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SARS-CoV 2 aka COVID 19: *The Pandemic*



FEATURED ARTICLE:

“Voices from the Frontline.”

In Memoriam



1969: Philippine
Wedding



Dr. Dale Edward Starchman
1941-2020



2019: 50th Wedding
Anniversary



2019: Christmas at the Starchman Family

Dale passed on peacefully at his home in Canton, Ohio with his beloved wife, Erlinda "Jane" Socrates (BSN '68) at his side. Dale was a highly successful physicist, businessman, professor and author of several books and articles in his field.

Dale and Jane met at Kansas University when Jane was an exchange scholar from the UPCN. Jane has been the office manager of his successful business. Dale considered his greatest accomplishment to be his family. They have 4 married children: *Ann*, a pediatrician, *Cindy*, high school English teacher, *Julie*, Director of Enterprise Marketing at GOJO Industries, and *Mark*, Attorney and Captain in Army JAG (Judge Advocate General). Dale and Jane have 8 grandchildren.

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OUR COVER

By Nelson C. Borrero, UP Law '73
Editorial Consultant

The IFNAH Journal's cover tries to capture the wide span of the current global health phenomenon --- SARS-CoV-2 aka COVID 19: *The Pandemic*. No country is spared by its impact, some severely than others. The Philippines is among those that suffered immensely. The economy, the livelihood of most people are upended by quarantine, lockdowns and other efforts to prevent, avoid and ward off the spread of the deadly pathogen. The University of the Philippines scientists, UP Manila, Philippine General Hospital (PGH), and the college of Nursing (UPCN) play a very crucial role in this pandemic. Effective April 1, 2020, UP-PGH begun operating a COVID -19 Referral Center to provide assistance to the public and manage the influx of patients to its health care facilities. In partnership with PLDT, a hotline was established allowing the public to call and consult regarding symptoms without being hospitalized. This frees up the much needed beds in most overwhelmed hospitals. UP Scientists invented respirators and ventilators that are supposed to be more effective and less expensive than those imported from other countries.



The cover also shows images of our frontliners wearing the required outfits to protect themselves from the infection of the novel corona virus, it manifests not only their presence in the battlefields in this war against COVID 19, but also their borne deep emotion, frustrations and anguish. As the plague rages on, these heroes give all they can and perhaps even more, day-in and day-out. Oftentimes they succumbed to extreme fatigue and despair that the thought of quitting enters their minds, yet when duty calls, they summon every inch of strength, every drop of enthusiasm, and every reason to respond. So many of them were infected, others lost their lives sacrificed for humanity, duty, compassion and love. There are rare triumphs, large and small, even the little ones give them a chance to applaud. More often you can see tears in their eyes. (Read their story, hear their voices from the Featured Article: *Voices from the Frontline*.) Yet they endure hoping that the enemy in this dreadful war will be defeated. As one of the TV commercials in the Philippines rings out: *“Babangon din tayo, at maraming ngiti ang sasalubong saiyo....”* We will ultimately overcome this, we will rise up and will be met by countless grateful smiles.

ACKNOWLEDGMENT

The International Forum for Nursing and Healthcare (IFNAH) profoundly acknowledges this edition's writers of thought-provoking research and studies. We also acknowledge the tireless and hardworking cooperation of the editorial staff and the wisdom and support of peer reviewers and IFNAH advisors who shared their valuable time in order to produce a very professional publication.

To our typist, layout artists, and printers from The Little Copy Shop and many others who contributed to this valuable publication, our deep appreciation.

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EDITORIAL

Covid-19 and Nursing's New Image

An Editorial by: *Dr. Minerva S. Guttman, EdD, APN, RN*

The Covid-19 pandemic that started in Wuhan, China in December, 2019 has transformed our lives, our profession and society. As it continues to wreak havoc in the United States as well as in individual States whose leadership has been weak in implementing effective mitigation efforts, what was deemed “normal” will never be the same and we are now operating on a “new normal” mode.

In a matter of weeks, the educational system, from elementary to the university level, shifted from face to face classes and hands-on training to online learning and virtual simulations. Although online courses have been around for a while, many faculty members and students have had to learn how to navigate courses using online platforms like Blackboard, Canvass, Moodle and others. They have had to meet the objectives in a modified way and adjust the way they teach and learn. In May 2020, we graduated nurses who will be giving in person care to patients but received some clinical training virtually, for the first time.

Economically, many people were furloughed from jobs that were not considered “essential” making the unemployment rate the highest since the Great Depression. According to the Bureau of Labor Statistics, the May, 2020 unemployment rate in the United States was 13.3 %. There is a stark racial gap in unemployment with Whites at 12.4%, Asian Americans at 15%., Black Americans at 16.8%, and Hispanics at 17.6%.

Our language has been transformed as well. Covid-19 is the official name of a new disease and here are other linguistic and behavioral changes associated with it. Social distancing, contact tracing, Covid positive, Covid negative, N-95 masks are some examples of new words and concepts. PPE is not only a common term used by healthcare professionals, but has become a lingua franca for ordinary people too. It is a sight to see different masks being worn in the streets, some with designs and some even very fashionable ones, though I am not sure if they are all equally as effective in protecting the wearer and those they contact.

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About the Journal

The International Forum for Nursing and Healthcare (IFNAH) is the official publication for nursing and healthcare practice, education and research of the University of the Philippines International Nursing and Healthcare Forum (UPINHF, Inc.). This peer-reviewed publication, formerly called “The Nursing Journal” is published annually. Recently, the journal was officially assigned ISSN 2637-4161 by the U.S. ISSN Center at the Library of Congress.

Social lives have been transformed. We rely on take-outs, curbside delivery, cooking at home, and grocery shopping with masks on and while standing six feet apart from others. We are limited to outside dining and are served by masked waiters and waitresses. Parties and meetings are allowed with limited guests. Unfortunately, there has not been a consistent message and healthcare protocol at the Federal level.

In the healthcare system, drastic changes were instituted to ensure that Covid-19 patients are isolated and cared for by professionals in varying PPE attire including face shields. Historically, nurses cared for patients in past pandemics and wars, but their image was not positive. However, in this Covid-19 pandemic, they are not only co-leading the healthcare team in caring for patients and making sure staffing is stable, but also serving as chief consoler for the patient who is dying alone because relatives and friends are not allowed in the hospital. The nurse is first to see the patient admitted the last to see the patient alive and remains to be the connecting link to the family. Many nurses in the frontlines talk about the physical, mental and emotional drain of witnessing so many Covid-19 deaths, including some of their colleagues, and the helplessness they feel because there is no effective treatment and vaccine to prevent the spread. They dread going to work for fear of bringing home the virus to their families and getting sick themselves. Yet, they continue to resolutely do their duty.

For the first time in my life, I have witnessed the transformation of the image of the nurse into a leader of the team of healthcare professionals in its fight against the Covid-19 pandemic. This new positive image of nursing leadership has been recognized simultaneously by the people, the media, and the healthcare system. It brings tears to my eyes every time people are clapping their hands at 7:00 pm every night in New York City and other places to honor the frontline healthcare workers and many times the “Thank You” placards and shouts of appreciation mention the nurse first before the doctor.

Although the World Health Organization declared 2020 as the Year of the Nurse and Midwife and the 2010 Institute of Medicine Report recommended that the Nurse should lead the healthcare system, it took this unfortunate Covid-19 pandemic to finally recognize the important contributions and the status of the nurse in healthcare. The spontaneous recognition of these contributions by their colleagues, the public and the media has transformed the image of the nurse to that of an indispensable leader of the health team, as we wait for a vaccine and cure to stop Covid-19 in its tracks.



Josephine F. Villanueva

Josephine F. Villanueva
BSN, MA, RN-BC, NE-BC
Chairman, Editorial Board



Minerva S. Guttman

Minerva Salinas Guttman
EdD, APN, RN
Editor-In-Chief, Editorial Board

*Thank you
Mely Consolacion
de Leon, RN, MSN
for your
patronage*





July 4, 2020
Lexington, VA, USA

UPINHF President's Message

On behalf of the 2020 2921 University of the Philippines International Nursing and Healthcare Forum, Inc. (UPINHF) Board of Directors, advisors and consultant, I would like to congratulate the Editorial Board and Management of the International Forum for Nursing and Healthcare (IFNAH). IFNAH is the Journal of the UPINHF. In its fourth year of publication, it has proven to be not only viable but well respected. We applaud IFNAH for moving forward with its digital publication and with offering free access to UPINHF members.

UPINHF as an organization is honored through IFNAH as it makes available the best academic research of UP alumni and others. IFNAH serves as a showcase for UP excellence. Kudos to your earnest dedication and commitment. The process of peer review prior to publication takes time and commitment. While UPINHF cancelled its 4th International Forum this year due to Covid-19, IFNAH is forging ahead to publish.

The year 2020 has been designated by the World Health Organization as the Year of the Nurse and Midwife. It is also Florence Nightingale's 200th birthday. Both bring honor and recognition for the contributions of Nurses during this global pandemic.

UPINHF is now on its 4th year as an organization. The founding President Rhodora Maligalig and founding members laid a strong foundation that supports us today. The second President, Ma. Theresa Abad, maintained leadership that emphasized cohesion, collegiality and respect for one another. In their footsteps we continue to MARCH FORWARD, AIMING ALWAYS UP FOR EXCELLENCE. In just a few short years, has UPINHF maintained the principles on which it was founded, which has helped it gain recognition and credibility. We can stand tall and proud of

our accomplishments in such a short period of time. The organization is united, cohesive, forward-looking and upbeat.

What we are: UPINHF INC, incorporated on June 1, 2017, is a non-stock, nonprofit corporation registered under the laws of the State of California. It is organized as a public benefit, educational, and charitable corporation within the purview of the Internal Revenue Code of 1986, Section 501(c)(3) and corresponding sections of other Federal Laws. It was awarded a Certificate of Accreditation as a Chapter by the University of the Philippines Alumni Association and the Board of Regents of the University of the Philippines System. UPINHF is an accredited provider of Continuing Education by the California Board of Registered Nursing (CE Provider Number 16871). The mission of this health-centered international nonprofit corporation is focused on transforming healthcare by fostering inter-professional and multi-sectoral dialogue and collaboration in the advancement of professional practices, services, education, and research. Within this broader mission, we focus on particular on supporting healthcare programs at the University of the Philippines and the Philippine General Hospital as a teaching and healthcare institution, on supporting alumni through education and networking, and on engaging in charitable endeavors in the Philippines. The current Covid-19 pandemic has prevented us from meeting in person, but has strengthened our online presence and skills in holding virtual meetings, and in raising and conveying charitable contributions. Finally, as noted, the pandemic has not stopped the sponsorship and publication of IFNAH.

I look forward to the active participation of our membership in these endeavors. I do so with good reason, because I can thank you all for what you have already accomplished in 2020!

With best regards,



Gloria Smitka, GN, RN
President, UPINHF



Iren Bobis Roldan '69 and Gloria Amayun Smitka '69

Salute the Nurses in the Frontline of this Fight
Against COVID-19

Congratulations to the IFNAH Editorial Board!

**“A blade of grass peeks from a crack in the pavement,
silently growing with each passing moment.
Not caring about its harsh surrounding,
it survives firm and uncomplaining.
... Love is like a blade of grass ...”**

**Wilfredo Derequito, Filipino poet
(1948-2006)**

αvα

A Concept Analysis: Adherence in Type 2 Diabetes

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Abstract

Aim: The aim of this analysis is to develop a better understanding of the concept of adherence among individuals with Type 2 Diabetes.

Background: The incidence and prevalence of diabetes in the United States continues to increase at epidemic proportions yearly.

Design: The analysis was conducted using Rodgers' evolutionary method including database searches from Cumulative Index to Nursing Health Literature (CINAHL), COCHRANE, EBSCO, Education Resources Information Center (ERIC), MEDLINE, PsycINFO, Institute of Electrical and Electronics Engineers (IEEE), and SocINDEX. Keywords included adherence, compliance, diabetes care, type 2 diabetes and theories.

Results: Rodgers' evolutionary method guided this inquiry of concept of adherence across several disciplines. Analysis revealed definitions, related terms, attributes, references, antecedents, consequences, and related concepts that helped construct a model case for a client.

Conclusion: Researching the concept of adherence across diverse disciplines revealed that the definition of adherence in nursing and medicine entails persistence in following a health care provider's recommendation. Future studies must define adherence in relation to culture to establish a framework for holistic and client-centered care.

Keywords: Adherence, compliance, diabetes care, type 2 diabetes, and theories

A Concept Analysis: Adherence with Type 2 Diabetes

This paper aims to define the concept of adherence as it relates to managing type 2 diabetes mellitus (T2DM) and its impact on outcomes in various populations. The authors discuss the evolution of the term adherence in healthcare, addressing its use across other disciplines, and explore its impact in the

health context. Additionally, in analyzing the concept of adherence, the writers identify its attributes, references, antecedents, consequences, and related concepts. A model case is highlighted to illustrate the concept of adherence.

Diabetes consists of several metabolic disorders marked by persistently elevated blood glucose readings. Diabetes mellitus is a public health issue in the United States and worldwide. According to the World Health Organization (WHO, 2018), diabetes cases are estimated at 422 million globally. According to the American Diabetes Association (ADA, 2016), in 2015, 79,535 mortalities in the United States were directly attributed to diabetes with 252,806 more deaths related to diabetes complications. In 2017, diabetes-related healthcare in the United States resulted in costs of \$327 billion (ADA, 2018). As reported by Nieuwlaat et al. (2014), these statistics have raised the level of alarm among health professionals globally. Of specific concern, the issue of adherence to a diabetic regimen. Fewer than 50% of individuals with diabetes follow their protocol or adhere to their treatment plan, according to Nieuwlaat et al. (2014), who defined adherence as taking prescribed medication over 80% of the time. Nieuwlaat et al. (2014) also noted that nonadherence is related to worse health outcomes and increased side effects and deaths. Trief et al. (2013) addressed the mediating factors that continue to negatively impact adherence in clients.

