is already known to struggle with mental health. Overall, students were not as negatively impacted as was expected.

This survey focuses on students at the University of Evansville to understand students' mental health and coping mechanisms during the pandemic. Students responded anonymously to a survey that was sent to them three times. Almost 80% of students who responded and were previously diagnosed with a mental illness reported that they had increased struggles during the COVID-19 pandemic. Students also reported an underutilization of counseling services on campus, citing a variety of factors, such as not knowing what they do or not believing they would be helpful.

This shows a clear need to address the mental health of college students now more than ever. As we are entering a third year of the pandemic, being cognizant of mental health and the impact the last three years has had on the population should continue to be an area of study and concern.

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