Definition

Several interrelated terms are used in the literature to describe clients' ability to follow a plan to manage their condition, including compliance, concordance and, of specific interest for this paper, adherence. Gardner (2014), Lehane and McCarthy (2009), and Sabate (2003), with the World Health Organization (WHO), used the theoretical definition of adherence as "the extent to which a per-

son's behavior — taking medication, following a diet and/or executing lifestyle changes — corresponds with agreed recommendations from a health care provider." Similarly, an article joining the fields of pharmacology and psychology by Matthes and Albus (2014) defined adherence as collaboration with shared accountability between client and health care provider for therapeutic purposes. Of interest, De Las Cuevas (2011) used the related terms adherence and compliance interchangeably when specifically discussing how clients follow their healthcare provider's recommendations for taking prescribed medication. By contrast, the related term concordance is used more broadly to apply to a target or a goal in client behavior and is not limited to medication-taking behavior.

Other disciplines using the term adherence include psychology, pharmacology, physiotherapy, nutrition, engineering, computer science and software engineering, architecture, the construction industry, nursing, and medicine. In medicine, adherence is a term widely used in the field of psychiatry, as psychiatric clients often find it challenging to maintain their medication regimen (De Las Cuevas, 2011). In fact, its focus on mental and behavioral health, psychiatry, as opposed to other branches of medicine, has played a substantial role in defining the concept of adherence.

Historical Evolution of Adherence.

Insulin was discovered by and credited to Frederick Banting, Charles Best, John Macleod and James Collip in 1922. The terms adherence and compliance most notably became associated with diabetes (Bliss, 2013). Alikari and Ziga (2014) asserted that adherence pertains to how well an individual follows a treatment plan. Haynes (1979) has been credited with establishing adherence and compliance as the terms associated mainly with diabetes treatment. According to Haynes (1979), adherence relates to an indi-

vidual's ability to observe lifestyle modifications, diet, and medications as instructed by the health provider. Adherence, compliance, and concordance have been used simultaneously since the 1970s to describe an individual's habitual taking of a prescribed medication. Lastly, concordance focuses on an equal relationship between the client and health provider (Mitchell, 2014).

Adherence Linked to Theoretical Framework

Chinn and Kramer (2015) purported that evidence-based practice is essential to clinical nursing and has a strong link between theory and research. As such, in an effort to consider the philosophy, theories associated with adherence will be discussed. Sirur, Richardson, Wishart, and Hanna (2009) and Jeihooni, Hidarnia, Kaveh, and Hajizadeh (2015) asserted that social cognitive theory (SCT) and the health belief model (HBM) are often associated with adherence and compliance in contemporary times. Regarding adherence to diabetes treatment and management of clients, the applicable models and theories are SCT, HBM, and the transtheoretical model (TTM) (Sirur, Richardson, Wishart & Hanna, 2009; Jeihooni, Hidarnia, Kaveh, & Hajizadeh, 2015).

Psychologist Rosenstock and his associates developed the HBM in the 1950s (Irwin, 2015; Jeihooni, Hidarnia, Kaveh, & Hajiza-

deh, 2015; Rosenstock 2005/1966). Irwin (2015) posited that an individual must be ready before a change will take place. The concepts are perceived susceptibility, severity, benefits, barriers, cue to action, self-efficacy, and modifying variables such as demographics, psychosocial concerns, and culture.

Sirur, Richardson, Wishart and Hanna (2009) asserted that SCT is founded on the behavioral and cognitive theories of Bandura (1986). Bandura posited that there is a dynamic triad created by the individual, the behavior, and the environment and that modeling and repetitive behavior can change how the triad functions. Self-efficacy, an important aspect of SCT, was included as a concept to the theory as it is essential to predicting an individual's behavior. Bandura (1997, p. 3) described self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments."

Platt, Green, Jayasinghe, and Morrissey (2014) argued that the TTM Prochaska and Diclemente developed in 1983 is a behavioral change model. In fact, TTM has been used to manage smoking cessation and other health problems. In their book *Change for Good*, Prochaska, Diclemente, and Norcross (1994) used the key component from other biopsychological theories to TTM. It consists of six dynamic phases of behavioral change: pre-contemplation, contemplation, preparation,

action, maintenance, and the final stage, termination. TTM borrowed additional concepts from other behavioral and cognitive theories. One such concept is self-efficacy, which is imperative because it allows an individual to move from the pre-contemplation to contemplation stages. TTM has been used mainly to treat addiction disorders and other illnesses, such as obesity, diabetes, and coronary artery disease (Andres, 2008; Chasan-Taber, 2015; Platt, 2014).

Identifying Issues of Diabetes Treatment, Adherence, and Management

This section will present three relevant studies using the concept of adherence in treating and managing the care of individuals with diabetes. Vervloet et al. (2014) conducted a quantitative study to assess short- and long-term outcomes of medication adherence in T2DM individuals. The goal was to determine the short- and long-term impact of a short message system (SMS) prompter for T2DM individuals with previous history of nonadherence to taking their medication. The study comprised 48 subjects in the non-SMS group, 56 subjects in the SMS group, and 57 in the control group. The study findings were significant at a $p < 0.05$. Further, the study revealed that SMS with medication follow-up can assist with adherence and improve medication refills. Based on the findings, the recommendation is that the SMS may contribute

CALL FOR MANUSCRIPTS

Submission Deadline: May 15, 2021

The INTERNATIONAL FORUM FOR NURSING AND HEALTHCARE (IFNAH), a peer-reviewed publication, is the official journal for nursing and healthcare practice, education, and research of the UNIVERSITY OF THE PHILIPPINES INTERNATIONAL NURSING AND HEALTHCARE FORUM (UPINHf INC). The IFNAH Editorial Board is currently accepting manuscript submissions. All submitted articles must be original, not under consideration for publication elsewhere, and have not been published before.

Please e-mail your queries regarding the manuscript submission guidelines to ifnahjournal@upinhf.org and please cc chairman.ifnahjournal@upinhf.org; include your full name in the subject line and your phone number in the body of your e-mail.

Manuscripts MUST be submitted electronically as an e-mail attached MS-Word compatible document to the Editor-in-Chief (E-mail Address: ifnahjournal@upinhf.org) and the Chairman, Editorial Board (E-mail Address: chairman.ifnahjournal@upinhf.org)

to increased adherence and decreased spending in distinct groups.

Huffman et al. (2013) conducted a quantitative descriptive study of African American and Haitian individuals with T2DM to evaluate their adherence by examining their relationship between dietary counseling on diabetes self-management (DSM) and glucose control. The sample consisted of 254 Blacks with T2DM recruited in community centers in Miami-Dade and Broward counties: 125 African Americans and 129 Haitians. The results reached statistical significance in demonstrating higher DSM scores and better glucose control in the African American participants than their Haitian counterparts. These findings suggest that the DSM given to the Haitian participants may have been inadequate. The researchers concluded that more studies should be conducted to better understand which factors may improve DSM delivery in this Haitian population.

Ens, Seneviratne, Jones, and King-Shier (2014) conducted a mixed method study to determine factors influencing adherence to medicine regimens among individuals from South Asia with cardiac illnesses. This study did not address any diabetes issues but was selected for its cultural aspect and the importance of adherence among individuals with cardiac disease. An ethnographic design and a survey were used to determine how culture contributes to medication adherence in individuals of South Asian descent.

The sample included eight South Asian individuals, ages 65-78. Participants consented to be observed by a physician and pharmacist, enabling the researchers to obtain data on challenges study participants faced and the level of adherence they achieved. The researchers concluded that tools to enhance communication should be developed to increase adherence in culturally distinct cultural populations.

The studies described in this section underscore the complex nature of treatment adherence in T2DM clients and show adherence to be a universal challenge intensified by diverse cultural components.

Concept Analysis

Researchers across multiple disciplines have taken numerous approaches to developing an academic framework for concept analysis. This is especially true in nursing. According to Rodgers and Knafl (2000), methods are grounded in a philosophical stance aimed at using the analytical process to delineate a concept. Among the most common approaches are those developed by

Chinn and Jacobs (1983), Walker and Avant (2005), and Rodgers and Knafl (1989), whose concept analyses will be discussed in this paper. The following examples illustrate that in addition to remaining abreast of concept development in healthcare, nurses must remain connected to other interdisciplinary revolutions to achieve better care for their clients. For instance, awareness of technological advances in engineering can provide innovative and practical choices to assist clients. Did you follow one of these models?

According to Chinn and Kramer (2015), a concept is how one ascribes meaning to a word using objective and subjective data as well as symbols. A concept also refers to how the word is understood by individuals. Chinn and Kramer explain further that conceptual analysis is used to determine a concept's parameters and distinguish it from other similar concepts. Once a concept is defined, how it is used in the literature can lead to critical reflection and enhanced understanding of the subject it addresses. Theoretical definitions help clarify how a concept is used in the profession or another social context, as well as how and where it was first used (Chinn and Kramer, 2015).

According to Rodgers and Knafl (2000), Rodgers' evolutionary concept analysis was developed in 1989 and builds on the work of philosophers Stephen Toulmin and Ludwig Wittgenstein (1953) regarding knowledge acquisition. Per Rodgers (2005), Toulmin believed that to understand a concept, one should focus on both the human being's inner experience of an object and on the object as it exists in the outside world, independent of perception; this philosophy of inquiry was holistic in nature. Toulmin further explained that the relevant time period, society, and anthropology all play significant roles in defining a concept. For his part, Wittgenstein emphasized the importance of knowledge acquisition through a deeper understanding of language to clarify concepts. Rodgers' concept analysis incorporates both of these epistemic principles in her process and will be used to analyze and clarify the term adherence (Rodgers & Knafl, 2000). The following examples of how adherence is understood and used in disciplines other than healthcare and nursing illustrate a broader view of adherence that can, in turn, inform its expanded use in health discussions.

Engineering, Construction, Architecture, and Physics

At the intersection of the fields of engineering, construction, and architecture, Slak

and Kilar (2012) described the importance of building structures according to codes designed to enable them to withstand earthquakes. Specific to the context of multidisciplinary dictates for sound and resilient building structures, compliance here is defined as maintaining construction standards to follow codes and regulations applicable to the field.

This concept of adherence from engineering and physics is important as an adjunct to nursing and to understanding the governing definition of adherence. The writer defines adherence in the aforementioned disciplines of engineering and physics as the ability of an object to stick to another or to the act of abiding to a rule. According to Vaughan and Turner (2013), in a study along similar lines relating to the construction industry, adherence and compliance referred to following strict procedures and regulations to achieve optimal results. They described the necessity of adhering to building codes to provide energy efficiency, create resistant structures, improve safety, and ultimately impact the health of any individuals who come into contact with these structures. From earthquakes in Haiti and Chile to powerful hurricanes like Andrew and Katrina, which caused catastrophic damage in South Florida and New Orleans, respectively, recent disasters have increased awareness among both the public and industry regulators of the imperative for strict adherence to and compliance with building codes.

Computer Science, Physics, and Software Engineering

In the field of computer science, Panesar-Walawege, Sabetzadeh, and Briand (2011) address the general concept of adherence in terms of compliance with specified industry safety standards. They measure adherence by the degree of compliance with these established standards to ensure safe practice. In an article by Santoso and Redmond (2015), the authors described a proposal by the Institute of Physics and Engineering in Medicine Telecare and Telehealth for targeted monitoring of and technological assistance for health-related tasks in the homes of aging adults living alone. The program's goal was to have indoor positioning systems (IPS), including sensors, robots, and security systems, monitor activities in both civilian and military settings to assist members of this population with their daily tasks. The proposal's aim of promoting health and preventing harm through adherence called for following and assisting individuals with chronic illnesses such as cardiovascular and pulmonary disease, a history



of falls, Alzheimer's disease, and other complex health conditions. The authors reviewed IPS home care applications, discussing pros and cons such as cost, complexity, security, and privacy issues. They also addressed the inevitable increased complexity and use of technology in all facets of healthcare as potential deterrents to using IPS.

Likewise, with Emmerich et al. (1999), who are active in the domain of software engineering, compliance is also used in relation to standards "... technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes, and services are fit for their purpose." In addition, Silva, Rodrigues, Barreto, and Ferreira de Lucena (2016), and Fallahzadeh, Minor, Evangelista, Cook, and Ghazemzadeh (2017) explain that engineers may assist clients by using technological systems such as smart phones or tablets in order to increase client medication adherence. These systems are based on specific processes that monitor the time the medication is taken and send reminders to increase medication adherence in those clients.

Defining Attributes to Adherence

Toftagen and Fagerström (2010) defined attributes as a list of criteria that contributes to identifying a concept. According to Sapkota, Brien, Greenfield, and Aslani (2015),

the following attributes have to be present to achieve adherence in diabetes management: consistent physical activity, proper foot care and nutrition, consistent checks of blood glucose levels at home, and routine visits to primary providers. Nieuwlaat et al. (2014) added taking medications as directed as another attribute.

Methodology and References to Adherence

The following search engines CINAHL, COCHRANE, EBSCO, ERIC, MEDLINE, PSYCINFO, IEEE, and SOCINDEX yielded 255,931 articles. Focusing on English-language sources with the terms *adherence* and *medication* resulted in 73,102 articles. Limiting publication from 2010-2018 yielded 27,359 articles. Specifying key words *adherence* and *diabetes care* generated 7,017 articles. Further limiting the years to 2014-2018 produced 4,227 items. The search progressed with the words *adherence* and *diabetes treatment and management*, resulting in 678 articles. Single searches and meticulous reading of abstracts and full text journals unearthed relevant sources that spoke to the concepts of adherence and produced 41 articles in total: 12 from nursing, 12 from medicine and psychiatry, 6 from psychology, 1 from physiotherapy, 1 from nutrition, 2 from other international organizations, and 7 combined from the fields of architecture, construction, and

physics, including engineering and computer science studies.

Antecedents of Adherence

According to Toftagen and Fagerström (2010), antecedents are experiences necessary to the emergence of a concept and happen before that concept can take shape. In a nursing study examining clients with tuberculosis, McDonnell, Turner, and Weaver (2001) identified several antecedents as pertinent to achieving positive client outcomes and adherence. The antecedents included ability to self-care, intention to adhere (akin to self-efficacy), confidence in an existing support system, and no observable barriers to antecedents of adherence. Of significance, the last factor proved the most difficult to achieve, with most clients attesting to some type of barrier.

In a hypertension study, Polinski et al. (2014) identified several antecedents of adherence, including client-provider relationships built on trust, cooperative decision-making, discussion of all adverse effects, and economic factors. Matthes and Albus (2014) observed and identified the following antecedents in their participant population: being educated about the course of treatment, taking relatively few pills, and being married (having a stable marital status); these antecedents proved essential to maintaining adherence. Nieuwlaat et al. (2014) identified other an-

ecedents to adherence, including the client's confidence, age, and psychological state.

Consequences and Related Concepts of Adherence

According to Chinn and Kramer (2015), consequences are defined as events that occur after and as a result of the concept. As reported by Garcia-Perez, Alvarez, Dilla, Gil-Guilien, and Orozco-Beltran (2013) in a study of T2DM, they recognized the following consequences: lack of adherence, morbidity, and mortality. Per Sapkota, Brien, Greenfield, and Aslani (2015), in the literature, many negative outcomes were reported due to lack of adherence. One factor identified as impacting outcomes was the client's socioeconomic status, as diabetes is a chronic condition that requires expenditure of extensive financial and social resources. A lack of resources can lead clients to negative outcomes. Client resources must be examined critically in order to maximize adherence, which improves outcomes (Sapkota, Brien, Greenfield, & Aslani, 2015). Of note, although the writer reported the psychological state in the antecedents, Nieuwlaat et al., (2014) also mentioned psychological state as a consequence of a client's medical regimen. Finally, as Toftshagen and Fagerstrøm (2010) state, related concepts are terms that are similar to the concept yet do not possess the same distinctive features. According to Alikari and Zyga (2014), Lam and Fresco (2015), and Nieuwlaat et al. (2014), related concepts include nonadherence, noncompliance, and persistence.

Model Case of Adherence

Marion, a 45-year-old man, comes to the healthcare provider's office for the first time. Marion, a married father of two, is a janitor who often calls in sick due to diabetes-related leg pain and nighttime awakening. Today's appointment follows a surgical consult he had about his leg pain. During today's visit, the nurse practitioner gathers a complete history, performs a physical assessment, and discusses his laboratory results. Marion's blood glucose is 270 and his hemoglobin A1C is 12%. The nurse practitioner (NP) revises a treatment plan designed to achieve a normal blood glucose and a hemoglobin A1C of less than 7%, initiating pharmacotherapy to control Marion's blood glucose and ameliorate his nerve pain symptoms.

Marion states that he does not routinely check his blood glucose as it is usually high. His diet is high in carbohydrates, and he does not attest to engaging in any physical activity outside of his job. Upon fully appreciating

what is expected of him, Marion is unsure of being able to achieve all of the goals he has set with his healthcare provider, so a negotiation between him and the provider ensues.

Marion returns in one month with a diary of his blood glucose readings ranging from 140-160 and reports a reduction of pain in his legs and less nighttime awakening. Now he reports being more confident about the plan and newly motivated to achieve its goals. Marion's short-term success has elicited a belief in him that he can achieve the progressively larger health goals he and his provider have determined are necessary, but at a pace he can handle. The long-term plan for Marion consists of frequent follow-ups to stabilize his blood glucose. Marion has also agreed to record his blood glucose, dietary habits, and physical activity.

After nine months, Marion is pain-free and eating a diet conducive to a euglycemic (normal blood glucose) state. He feels much better, and his blood glucose ranges from 100-130 with an A1C of 7%. He is optimistic about achieving his goal of an A1C of 6.5% in short order. Also conducive to his adherence, Marion has incorporated his family into his plan, so they are now involved in helping him eat a healthier diet. Further evidence of his adherence, Marion keeps routine appointments and follow-up visits with his ophthalmology, podiatry, and primary care providers.

Discussion

The writers gathered a wealth of information reviewing literature on the concept of adherence. Several themes emerged in the process of defining adherence through various disciplines. A review of multiple disciplines, including nursing, medicine, psychology, psychiatry, pharmacy, physiotherapy, nutrition, engineering, computer science, architecture, and construction led to a consensus definition of adherence for nursing as both physical stickiness and figuratively sticking to a plan and closely following a provider-recommended regimen.

Conclusion

Historically, adherence in the health fields has focused on medication compliance. But based on this preliminary concept analysis, the writers conclude that adherence in medicine and nursing contexts alike should be redefined to reflect the following: first, the role of an individual's culture and specific engagement in a plan of action, and second, the application of adherence to components beyond medication, such as dietary and lifestyle changes, all of which may help ameliorate

health outcomes in a holistic manner.

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The Demographic Determinants of Type 2 Diabetes: A Systematic Literature Review

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Abstract

Diabetes is the seventh leading cause of death in the United States. Beyond genetics, there are many social determinants and lifestyle choices that affect predisposition for this disease. These same factors also influence diabetes management after diagnosis. Race, income-level, and education-level all shape how likely a patient is to be diagnosed with, and how likely they manage diabetes. After extensive literature searches, this review found that Non-Hispanic Blacks were 1.5 times more likely to be diagnosed as compared to Non-Hispanic Whites. There were both an inverse correlation between income and diabetes prevalence, as well as between educational attainment and diabetes. Overall, this review breaks down many of the demographic factors that characterize diabetes prevalence.

1 Introduction

Diabetes is a disease that affects more than 34.1 million Americans each year, a number roughly 10% of the total U.S. population. There are two main types of diabetes: Type 1 (T1DM) and Type 2 (T2DM). Type 1 is caused by genetic deficits that prevent the pancreatic β cells from producing insulin. Type 2, on the other hand, is caused by cellular insulin resistance. T1DM is also known as insulin-dependent diabetes is caused by a root insulin production problem and is often managed with insulin injections. T2DM, on the other hand, is also known as insulin-independent and diabetes and drugs like Metformin work to lower patient hyperglycemia.

For the purposes of this review, Type 2 diabetes was selected for study, as demographic determinants of health have a stronger correlation with it than with Type 1. Within the last 10 years, the number of publications regarding the social impacts of diabetes has increased sharply. As a case in point, the search term "diabetes social determinants" yielded around 19,000 results between the years 1990 and 2000, 91,000 results between 2000 and 2010, and 172,000 results from 2010 to 2020. This trend emphasizes the need for curated, systematic reviews that garner both qualita-

tive and quantitative trends in the literature.

To break down certain social parameters, race, income, and educational attainment were operationalized. Race was mainly broken down into four groups: Non-Hispanic White, Non-Hispanic Black (NHB), Hispanic, and Asian. Income levels were broken down broadly into three main annual income categories: Low Individual Income (<\$15,000), Middle Individual Income (\$15,000-\$80,000), and High Income (>\$80,000). Finally, educational attainment was further operationalized by the highest level of education attained (grade school through graduate/professional school). By defining the variables examined in this review, the reader will have a clearer understanding of what specific social and demographic variables influence diabetes prevalence and management.

1.1 Article Selection Methods

For this review, we relied heavily on the Google Scholar and PubMed search engines. Different combinations of keywords such as "diabetes", "social", "determinants", "demographics", "Hispanic", "White", "Asian", and others were used in the search. A holistic relevancy filter was used to limit our search results. We further categorized the articles based on their scope. Journal publication dates were considered, and all journals published before 1990 were excluded. We gave a stronger preference to articles published after 2005. Articles were classified as focusing primarily race, income disparities, or education attainment. Figure 1 demonstrates the article selection methodology with a flow diagram. With the resulting methods, we selected a total of 19 articles for review. A matrix summarizing the articles selected, along with a brief summary and their categorization is provided as Supplemental Figure 1 in the appendix.

2 The Influence of Race

Race has often been shown to be strongly correlative with T2DM prevalence.

2.1 Non-Hispanic Blacks

Brancati et al showed that Non-Hispanic Blacks are over twice as likely to be diag-

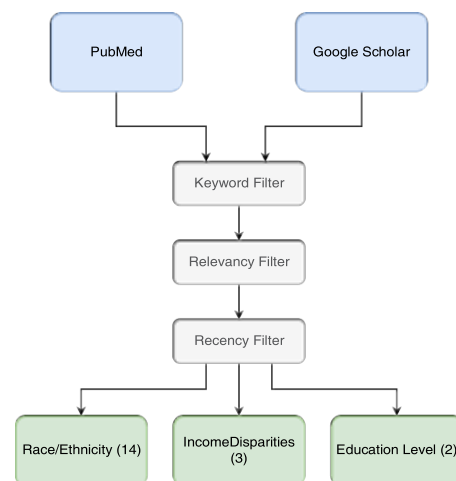


Figure 1: The flow chart demonstrating criteria for journal selection and classification. The majority of the selected literature focused on racial and ethnic factors.

nosed with diabetes as compared to Non-Hispanic Whites [1]. To attain this statistic, the scientists even adjusted for confounding factors such as racial differences in age, income levels, and Body Mass Index (BMI). This strongly suggests that there maybe certain social or even genetic factors directly associated with NHBs that predisposes them to having diabetes. These numbers are also reflected in children aged 10-19. Whereas Asian populations have about

0.52 cases per 1,000 children, African-American groups had a rate of 1.06 cases per 1,000 children [17]. This number is roughly double that of the rates found in Asian populations. These numbers could be due to the fact that NHBs, along with Hispanic groups, have increased baseline insulin secretion [11]. This is further associated with insulin resistance. If the baseline secretion levels of these groups is higher, there is a lower threshold for them to actually be diagnosed with diabetes. Chow et al. [5] noted that African Americans, among other races, experience a 50-100% higher burden of illness and mortality rate from diabetes as compared to White Americans.

2.2 Hispanics

Amongst Hispanic populations there is

also increased T2DM prevalence as compared to Whites. Mexican populations are especially susceptible, with rates about 2 to 3 times higher than Non-Hispanic Whites [19]. This number is not as pronounced in other Cuban-American and Puerto Rican subgroups. The e Hispanic Health and Nutrition Examination Survey (HHANES) was a survey conducted in the 1990s amongst Hispanic-American populations to understand the demographics of diabetes, amongst other diseases. The study found that Cuban-Americans in the Miami-Dade area, along with Puerto Ricans in New York City had lower diabetic rates as compared to Mexicans, but still had about a 40% higher prevalence rates as compared to Non-Hispanic Whites [19]. Even modern statistics from the 2010s confirm this trend of higher prevalence rates. Cheng et al illustrated between the 2011 and 2016 that roughly 1 out of 4 Mexican Americans would be diagnosed with diabetes [3]. Roughly 20% of Cubans and Puerto Ricans were also diagnosed. Noting the complexity this demographic, South Americans only had a 12.3% diagnosis rate. These numbers may again be due to the fact that prior studies have linked race to higher baseline insulin production. On the other hand, complexities within the vast Hispanic demographic itself hint at other factors that may influence higher susceptibility to diabetes.

Multiple studies have noted the presence of certain genes and proteins in Mexican American groups that correlate with higher diagnosis rates [13] [6]. Another reason for overall higher prevalence rates in Mexican Americans is lower patient adherence to hypoglycemic medications. A recent study by Garcia et al. found that approximately 72% of Mexican American males do not adhere to oral hypoglycemic medication regimens. The authors of this found that high social support negatively correlated with adherence. Mexican demographics are known to have some of the highest social support networks, so contextualizing the results with known aspects of Mexican culture helps to provide a deeper understanding of diabetes prevalence. Hispanics have an overall higher T2DM prevalence compared to Non-Hispanic Whites. A combination of both genetic and social factors influence these higher racially-specific diabetic rates.

2.3 Asian Americans

This demographic has vast disparities depending on the geographic location within Asia. Whereas South Asian populations had about a 24% prevalence rate of diabetes,

only about 14% of East Asians had been diagnosed[3]. South Asians are more predisposed to than their white counterparts to get diabetes. Some studies have gone so far as to characterize diabetes as an "epidemic" in South Asia [14]. Jayawardena defined the "epidemicity index" as the ratio between the prevalence of Impaired Glucose Tolerance and Total Glucose Intolerance (TGI) (diabetes and pre-diabetes) [14]. This tool is useful as a prognostic factor for determining the likelihood of diabetic spread. The Island of Sri Lanka had the highest index of 50.4% as compared to other nations in South Asia[14].

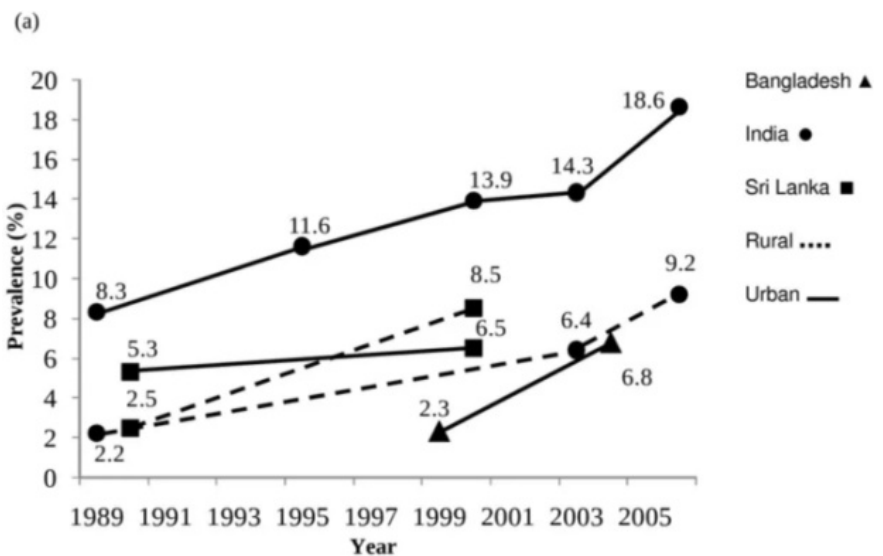


Figure 2: The increased prevalence of diabetes amongst South Asians overtime [14]

There is also a trend of increasing prevalence amongst South Asians. Whereas in 1989 only 8.9% of Indians were diagnosed with diabetes, by 2005 that number had ballooned to 18.9% [14]. The se numbers are further reflected in Indian- American populations, as illustrated by the Metabolic Syndrome and Atherosclerosis in South Asians Living in America Study (MASALA) [15]. This study found that compared to Non-Hispanic Whites (7% prevalence) and East Asians (14% prevalence), Indian Americans had a 26% diabetes prevalence rate. This number is even higher than the aforementioned NHB and Hispanic American groups, both of which had 19%prevalence rates in this study.

Although many underlying causative factors are still not clear, aspects like higher BMI, central obesity (abdominal fat), and higher levels of metabolically active deeper intra-abdominal in South Asians all correlate with increase T2BM prevalence [10]. The trend of increased diagnosis may also be due to overall changing lifestyles. East Asian American groups have some of the lowest

prevalence rates amongst Non-White minorities in America. Yet higher diabetes diagnoses levels in this demographic may also be due to certain genetic predispositions for insulin resistance[4] not found in Whites.

2.4 Whites

As compared to other racial groups, Whites have the lowest prevalence of diabetes in America. On average, there is about a 7% prevalence in this racial group [15]. This prevalence level maybe due to behaviors unique to this racial group. Harris et al. found that even though Non-Hispanic Blacks and Whites often see the same specialists and

endocrinologists, Whites had about a 40% higher physician visitation rate as compared to NHBs [12]. Even when controlling for other factors like obesity, Whites still tend to have lower diabetes rates, indicating that perhaps underlying social and genetic factors may influence White patient outcomes.

3 Income Disparities and Diabetes

It is nothing new that socio-economic status affects many aspects of healthcare. By affecting both access to quality health care and lifestyle choices, income disparities significantly impact diabetes prevalence rates.

3.1 Low Income Populations

As stated in the introduction, low-income was defined as any annual individual income less than \$15,000. Dinca-Panaitescu et al. [8] identified that diabetes prevalence in low income individuals was over 4 times higher than in the highest income individuals. Even after adjusting for traditional diabetes risk-factors such as BMI, there was still a significant difference between the lowest and high-

est income individuals. This observation may be explained by some of the social aspects of being low income. Poorer households have lower access to quality healthcare, tend to have lower education rates, and also tend to have higher levels of stress. Stress levels in particular have been implicated in hyperglycemia [21].

3.2 Middle Income Populations

There is a gradient in the levels of diabetes as a function of income level. Further validating the results of the Dinca-Panaitescu et al. study, Stern and his colleagues showed that in Mexican American populations in San Francisco, the middle-income neighborhoods had a 10% prevalence rate, as compared to 16% in the lower income barrios and 5% in wealthy households in San Antonio, Texas [20]. These additional data points highlight how intermediate income levels correlate with intermediate prevalence rates.

As compared to lower income populations, those in the highest income bracket also tend to have lower rates of auxiliary habits that correlate with diabetes. Wealthier individuals tend to smoke less, have lower BMIs, and have higher physical activity [16]. These individuals have further access to high quality health care, and therefore may have better resources to manage and control their hyperglycemia and other diabetic symptoms once diagnosed. Socio-economic status not only indicates income levels but also implies educational attainment. Many recent articles have shown that education itself is a strong determinant of health, including diabetes, outcomes.

4 Educational Level

As stated earlier, the educational level of patients often strongly influences not only their predisposition for diabetes, but also their success in managing their T2DM once diagnosed. As per the prior discussion of operationalizing education, low educational attainment was defined as anything less than a college undergraduate degree. High educational attainment was defined as an undergraduate degree or above.

4.1 Low Educational Attainment

A study published in the American Journal of Public Health found that individuals with less than a high school diploma were 1.6 times more likely to have diabetes than those with at least a bachelor's degree [2]. When controlling for confounding variables, such as race, there was still an inverse correlation between education and diabetes prevalence

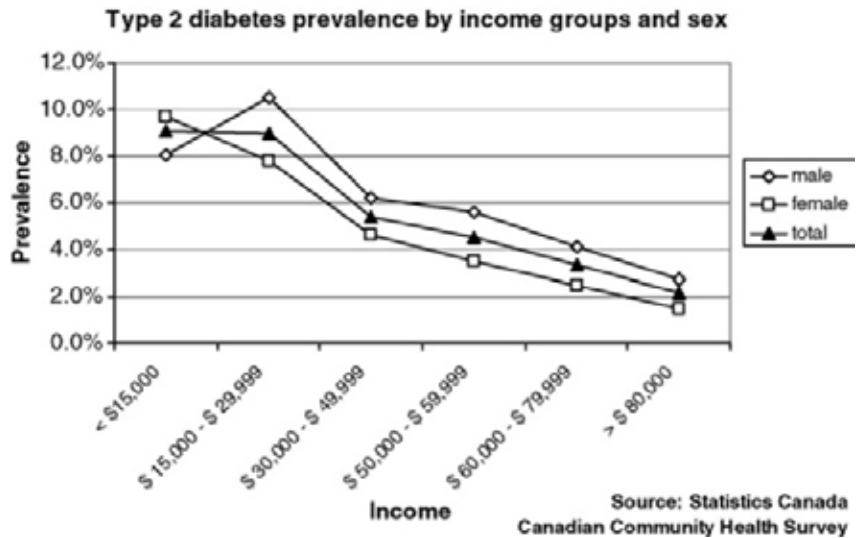


Figure 3: T2DM prevalence rates as a function of income levels [8]

amongst Non-Hispanic Blacks. The study cites how individuals with lower education levels may not adopt healthy behaviors such as good nutrition and medication compliance. These habits are often associated with higher levels of educational attainment.

4.2 High Educational Attainment

Especially amongst Whites and Hispanics, higher educational levels correlated with lower diabetes prevalence. There is even a difference amongst gender and educational attainment, with women with at least a bachelor's degree exhibiting lower disease prevalence as compared to men[2]. These interesting findings indicate the intersection of many different variables along with educational attainment when it comes to disease prevalence.

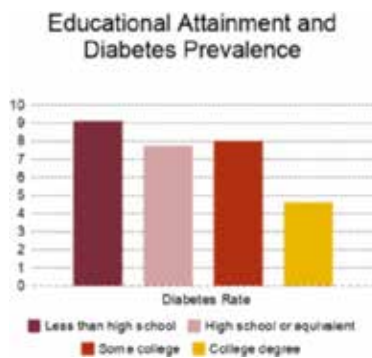


Figure 4: Educational Attainment and its impact on diabetes prevalence rates [7]

5 Conclusion and Discussion

By exploring three very important aspects of diabetes demographics, this review has shown that diabetes is rather a complication of many distinct variables, rather than a giant monolith. Race has been shown to be significantly linked to its prevalence rates,

with South Asians and Non-Hispanic Blacks amongst those with the highest incidence rates. A combination of genetics and behaviors unique to these racial groups may drive their diabetes prevalence statistics.

Income levels have also been shown to be inversely correlated with diabetes, even after controlling for BMI. Secondary factors associated with poverty, including stress, and access to healthcare may influence the fact that a poor individual is four times more likely to have diabetes as compared to a wealthy individual. Educational attainment further showed an inverse correlation when it came to this disease prevalence. However, this trend was nuanced by the fact that it was unique to only certain racial groups.

This brings up a vital point. These three factors are not mutually exclusive. Rather, they intersect in complex ways, yielding overall different health outcomes depending on an individual's demographics. A low-income White woman may have distinctly different outcomes as compared to a Hispanic high-income woman. The social and medical disparities of this paper highlight vital avenues for future research. Cross-sectional studies that track the health outcomes of diabetes patients from different groups will illuminate new trends. Case studies directed towards members of certain demographics will help scientists attain a more subjective understanding of existing disparities. Future works may also include more meta-analyses of existing literature to provide new insights. Overall, this review has highlighted and broken down many of the social determinants of diabetes. This allows readers to gain a clearer understanding of the mosaic that is Type 2 Diabetes.

6 Appendix

Article Title	Year	Summary	Type	Classification
Noninsulin-Dependent diabetes mellitus in black and white Americans [12].	1990	Compared diabetes prevalence as a function of age in Black and White Americans.	National survey meta-analysis	Race/Ethnicity
Recent developments in the epidemiology of diabetes in the Americas [20]	1992	Compared diabetes prevalence rates amongst Hispanics in America and in the southern hemisphere.	Population Survey	Race/Ethnicity
Stress and Diabetes Mellitus [21]	1992	Contrasted human and animal based studies regarding the effects of stress on diabetes.	Animal and Patient Study Review	Income Disparities
Diabetes mellitus, race, and socioeconomic status a population-based study [1].	1996	Examined either the self-reported or blood-glucose derived diabetes status of 975 White and 418 African Americans between 35-54 years of age.	Population-based cross-sectional study	Race/Ethnicity
Increased Insulin Resistance and Insulin Secretion in Nondiabetic African Americans and Hispanics Compared With Non-Hispanic Whites: The Insulin Resistance Atherosclerosis Study [11]	1996	Examined fasting and first-phase insulin response in nondiabetic African Americans (n= 288), Hispanics (n= 363), and non-Hispanic whites (n= 435).	Population-based cross-sectional study	Race/Ethnicity
Diabetes in Hispanic Americans [19]	1996	Summarized that Hispanic Americans have higher risk factors such as higher levels of LDL, obesity, and triglycerides.	Book Chapter	Race/Ethnicity
Low Adiponectin Levels Predict Type 2 Diabetes in Mexican Children [6]	2004	Compared adiponectin levels in diabetic and non-diabetic Mexican children. Determined that high adiponectin levels predict lower prevalence of Type 2 Diabetes.	Population-based cross-sectional study	Race/Ethnicity
Socioeconomic status and diagnosed diabetes incidence [16]	2004	Analyzed results from the NHANES I Epidemiologic Followup Study 1971-1992. Found in women that diabetes levels inversely associated with income and occupational status.	Retrospective Survey Analysis	Income Disparities and Educational Attainment
Education and Diabetes in a Racially and Ethnically Diverse Population [2]	2005	Examined results from the National Health Interview Survey (1997-2002). Found that education and diabetes prevalence were inversely correlated.	Retrospective Survey Analysis	Educational Attainment
Identification of Type 2 Diabetes Genes in Mexican Americans Through Genome-Wide Association Studies [13]	2007	Discovered several single nucleotide polymorphisms (SNPs) that are suggested to be associated with diabetes in the Mexican American population.	Genome-Wide Association Study	Race/Ethnicity
Diabetes prevalence and income: Results of the Canadian Community Health Survey [8]	2010	Found that diabetes is inversely associated with income in the Diabetes population	Retrospective Survey Analysis	Income Disparities
Prevalence and Correlates of Diabetes in South Asian Indians in the United States: Findings From the Metabolic Syndrome and Atherosclerosis in South Asians Living in America Study and the Multi-Ethnic Study of Atherosclerosis [15]	2010	Reported that South Asian Indians have higher prevalence of diabetes as compared to White Americans.	Population Survey Analysis	Race/Ethnicity
Type 2 diabetes and cardiovascular disease in South Asians [10].	2011	Analyzed the existing knowledge base of the epidemiology and pathophysiology of South Asian diabetes patients.	Literature Review	Race/Ethnicity
Genetics of Type 2 Diabetes in East Asian Populations [4]	2012	Summarized that at least 15 T2D loci are associated with the East Asian demographic	Review of Genome-Wide-Association Studies	Race/Ethnicity
Prevalence and trends of the diabetes epidemic in South Asia: a systematic review and meta-analysis [14]	2012	Compiled the corpus of literature on diabetes prevalence in South Asia.	Systematic Literature Review	Race/Ethnicity
The Disparate Impact of Diabetes on Racial/Ethnic Minority Populations [5]	2013	Reported that African Americans may experience 50% to 100% higher burden of T2D associated illness and mortality as compared to non-Hispanic Whites	Review of Diabetes Advocacy Literature	Race/Ethnicity
Race/Ethnic Difference in Diabetes and Diabetic Complications [17].	2013	Reviewed published literature on ethnicity/race associated diabetes trends	Scoping Literature Review	Race/Ethnicity
Prevalence of Diabetes by Race and Ethnicity in the United States [3]	2019	Found higher levels of unreported diabetes in Hispanic populations as compared to non-Hispanic Whites.	Retrospective Cross-sectional Population Survey Analysis	Race/Ethnicity
Correlates of low-adherence to oral hypoglycemic medications among Hispanic/Latinos of Mexican heritage with Type 2 Diabetes in the United States [9]	2019	Reported lower levels of oral medication compliance amongst Hispanic populations as compared to non-Hispanic Whites.	Retrospective Cross-sectional Population Survey Analysis	Race/Ethnicity

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Salute to the frontliners and first responders during the pandemic crisis

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GRADUATE

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Emergence of Pandemics: A Historic Review

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Abstract

Pandemics caused by different infectious viruses affecting humans for which they have little or no immunity within the past century have been recorded in history. The worst of these was the 1918 Spanish Flu, causing about 20 million deaths globally. Other flu pandemics that followed were the H2N2 Asian Flu in 1957, the H3N2 Hong Kong flu in 1968, and the swine flu in 2009. These influenza viruses, the *Orthomyxoviruses*, consist of Type A viruses causing periodic pandemics. Both types A and B cause recurring regional and local epidemics occurring during the winter months in temperate countries, causing extensive morbidity and mortality in all age groups. However, fatal pneumonia may develop as a complication predominantly in elderly persons with underlying chronic disease. In 2002, a different family of viruses, SARS-HCoV, a human-infecting Betacoronavirus, and member of the *Coronaviridae* family, was identified in *Guangdong, China* causing a pandemic affecting 26 countries in five continents and more than 8000 cases possibly, through the animal-to-human transmission. And lately, the novel coronavirus disease (COVID-19), formerly called SARS-CoV-2, was identified in Wuhan City, Hubei Province in China. It is considered as the most severe public health emergency since the outbreak of SARS in 2003 spreading from one city to the whole country in just 30 days. Within a few months, since cases emerged, it has prompted lockdowns in multiple countries, claiming millions of lives worldwide and counting.

Technological advances brought by the industrial revolution enhanced trade and travel increasing significantly human mobility, both within countries and beyond boundaries, increasing rate of infectious disease communicability. Moreover, social development gravitated in settlements within the cities interacting with each other in close proximity facilitating the transmission of contagious diseases for which humans possessed little or no immunity. Overcrowding quickly became the primary vector of infectious disease spread throughout the world.

Lessons learned from public health strategies that flattened the epidemiological curve highlighted the use of nonpharmacologic and pharmacologic interventions. These are mandatory and voluntary quarantine to isolate the asymptomatic patients, hospitalization for complicated cases, avoidance of mass gathering, disinfecting the surroundings, social distancing, wearing of face masks when in public, alleviating the signs and symptoms, and most of all performing frequent hand hygiene. Further, travel advisories were quickly effected within and between countries, and continents and antibiotics were given to treat secondary bacterial pneumonia.

To combat this public health threat, two requisites stand out: control and prevention of the pandemic and scientific research. Until a vaccine or an efficacious treatment becomes available, COVID-19 may be one of the worst pandemics in recorded history.

Keywords: Virus, Flu, Influenza, Pandemic, Coronavirus

Introduction

Going back in history, thousands of years ago, humans were hunter-gatherers with familial groups of 20-30 people mainly concerned with foraging food. The infectious disease was unknown because the population was small to maintain the chain of human-to-human transmission (Huremovic, 2019). The shift from hunter-gatherer to agricultural revolution provided ample food supply. However, the number of domesticated livestock grew large, making these animals purveyor of infectious diseases. The interaction between humans and animals gave microbes opportunities to cross-species, leading to outbreaks (Huremovic, 2019). For example, smallpox was believed to have originated from Camel pox thousands of years ago. Other viruses like influenza, mumps, rotavirus believed to have originated in the same manner. Further, the massive human agricultural settlements and surplus grain storage led to rodent infestations and contact between humans leading to the outbreak of plague and typhus (Saunders-Hastings & Krewski, 2016). Moreover,

the downfall of the Aztec civilization in the 16th century with a population decline from 15 million to 2 million was mainly due to the consequences of infectious diseases rather than wars. Infectious diseases have continued to create a heavy toll on humankind for many centuries (Saunders-Hastings & Krewski, 2016)

The advent of the industrial revolution brought technological advances: expansion of roads and the rail system as well as steam engines. These technological advances increased trade and travel, leading to significant increases in human mobility, both within countries and beyond boundaries. Human development gravitated in settlements within the cities interacting with each other in close proximity facilitating the transmission of infectious diseases. Overcrowding quickly became the primary vector of contagious disease spread throughout the world. The spread of plague across continents is documented to have been caused by human movements over long distances for trade, conquest, or colonization. Further, sea voyages, such as the Americas' discovery, led to the introduction of new infections. Diseases like smallpox, measles were carried to non immune populations causing devastating impacts (Saunders-Hastings & Krewski, 2016).

It was only until the 19th century when Louis Pasteur provided substantial evidence for the Germ Theory Disease that explained the mechanisms of emergence and causation of infectious disease leading to rapid advances in the development of anti-microbial therapy and vaccinations in the 20th century. The discovery and isolation of the influenza virus changed flu prevention and control. The discovery of penicillin in 1929 provided necessary treatment for secondary bacterial pneumonia, the primary cause of death from influenza (Saunders-Hastings & Krewski, 2016). The advent of vaccination dramatically reduced the burden of infectious diseases with the eradication of smallpox. However, nature has been striking back at us with the rise of emerging influenza virus-caused infectious diseases.

Objectives

This article aims to discuss:

1. The emergence of major pandemics affecting humans within the past one hundred years, for which they have little or no immunity: the H1N1 Spanish Flu (1918), the H2N2 Asian Flu (1957), the H3N2 Hong Kong flu (1968), SARS (2002), H1N1 swine flu (2009), and the on-going novel COVID-19.

2. Public health strategies that flattened the epidemiological curve, and the lessons learned from the healthcare management of each.

Through the centuries, outbreaks of viral infection in pandemic proportions have changed the economic, political, and social landscapes of human civilization. History has taught us that accentuating on the drivers of emergence and management of past pandemics are crucial in understanding why the present COVID-19 continues to arise.

Emergence of the Influenza Virus Pandemic

Influenza viruses, the Orthomyxoviruses causing acute respiratory disease with accompanying systemic symptoms consist of types: A, B, and C. Influenza A viruses are classified by subtypes based on the properties of their hemagglutinin (H) and neuraminidase (N) surface proteins. There are 18 different HA subtypes and 11 different NA subtypes. Subtypes are named by combining the H and N numbers, e.g., A(H1N1), A(H3N2). Type A viruses cause periodic pandemics, while both types A and B cause recurring regional and local epidemics typically occurring during the winter months in temperate countries causing extensive morbidity and mortality in all age groups. However, fatal pneumonia may develop as a complication predominantly in elderly persons with underlying chronic disease. Type C virus is milder than A or B, and does not cause epidemics.

Spanish Flu 1918-1920

The 1918 Spanish Flu pandemic was considered the most significant medical holocaust in history (Waring, 1971). Caused by H1N1 virus with genes of avian origin, it was considered as the first and worst pandemic in recorded history that occurred in the setting of modern medicine (Huremović, 2019). The pandemic came in three waves: Spring, Fall, and Winter 1918–1919. The number of cases during the first wave in the Spring season was relatively mild. However, over four months that followed during the second wave in the Fall, 500 million or about one-third of the world's population became infected with the number of cataclysmic global losses esti-

mated to at least 50 million deaths worldwide (CDC, 1918, Humphries, 2013).

The Spanish Flu unusually affected the young and previously healthy individuals, which was likely due to the infection triggering a cytokine storm, overwhelming and destroying the immune system. By August 1918, the virus mutated to a much more virulent and deadlier form, returning to kill many of those who escaped it during the first wave (Simonsen L, Clarke MJ, Schonberger LB, Arden NH, Cox NJ, Fukuda KK, 1998).

The pandemic reportedly took place around World War I, with overcrowding, frequent human movements, intercontinental travels, advanced modes of transportation contributing to the spread of the infection. In the military camps and trenches during the First World War, the influenza pandemic affected millions of soldiers worldwide, causing the deaths of 100,000 troops (Shanks, 2015). However, despite the advent of medical epidemiology and the study of infectious diseases, the primary origin of the Spanish Flu remains unknown. Possible sources cited are the USA, China, Spain, France, or Austria (CDC, 1918).

Even after the 1918 H1N1 virus has been synthesized and evaluated, the properties that made it shattering are not well understood. With no vaccine to protect against infection, no antibiotics to treat secondary bacterial infections, the officials relied on preventive and control measures. These included worldwide isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings, which were not uniformly enforced (CDC, 1918).

The return of soldiers from the war, the migration of refugees, and the mobility of women engaged in extra-domestic activities increased the rapid spread of the virus since the onset of the first pandemic wave (Reid, Taubenberger, & Fanning, 2004). Street cleaning, disinfection of public spaces, churches, cinemas, theaters, and workshops, banning crowds outside shops, and limiting the number of passengers on public transport were considered cornerstones in controlling Spanish Flu. However, these measures were deemed ineffective (Martini, Gazzaniga, Bragazzi, & Barberis, 2019).

Public health interventions included distribution of free soap and provision of potable water, removal of human waste, regulation of toilets, and organized inspection of milk and other food products. Further, announcements in newspapers and leaflets advertised the therapeutic virtues of water. Furthermore, identifying cases of illness through surveil-

lance, and voluntary or mandatory quarantine or isolation also helped curb the spread of Spanish Flu in a period in which no effective vaccines or antivirals were available (Martini, Gazzaniga, Bragazzi, & Barberis, 2019).

In Italy, to simplify mortuary services, administrations in the worst affected centers set up collection points for corpses and abolished all the rituals that accompanied death.

Asian Flu 1957- 1958

Also known as the influenza A (H2N2) virus, it emerged in East Asia, triggering a pandemic. This H2N2 virus comprised of three different genes from an H2N2 virus that originated from an avian influenza A virus, including the H2 hemagglutinin and the N2 neuraminidase genes. The strain known as the Asian Flu was a comparatively milder influenza pandemic (Saunders-Hastings, & Krewski, 2016). It was first reported in 1957: Singapore in February, Hong Kong in April, and coastal cities in the United States in summer 1957. The estimated number of deaths was 1.1 million globally (CDC, 2019).

Symptoms were mostly mild, and patients recovered after a period of bed rest and antipyretic interventions. There were complications in 3% of cases with 0.3% mortality. Pneumonia and bronchitis accounted for 50% of these complications, the rest being cerebral- and cardiovascular disease caused by the Flu (Jackson, 2009). Some General Practitioner physicians prescribed antibiotics to uncomplicated cases, which was later observed that the arbitrary use of antibiotics was not advantageous. Although the Asian Flu was the first pandemic to occur in an environment with global surveillance systems and laboratory capabilities in place, expertise and methodological rigor were still lacking (Henderson, 2016). The development and distribution of vaccines were inefficient and were in limited circulation (Jackson, 2009). By the end of the pandemic, only thirty million vaccine doses were distributed globally (Jensen, Dunn, Robinson, 1958). Despite a heavy focus on vaccination campaigns and vaccine efficacy of 53%–60%, inadequate coverage prevented vaccination from having a significant impact on pandemic trends (Henderson, Courtney, Inglesby, Toner, Nuzzo, 2009). Non-pharmaceutical interventions included school closure, travel restrictions, banning of mass gatherings, and quarantine. Quarantine was not strictly imposed due to the mild nature of symptoms.

Hong Kong Flu 1968-1970

The Hong Kong Flu, also known as the



H3N2, occurred ten years after the appearance of the Asian Flu. It was the first virus to exhibit an accelerated spread due to extensive air travel (Cockburn, Delon, Ferreira, Bull, 1969). Despite being highly communicable, this strain was even milder than the Asian Flu.

First reported in Hong Kong in July 1968, the virus spread was driven in part by the Vietnam War veterans returning to the United States. Origin and progress of the Hong Kong influenza pandemic varied globally: the infection was isolated in the United States and Japan in August; England, Wales, and Australia in September; Canada in December; and France in January 1969 (Viboud, Grais, Lafont, Miller, & Simonsen, 2005)

The Hong-Kong Flu is estimated to have caused between 300,000 and two million deaths worldwide (Reperant, Moesker, & Osterhaus, 2016). Mortality rates varied among nations, which may have been due to pre-existing immunity to the neuraminidase antigen (N2), the same as the previously circulating influenza strain (Saunders-Hastings, & Krewski, 2016). The United States experienced a 47% increase in mortality related to pneumonia and influenza, Canada, at 43%. The pandemic burden, however, was higher in other countries, with a 9.1% increase in excess all-cause mortality in Australia, France, England, and Wales (Viboud, Grais, Lafont, Miller, Simonsen, 2005).

Infection control measures included: vaccination, hospitalization for complicated cases, and antibiotics for secondary bacterial pneumonia (Rogers, 2020). Ambulatory visits for influenza and influenza-related acute

respiratory disease increased by 30-50%, while pneumonia and influenza hospitalization rates increased by 140-150% over the rates in the nonepidemic period (Barker, Mullooly, 1980).

Swine Flu 2009

The H1N1 virus, also known as swine flu, Mexican Flu, New Flu, and A (H1N1), likely emerged from Mexico in April 2009 (Bults, Beaujean, Zwart, Kok, Empelen, Steenbergen, Richardus, Voeten, 2010). This viral strain developed through the emergence of tripe viral reassortment between two influenza lineages and had been circulating in pigs for years (Smith, Vijaykrishna, et al., 2009). The viral genes appear to have come from viruses found in North American and Eurasian swine, although it is unclear when and where the reassortment occurred (Guan et al. 2010). By the end of April, cases were reported in several U.S. states and countries on various continents (Fineberg, 2014). The World Health Organization then declared a global influenza pandemic in June 2009 (WHO, 2009). The rapid spread of the disease was attributed to the extent of global trade and travel. By July, the infection was reported in 122 countries, with 134,000 laboratory-confirmed cases and 800 deaths (Henderson et al., 2009). Evidence from the first outbreak in Mexico was alarming. An observational study of 899 hospitalized patients showed that 58 (6.5%) became critically ill, and 41% died (Dominguez-Cherit, Lapinsky, Macias, et al., 2009). The total number of influenza-related deaths ranged from 123,000 to 395,

600 deaths (Dawood, Iuliano, Reed, et al., 2012)

North America and Europe showed a significantly improved preparedness for the 2009 H1N1 pandemic compared to past pandemics. This improvement was the result of emergency preparedness efforts mitigated by the earlier SARS outbreak of 2002–2003 and persisting fears surrounding H5N1 avian Flu (Saunders-Hastings, & Krewski, 2016).

Infection control efforts used a combination of pharmaceutical and non-pharmaceutical interventions. It is the first pandemic to have the response of combining both vaccination and antiviral use. High priority groups were the first to receive the vaccination before expanding to all groups a few weeks later. Non-pharmaceutical measures used in response to past pandemics were again widely implemented to help contain the pandemic. The most common among these were hand hygiene and voluntary isolation of symptomatic individuals (Cantey, Chuk, et al. 2013). Countries like United States, United Kingdom, and Australia recommended the closure of schools, and research suggested that this measure helped mitigate the pandemic.

In the United Kingdom, an aggressive containment campaign combined school closure and voluntary isolation with antiviral treatment for suspected cases. Additionally, mass prophylaxis of potential contacts helped control the outbreak until more information could be gathered (Hine, 2010).

Emergence of the Coronavirus Pandemic

Coronaviruses are human-infecting Beta-

coronavirus and member of the Coronaviridae family. The highly pathogenic members of the Betacoronavirus family include Severe Acute Respiratory Syndrome human coronavirus (SARS-HCoV), the Middle Eastern respiratory syndrome coronavirus (MERS-CoV) and the SARS-CoV-2 which later was renamed by the WHO to COVID-19.

Severe Acute Respiratory Syndrome (SARS) 2002-2003

Severe Acute Respiratory Syndrome (SARS) also known as SARS-CoV, was first reported in Guangdong Province, China, in November 2002, a rapidly progressive respiratory illness that spread through five continents. The regions most affected were Guangdong Province in China, Hong Kong, Vietnam, Singapore, and Canada (Christian, Poutanen, Loutfy, Muller, Low, 2004). Respiratory secretions and other bodily fluids appeared to be a significant factor in the outbreak (Clери, Ricketti, Vernaleo, 2010). The first case was a physician from Guangdong who traveled to Hong Kong to visit family five days after the onset of symptoms (Tsang, Ho, Ooi, et al., 2003). The infection spread to Singapore, Thailand, Vietnam, and Canada by travelers returning from Guangdong province and Hong Kong. In Toronto, a couple returning from Hong Kong was considered the index case. The disease seemed to have been spread by healthcare workers and patients in the institution where they were treated and then spread further when some of those patients were transferred to other hospitals before the Canadian medical community was aware of SARS (Malave, Elamin, 2010).

SARS-CoV disease seemed to spread from person to person and through face-to-face contact, by droplet transmission. Clinical manifestations are also similar to other viral illnesses, with the patient having influenza-like symptoms. During outbreaks, SARS-virus RNA was detected on a variety of hospital surfaces, including computer mouse and elevator handrails (Tsang, Ho, Ooi, et al., 2003). SARS affected 8000 people, and killed almost 800 in 26 countries (WHO, 2003)

The management was supportive care (Stockman, Bellamy, Garner, 2006). Antibiotics were ineffective. Several antiviral agents, including ribavirin, have been tried, but the efficacy of these drugs had not been established (Booth, Matukas, Tomlinson, et al., 2003). Most reported treatment regimens included corticosteroids, with no evidence of their efficacy.

Other strategies to control the spread of the virus were: WHO issuing travel adviso-

ries against nonessential travel to Guangdong Province, China, and Hong Kong in April of 2003, CDC advising travelers to carry surgical masks or alcohol-based hand sanitizer. By late June and early July 2003, the number of SARS cases globally had decreased through voluntary quarantines and strict infection control measures (WHO, 2004).

During outbreaks of SARS or similar respiratory illness, it will be necessary to isolate hospitalized patients in negative pressure rooms, which draw air in (rather than letting it out) when opened, helping to control infection. Since healthcare workers (HCWs) spread the past outbreak, droplet precautions, like wearing surgical masks and frequent hand hygiene, must be enforced. (Clери, Ricketti, Vernaleo, 2010). Furthermore, HCWs must stay at home if they develop fever or respiratory symptoms within ten days of exposure to SARS and should remain off work for another ten days after free of symptoms. However, HCWs who are asymptomatic are not advised to remain home during the 10-day incubation period for SARS. (WHO, 2004). Strict handwashing and the use of gloves for contact with bodily fluids are also implemented.

COVID-19

The novel coronavirus disease-19 (COVID-19), formerly called SARS-CoV-2, is the most severe public health emergency since the outbreak of SARS in 2003 spreading from a single city to the entire country in just 30 days. Within a few months since cases emerged, it has prompted lockdowns in multiple countries claiming millions of lives worldwide and counting. The swiftness of the spread of cases put health and public services in China, particularly in Wuhan City and Hubei province in an overwhelming situation (Harapan, et al., 2020)

The epidemic curves reflect what may be a mixed outbreak pattern, with early cases suggestive of a continuous common source, potentially zoonotic spillover at Huanan Seafood Wholesale Market, and later cases suggestive of a propagated source as the virus began to be transmitted from person to person (Wu Z, McGoogan JM, 2020).

Highlights: Events as they happened

On December 1, 2019, the first patient's symptom onset was identified in Wuhan, the People's Republic of China. However, none of his family members developed a fever or any respiratory symptoms (Huang et al., 2020). During the whole month of December 2019, a series of cases resembling clinical

manifestations of viral pneumonia emerged: fever, dry cough, fatigue, and occasional gastrointestinal symptoms. Thirty days after the identification of the onset of the first symptom, on December 30, 2020, the Chinese authorities reported the string of pneumonia-like cases to the World Health Organization (WHO) (Huang et al., 2020).

The following month, in January 2020, exported cases were reported in five continents comprising of 23 countries in the North America, Europe, Asia including the Philippines. The Chinese government reported coronavirus (CoV) as a possible pathogen causing the cluster of cases ruling out SARS-CoV, MERS-CoV, influenza, avian influenza, adenovirus, and other common respiratory pathogens (WHO, 2020). This emergency has attracted global concern, and on January 30, 2020, thirty days after the Chinese government reported the cases, the WHO declared the outbreak a Public Health Emergency of International Concern.

Multidisciplinary task forces under the National Health Commission of the People's Republic of China identified the novel coronavirus (CoV) as the pathogen responsible for the pandemic disease (Wang, Jian-Wei; Cao, Bin; Wang, Chen, 2020). On February 11, 2020, WHO announced a name for the new coronavirus disease: COVID-19.

Spanning five continents, 216 countries, areas, or territories COVID-19 inflicted 6,931,000 people (confirmed cases), 136,405 (new cases), 400,857 (confirmed deaths) as of June 8, 2020 (WHO, 2020).

The pathogenic mechanism of SARS may help our understanding of COVID-19, as studies have shown that the novel virus shares the angiotensin-converting enzyme 2 (ACE2) receptor with SARS-CoV (Wan, Shang, Graham, Baric, Li, 2020). In the pathogenesis of SARS, ACE2 contributes to lung injury and increases vascular permeability (Imai, Kuba, Penninger, 2020), but the role of the receptor in the pathogenesis of COVID-19 still needs further study. Since 2019-nCoV is an RNA virus that does not contain any proof-reading mechanism during genome replication, makes it prone to mutations. Moreover, distinct viral sub-species have been identified within hosts (Shen Z, Xiao Y, Kang L, Ma W, Shi L, Zhang L, et al., 2020). Thus, it is necessary to investigate the biological characteristics and mutation trends of 2019-CoV to assess viral transmissibility and pathogenesis

Clinical manifestations of COVID-19 include four clinical phenotypes: mildly, commonly, severely, and critically-ill patients (National Health Commission of the People's

Republic of China and National Administration of Traditional Chinese Medicine of the People's Republic of China, 2020). Some cases manifest mild symptoms, normal body temperatures, and others are asymptomatic. However, both symptomatic and asymptomatic patients are contagious, leading to difficulties in the timely identification of cases. The severity of the disease and modes of transmission may shed light on identifying the percentage of asymptomatic infections and whether a patient is a contagious carrier during the incubation period (Wang, Jian-Wei; Cao, Bin; Wang, Chen, 2020).

Polymerase chain reaction (PCR)-based diagnostic reagents have been rapidly developed based on available viral genome sequences, and have served as essential screening tools (Wang, Jian-Wei; Cao, Bin; Wang, Chen, 2020). For now, there is no treatment for COVID-19. The main strategies are directed to symptomatic and supportive care, maintaining oxygen saturation and blood pressure, and treating secondary infections (Wu, Yi-Chi; Chen, Ching-Sung; Chan, Yu-Jiun, 2020).

Like SARS-CoV and MERS-CoV, interrupting the spread of infection is key. The experience in SARS, triaging, implementing correct infection control interventions, isolating the cases and contact tracing were crucial in limiting the spread of the virus in health-care institutions. Confirmed COVID-19 case requiring hospitalization, were placed in a single patient room with negative air pressure and medical personnel entering the room should wear personal protective equipment (PPE) such as N95 mask, eye protection, gloves, gown.

In a community setting, isolating the infected people and quarantining of suspected people and their close contacts were paramount. In a bigger scale community transmission, locking down cities, airports and piers, abating social gatherings, school closure, close monitoring of symptomatic individual, personal hand hygiene, and wearing personal protective equipment were enforced.

Like MERS-CoV and SARS-CoV, specific antiviral treatment for COVID-19 is still unavailable. Antibiotics are recommended for secondary bacterial infections, supportive care, isolation, oxygen therapy, fluid management, are suggested. Early recognition of suspects, containing the spread by immediate isolation and infection control measures

While there is no treatment for COVID-19 yet, however, many investigational treatments are underway:

1. Remdesivir: This is an unapproved an-

tiviral drug developed for Ebola and SARS by Gilead Sciences, Inc. It was given for compassionate care on day 11 after illness, resulting in decreased viral loads in nasopharyngeal and oropharyngeal samples and improved clinical outcomes (Holshue ML, DeBolt C, Lindquist S, Lofy KH, Wiesman J, Bruce H, et al., 2020). However, randomized controlled trials are required in determining the safety and efficacy of this drug for the treatment of patients with 2019-nCoV infection.

2. Plasma from recovered COVID-19 patients (convalescent therapy). Based on the studies from the Middle East Respiratory Syndrome (MERS), the therapeutic agents with potential benefits include convalescent plasma, interferon-beta/ribavirin combination therapy, and lopinavir (Mo, Y., & Fisher, D., 2016). However, in the case of COVID-19, currently, there no randomized controlled clinical trials for this management.

3. Antiviral drugs: lopinavir/ritonavir and ribavirin had been tried to treat SARS disease with apparent favorable clinical response (Chu, Cheng, Hung, Wong, Chan, K. H., Chan, K. S., et al., 2004). A recent report found uncanny similarity of unique insertions in the 2019-nCoV spike protein to HIV-1 gp120 and Gag (Prashant, Ashutosh, Akhilesh, Parul, Praveen, Menon, Gomes, Vivekanandan, Kundu, 2020).

4. Vaccine: Currently, there is no vaccine available for preventing COVID-19

Therefore, scientific research is of vital importance for tackling emerging infectious diseases and developing effective intervention strategies. The spread of infectious diseases is affected not only by the biological characteristics of the pathogen but also by politics, culture, economy, and the environment. Multidisciplinary research in biomedical, social, and environmental sciences is required to achieve a deeper understanding of disease transmission and develop a more effective emergency response (Wang, Jian-Wei; Cao, Bin; Wang, Chen, 2020).

Summary

Clearly, these pandemics are international public health problems. We have increased our knowledge about these pathogenic viruses, the similarities and differences in their clinical manifestations, the way they infect cells and the swiftness they transmit diseases across the borders.

For the next steps, a more comprehensive understanding of the disease's epidemiology and clinical properties is valuable for policy and decision making related to increasing

disease surveillance systems, enhancing readiness and rapid response team operations, improving the capacity of the national laboratory system, and ultimately a vaccine and cure specific to the prevention and control of these pandemic virus infections.

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The Psychological Effect of Quarantine in Nursing Homes

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Abstract

COVID-19 has affected millions of people worldwide, with the older population in nursing homes being impacted greatly. Because of this, stricter visiting rules have been put in place that would isolate the residents even further than the current quarantine, which could have damaging psychological impacts. We explore potential ideas and activities for nursing homes that aim to combat this unintended yet important adverse effect of quarantine.

The use of quarantine has been a public health tool since the plague of the 14th century and subsequent pandemics such as yellow fever and tuberculosis.¹ Nearly seven centuries later, Severe Acute Respiratory Syndrome (SARS) transformed 26 countries with more than 8,000 people affected and approximately 800 deaths, with most of these cases were centralized in Singapore, China, Hong Kong, Taiwan, and Toronto.^{1,2} The use of quarantine by these countries allowed SARS to be contained within 8 months.³ However, SARS and previous quarantines were limited in scope with no states requiring quarantine protocol activation compared to what we are currently experiencing with the COVID-19 pandemic. Today, the stay-in-place orders extended to all 50 states in the United States and many parts of the world.

In the United States, there are approximately 2.16 million adults who live in long-term care, with an estimate of 68% of these adults being over the age of 75.⁴ COVID-19 has affected the elderly population disproportionately, with 8 out of 10 deaths reported in the U.S. have been in adults 65 years or older and the first death in the U.S. occurring in a nursing facility in Kirkland, Washington on February 29, 2020.^{4,5} According to the U.S. Centers for Disease Control and Prevention (CDC), residents of nursing homes are among those at risk of severe illness from COVID-19, with an approximate jump of 10-fold fatality rate in this population.⁶ Because of this, stricter visiting rules have been put in place that would isolate the residents

even further than the current quarantine. This could have damaging psychological impacts on these seniors on top of their given susceptibility to depression due to the normal aging process itself. It is a dilemma that pits the prevention of the spread of the coronavirus against the potential effects of social isolation and loneliness.

Prior to this pandemic, nearly half of the 20,000 U.S. adults reported feeling lonely and 40 percent of participants reported feeling isolated according to a 2018 national survey by Cigna.⁷ The current pandemic significantly increases the risks for loneliness even more, especially for the geriatric population. The well-being of older adults is affected by their mood states and level of social activity. The specific emotion of loneliness has been found to be strongly associated with losses of loved ones, living individually, lack of family connections, and inability to participate in community activities.⁸ With advancing age, it is inevitable to experience loneliness, especially when the loss of loved ones may lead to a shrinking friendship network.

Quarantine may worsen loneliness and increase the risks for mental health problems. A study examining the effects of quarantine from the Middle East Respiratory Syndrome (MERS) reported that feelings of anxiety and anger persisted at four to six months after the release from a 2-week quarantine.⁹ The lack of control and confinement to a small space lead to increased risk for anxiety, while the sense of helplessness and anger increases the risk for depression. The loss of visitation with family members is challenging for nursing home residents, but the effect of social distancing in preventing them from dining with their friends in the nursing home only worsens the desolation. What was once a joy or reprieve from the daily routine now is banned, forcing these seniors to be further isolated from their peers. It is difficult to imagine having to eat all their meals alone in the confinement of their own room. These restrictions also affect volunteers who are asked to stay home instead of coming in to read the news-

paper, sing some songs, or play bingo. Even worship hours are curtailed, leading to more isolation and despair.

The effect of quarantine has been shown to increase morbidity among the older population with chronic conditions.¹⁰ In addition, loneliness may affect mental and cognitive condition.¹¹ The study linked perceived social isolation with depression, impaired executive function, accelerated cognitive decline, and poor sleep quality. Another study published in 2019 by Cassandra Alcaraz, PhD, MPH showed that social isolation increases the risk of premature death from every cause.¹² It is important to identify these risks early in order to improve physical and mental health.

Many nursing homes are currently adapting to assist their residents with low-tech and high-tech digital approaches to reduce loneliness.

Volunteers

Telephone support services to help connect older adults have been organized. Volunteers schedule regular phone calls between the nursing home residents with trained part-time volunteers. Seniors can be matched with volunteers for their weekly check-ins, thus providing a routine for these residents. A simple phone call may be enough given the circumstances to minimize the risks for loneliness.

Exercise

Outdoor group exercises or daily walks within the property of a nursing home may help reduce social isolation. This can be safely done by staggering the exercise sessions so that proper social distancing measures are enforced. This may be challenging for some nursing homes that don't have an outside yard or enough space.

Digital Solutions

Tablets may be used to stream movies or shows to reduce boredom. The same tablet

may be used to connect with their friends and family from the outside. In addition, families may send old pictures or personal videos that can be played on the tablets in order to help make them feel like they're surrounded by loved ones. Volunteers may set up time to do video sessions to read the news, sing, or just to talk to the nursing home residents. All this will require the older adults to own a tablet or know how to operate a tablet. If this is a challenge, nursing home facilities should consider installing smart televisions in the room that may have some of the features of a tablet.

Visitation

With strict confinement to their rooms, the interactions via a tablet video screen cannot replace a live human visit. But the risks of a spread to this fragile population make it difficult for this visit to occur. However, facilities may arrange for families or friends to visit through a glass door or a window.

Activities

Outside-the-box thinking is necessary to find solutions to combat the psychological effects of isolation at nursing homes. Instead of gathering everyone in the same room, residents may be properly spread out with less than 10 people in a room for a game of bingo, talent show or a concert. Besides the limitation of space, another difficulty in implementing such programs is having enough manpower. With the staff already busy caring for the residents, they may not have the time to coordinate these volunteering sessions.

Mindfulness

Meaning-based approaches such as mindfulness and meditation will also prove to be beneficial for this population. Research has shown that mindfulness-based stress reduction interventions decreases symptoms of depression and anxiety in the elderly by > 50%.¹³ Combined with providing streamlined communication resources such as access to support groups and psychiatric nurses would allow the elderly to validate their emotions and feel empowered.¹⁴ This is essential to combat the psychological effects of quarantine, most of these effects being due to the restriction of liberties. Similarly, the multimodal approach of Strength-Focused and Meaning-Oriented Approach to Resilience (SMART), a Mind-Body-Spirit intervention utilized during the SARS pandemic, has been shown to decrease in depression subscale scores.¹⁴ What SMART underlines is using breathing techniques and physical exercise to promote emotional changes in relation to

trauma management. The outline includes developing strength through activities such as tai-chi, meditation, and appreciation of nature. Interventions such as SMART are important to emphasize for use in the elderly, especially those in nursing homes without access to other modalities of coping, to give them a way to more meaningfully process their new emotions.

While these approaches may help reduce the risk for isolation, the risks remain high for those who have an underlying mental illness. Because access to mental health treatment may be limited during the quarantine period, it's vital for nursing homes to offer alternative methods to screen patients for loneliness and depression and offer telehealth treatment.

Screening

During this time, it's essential for nursing home facilities to screen older adults for depression using a structured questionnaire. If a patient screens positive for depression, a suicidal assessment needs to be completed at the same time as referring the patient for a mental health evaluation.

Telehealth

Studies have shown that patients with depression have reported gains in mental health status, health-related quality of life, and higher satisfaction when given the resource of telehealth.¹⁵ Because of the transmission risks, the use of tele-psychiatry may deliver much needed mental health services to the residents of nursing homes. Psychiatrists can evaluate patients for medical management while psychologists can focus on stress reduction, connecting with loved ones, and normalizing emotion symptoms. It is important that nursing home residents don't feel overwhelmed by the use of the technology.¹⁶ Therefore, nursing home facilities should set up a quiet space with the necessary equipment ready for the residents to use.

COVID-19 has affected millions of people worldwide, with the older population in nursing homes being impacted greatly. Besides the increased risk of mortality from the infection with the coronavirus, the tool used to minimize the spread of the transmission may have an unintended effect. Quarantine may increase the risk of loneliness, social isolation, anxiety and depression. As this pandemic stretches into the third month and with no end in sight, it's imperative that more research be done to assess the risks and evaluate different treatment modalities to address

this important need. A better understanding will allow alleviation of the effects of quarantine for the future.

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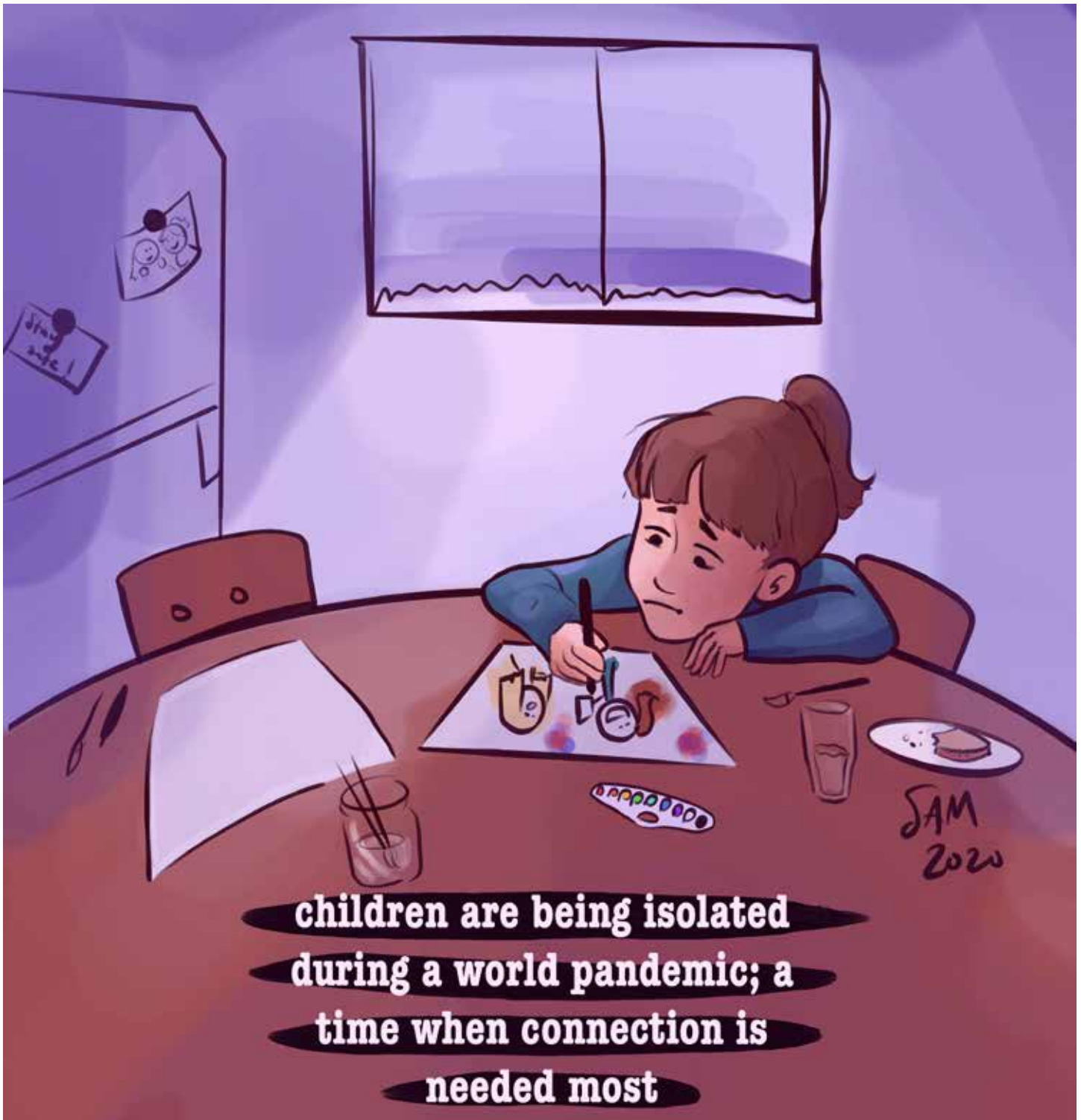
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Voices from the Frontline

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Filipino nurses are well known for their dedication, hardwork and compassion. During this time of COVID19, nurses have shown their extraordinary strength, resilience and commitment in facing the challenges of the global pandemic. In this article, we will feature actual experiences of seven (7) University of the Philippines- College of Nursing alumni who are presently working in Philippine General Hospital, a COVID Referral Center. They were requested to submit a short write up about their experiences which included their initial feelings, their challenging and rewarding moments, their coping strategies and valuable learnings to be shared for this article.

The Initial Feelings

The frontliners in the Philippine General Hospital, (PGH) have been called the People Giving Hope, according to Ms. Arlen Aquino,

a Neonatal Intensive Care Unit (ICU) nurse for 2 years now. She stated that the ability to respond to the country's call during the pandemic requires courage however, it is difficult.

Ms. Daisy Monica Poliquit, a senior nurse in the Department of Pay Patient Services(DPPS) described it as, "These are fearful times, for sure, that's why many would say that we are not on the same boat but we are all facing the same storm. And I couldn't agree more. We are all in the middle of this pandemic but under different circumstances and with varying perspectives. This made me realize how I am in a unique position amidst all this chaos and confusion."

"When the Philippine General Hospital accepted the task to accommodate patients afflicted with COVID-19, I felt apprehensive because we have never seen an illness affect so much people that led to the death of some

patients in a short period of time. Since this is a new experience for all of us, there is a certain degree of fear of the unknown and the fear that we may put our families' health in jeopardy.", This was how Ms. Toni Rose Gepiala, a nurse who have been working for 12 years in the obstetrics unit, described her feelings at the outset of the pandemic.

During their first week of duty after PGH was categorized as a COVID Referral Hospital, most the nurses felt anxious and terrified. Ms. Dianne Marie De Castro, a nurse for 4 years assigned in the surgical ward (converted to covid ward), aptly described herself as feeling helpless back then. The hospital in response to the guidelines drafted by the Interagency Task Force on COVID19 had to reconfigure its staffing plan to allow nursing personnel to have adequate rest after being on duty for 7 straight days. Given this situation, Ms. De Castro further mentioned that the hos-



pital with the increased demands brought by the pandemic may be understaffed and she said, “I knew we would have our hands full and I was terrified if we would even make it out alive. I wanted the pandemic to just end with a snap of a finger because everything was just overwhelming.”

Mr. Michael Arnold Bilan, also a nurse for 4 years assigned in a COVID area, described his anxiety which was stemming from thoughts that no one really had a very clear picture of what’s going to happen in the next few months or so as the pandemic continues to worsen. They were not able to go on duty like how they used to before because the physical environment was entirely different, new protocols were implemented, and there were changes in the supply of health and human resources. According to him, it was exhausting physically as they try to adjust their bodies in wearing complete personal protective equipment (PPE) overalls for 8 hours or so, which was emotionally draining as well. Social interaction was difficult since they had to minimize face-to-face communication with other people, including their own families.

On the other hand, Ms. Aquino felt paranoid. She said, “I have many ‘what ifs’ in my mind. What if I am infected? What if my patients are negative and I’m the one whose positive then I’ll get blamed if I transmit the virus to them? What if I will infect the other people I get to interact with? With the news that other frontliners are being discriminated, I felt like I can’t handle it if I experienced the same. These thoughts gave me sleepless nights. I felt like I can’t be one of the People Giving Hope.”

Even if Ms. Poliquit had experienced almost all highs and lows in her nursing profession for working at the DPPS for almost twelve years now, she said that nothing can compare with the uncertainty that this pandemic has brought them. During the first weeks, she was feeling anxious, scared and stressed over what was happening and what was about to happen. She said that the turning point for her was when cases started going up in early March and PGH was chosen as one of the Covid Referral Center of the country. She said, “That was the time when the anxiety and stress level in my unit has been the highest and the morale has been the lowest. It was such a difficult situation for all of us because we felt like we are being sent into a war zone.”

As a nurse trainer and a mental health nurse who provided orientation to COVID19 duties and conducted debriefing and psychological preparation for the nursing staff, Ms.

Marian Villanueva mentioned that the first weeks of COVID19 were the most stressful because of the need to adapt to rapidly changing policies and the reactions of the staff to the fear and uncertainties. She said, “What’s most stressful for me was the high demand for addressing psychosocial needs of the staff and it made me feel a lot of emotions throughout the process. Debriefing, counseling and listening to other people’s concerns and helping them cope is both challenging and inspiring for me and the PGH CARE Society (the peer counseling group of PGH nurses). There are times when we need to set aside our personal fears and anxieties about COVID19 because we needed to be strong to be able to address the feelings of the employees whom we are helping. We had to deal with anger, fear, anxiety, frustrations and even depression among the nursing staff. It was really a test of our abilities as mental health nurses and I think in some way, it has pushed us to improve on our mental and emotional competencies so we can better help people.”

On the other hand, Mr. Andro Carl Coronejo is assigned to the Pediatric Intensive Care Unit which is a non-COVID area. During that time, that was a big relief, according to him knowing that he will be in the cleaner side of the hospital. He said, “Since the disease is still a big mystery to science, it is frightening. Personally, I think I am healthy to overcome this disease but at the same time I’m afraid that I might infect all the people around me. Mentally, I think I was prepared. Through our debriefing sessions I’ve learned a lot from other people’s feelings and coping, it was like preparing myself for the battle based on other people’s experiences. Emotionally and socially, I have a good support system that made me feel safe and normalize my anxious feelings. To prepare myself physically, I started eating healthier foods and started drinking my vitamins religiously.”

Challenging and Rewarding Experiences

Ms. De Castro said that every duty is a struggle. The most memorable and challenging duty for her was when she almost had a panic attack while she was in the middle of her shift wearing her level 4 PPE. “We were short of nurses and I was the charge nurse. I only had a Department of Health (DOH) volunteer nurse with me in the Covid ward and we had to take care of 18 patients. I could have succumbed to the fear, gave in to the panic attack and froze. But I remembered talking to myself and telling myself, “*Kaya mo ‘to,*” over and over. “*Kung kinakayani*

Bernice (the DOH volunteer, not her real name) dahil kasama kaniya, kayanin morin para sakaniya. Kayaninniyo magkasama.” I was able to get through that duty and come out stronger”, she described.

Aside from experiencing back-to-back intubations and cardiac arrests in one shift, and having multiple mortalities in one week, Mr. Bilan said that “Nothing hurts more than informing a patient’s significant other over the phone of their unstable condition, such as when the patient is on the brink of death, fighting for his life, or has already died. You have to make an effort even if you’re already exhausted in attending to the dying patient, to be able to show empathy and compassion. You have to maintain your composure and bear the pain as you listen attentively to the grieving family on the other end of the call.”

Ms. Gepiala also mentioned that there is a feeling that employees’ welfare was not adequately taken care of since a lot of policies tend to overlook the staff’s interests due to the ever changing implementation of plans. In the same way that the most challenging part for Ms. Villanueva is on trying to meet the demands for debriefing sessions and the need to deal with a lot of difficult stress reactions from the staff. Eventually, it ended up as the most rewarding part for her because she realized that there are a lot of nursing staff who are able to empower themselves in dealing with their own difficulties.

As a peer counselor and a facilitator of debriefing sessions, Mr. Coronejo found it rewarding to see how he was able to help other people through talking to them and listening to their worries and anxieties. He said, “Hearing people thank me and knowing that they’ve coped well after our debriefing sessions was rewarding. I realized that even though I was not directly caring for patients with COVID, I am a part of a team that care for people caring for COVID. I found my purpose in this pandemic.”

In the end, there is a manifestation of hope as described by Mr. Bilan. He said, “There is hope in seeing my patients recover from illness little by little, finally being able to breathe with ease without oxygen support, stable and afebrile, not requiring close supervision and monitoring, and ultimately seeing their worried faces turn into smiles, as they hear the news of a negative swab, which means they will be transferred, or better yet discharged, very soon.”

The appreciation of patients, their families, coworkers and even strangers who shared their earnings, resources and personal time helped ease the burden that the staff ex-

periences front liners according to Ms. Gepiala. During the previous months, Ms. Aquino mentioned that they have received support from individuals and groups, and their appreciation boost their morale. It is also helpful when they receive assistance from their institution, colleagues, friends and family. It makes them feel that they are important in this battle and that their efforts are highly acknowledged.

Coping Strategies and Valuable Learning Points

“This pandemic exacerbated my anxiety to the point that I have lost sleep prior to duty and have had bouts of crying prior to duty while donning my PPE. The first few months were difficult but with the help of friends and my psychiatrist, we were able to work through these challenges so that I could be functional. How I coped wasn’t a solo win but a team effort of the people who care about me”, according to Ms. De Castro.

Ms. Poliquit would do positive self-talk to encourage herself during the times that she felt anxious. She mentioned, “I told myself that I will fight no matter how tough it will be because it is the right thing to do and that this is my sworn oath. I will fight for my patients who remain to have blinding hope despite the distant blur. I will fight for my colleagues who continue to serve and care despite all the sacrifices they had to make. I will fight for my family for remaining at the frontline means I can also protect them from acquiring this and getting sick. I will fight for my country because no matter how neglected our healthcare system is, I still value my homeland and believe that it deserves better. I also realized then that this is my purpose. I was put here for a reason.”

“Having a good support system with workmates and family is my biggest source of strength in coping with the situation. The thought of having a pandemic made me closer and more expressive of the love I have for people who matters to me. Also, I have been more particular with self-care strategies and doing things that make me happy especially when days are harder”, said Ms. Villanueva. In the same way, Mr. Bilan said, “I do my best to maintain a constant communication with my friends and family so I can have a solid support system which is helpful for me. I try to entertain myself by keeping some hobbies I enjoy, such as watching movies and TV series, in addition to participating in virtual activities and games of my choir. I also keep myself updated and informed with the news and current events, no matter how disappoint-

ing they may be.”

This was affirmed by Ms. Gepiala when she added that, “The belief that I have that Filipinos are very resilient is reinforced. But this extreme situation also awakened my thinking that Filipinos do deserve so much better than what we are getting right now from our administration. Turning to family and friends for emotional support is the fundamental coping strategy most us do but there are times that it will not be as effective as before. So I just have to toughen up, rely on my character and seek guidance and strength from the One above. If all else fail, seeking professional help is another option.”

“Practicing self-love is also one of my biggest takeaways so far in this whole turmoil that we are in. I allow myself to feel that extra burst of self-love by becoming a best friend to myself and being my own cheerleader. This helps a lot because by filling up my own cup first, I am able to keep my anxiety at bay and fulfill my daily tasks and responsibilities. Talking to my family and friends on a regular basis helps a lot too. I cling on memories of past travels and happy moments to help me march forward. Furthermore, I learn to focus on the things that I can control – like my thoughts. I learn to see things from a better perspective, just like how going to work is something that ‘I am blessed to do’ rather than something that ‘I have to do.’ I also tend to offer myself to my colleagues as someone who can listen to them, especially during the start of this crisis. By listening to my colleagues, I learned that I am not alone with what I am feeling and I was able to draw strength from their courage, compassion and drive to continue serving. Listing down my ‘little wins’ and ‘things to be thankful for’ at the end of the day also calms me down and help me to avoid wallowing pointlessly into the unknown. Finally, praying has also been one of my biggest armors in this war against Covid-19. My faith serves as my great shield, the one that really keeps me from breaking down in this dark time”, as stated in detail by Ms. Poliquit.

“I have learned (and am progressively learning) that I am not alone in this. I have friends whom I can cry on and rant to; my psychiatrist who patiently processes these difficulties and small wins with me; and a God, though at times I forget because I am too focused on my ails and woes, who never fails to remind me that His grace is sufficient for me and that His strength is made perfect in my weakness (II Cor. 12:9)”, as shared by Ms. De Castro.

Mr. Bilan highlighted the emergence of

new leaders in the midst of this crisis situation. “Effective, visible, and compassionate leadership is paramount especially in this time so that everyone working in the frontlines feel more empowered and supported”, he said. Ms. Villanueva also stressed out that, “With the challenges of the pandemic, I have learned the importance of empathic leadership and commitment to make each member of the team feel valued and supported. The work that people had to do was hard, but it was made harder by poor communication and lack of empathy and support in some cases. With the impact of the pandemic to people, it has emphasized the value of psychological health and safety in the workplace as an important aspect that must be valued by all leaders to ensure continuity and quality of services.”

As for Mr. Coronejo, he said, “The valuable thing that I’ve learned in this pandemic is staying connected to people. In this situation, where we are forced to isolate or distance our self from the rest of the world, connecting with other people in any way possible is important. It may be virtual or through simple gestures but by simply knowing that someone thinks that you are worth connecting with, helps in relieving feelings of isolation. Taking your time to listen other’s concerns even though they might be trivial things, will really be appreciated.”

“As a front liner, I must be stronger than my thoughts and fears as our service and commitment is needed especially during this pandemic”, says Ms. Aquino. “My experience as a NICU nurse reminds me that accomplishments can come in the tiniest, smallest forms possible. I’ve learned so much from the babies. Their fortitude inspired me so much as I continue to serve in our Covid area. They may be unaware of what is happening to the world right now, but when I look at them, they remind me that there’s so much to life than being afraid all the time. They’re the living proof that miracles do happen despite the difficult situation. It is an honor to care for the tiniest Filipinos, who are also the most resilient persons I encountered during this pandemic.”

Messages for Fellow Nurses

When asked what their key messages for their fellow nurses are, they gave the following statements:

“I understand that what healthcare is experiencing right now is especially taxing. I know that first-hand. But a good friend once told me, “Sino angtataposnito [Covid pandemic] kunditayo [nurses] lang din. Isn’t it

ironic to say that we are placed on this position, in this pandemic, for such a time as this, the Year of the Nurse and Midwife? We don't need to bear the burden on our own. Inch by inch, we can win this fight together."

*Ms. Dianne Marie De Castro,
UPCN Class 2015*

"To all my fellow nurses here and abroad, I want to say that we have done so well so far. Let us keep ourselves safe because our lives are important, because our profession matters. We matter. It may be extremely tiring and challenging these days, but I hope we find it in ourselves to look back and remember who we work for, our patients. May God give us more strength and willpower to overcome this crisis."

*Mr. Michael Arnold Bilan
UPCN Class 2015*

"As frontliners, we may feel uncertain about the current situation, but I hope that we must learn from our daily experiences and our patient's small victories and continue to be the hope that every Filipinos need."

*Ms. Arlen Aquino
UPCN Class 2017*

"Colleagues, 2020 is the Year of the Nurse & Midwife. It is high time that we claim back our dignity and receive what we deserve for the work that we are doing. Be the beacon of hope for our patients and their families. But do not forget your own needs for we are also human."

*Ms. Toni Rose Gepiala
UPCN Class 2006*

"This pandemic showed us the best and

worst part of ourselves, we should take time and reflect on the things that really matter to us. During this time, it is important to be motivated by the right reasons. Helping other people that might cause you your life without the proper motivation can really be exhausting. We should also remember to always check ourselves every now and then, because we might be caring for others but we sometimes forget ourselves."

*Mr. Andro Carl Coronejo
UPCN Class 2015*

"It is always heartwarming to see how nurses have served as heroes around the world and this pandemic is a reminder of the honor and pride that our profession brings. We recognize the sacrifices, hardships and risks that nurses have been through in responding to the needs of the crisis situation. We acknowledge the emotions that you've had and know that these are all normal and valid in the face of a pandemic. Accept yourselves as you are and always remember to take care of yourself first before anyone else so you don't end up losing yourselves as we continue to serve. When the crisis ends, let us carry all the lessons learned so that we can make things better next time. Let us always be grateful of the support that we get from people and let us continue to support each other until everything is easier to bear."

*Ms. Marian Villanueva
UPCN Class 2007*

"As our situation continues to be difficult, I cannot help but be inspired by all the glimmer of kindness that I see around me, especially at our department – those who cope by lending a helping hand, those who continue

to extend themselves in spite of lack and those who chose to rise above pain and suffering by sharing. Yes, it is still a struggle to see the end to this, but it is critical for us not to lose hope and support each other. We are all fighting the same virus but we are all experiencing different journeys. We are sailing in different speeds. So, let us continue to be each other's light. As the world continues to grapple with this unforeseen tragedy, let us value this enormous privilege of carrying the burden of saving lives and preserving human dignity amid uncertainty. This is not a battle we've signed up for, it is never easy and few will understand why we do it, but I know that we will charge on – armed with our values for compassion and integrity and hearts to care – ready to fight another day. And though we may emerge from this wounded and scathed, I hope we will come out better, with sturdier boats and more prepared when the next storm comes."

*Ms. Daisy Monica Poliquit
UPCN Class 2007*

Indeed COVID-19 has tested our ability as nurses to think, learn, adapt, and act as a global health workforce. Our success as a critical force in the healthcare system will depend on our solidarity within teams, communities, nations and globally to address the challenges of this pandemic.

We continue to face the uncertainties of this extraordinary time and what lies beyond this.

We will continue to take a prominent role in this fight against the COVID 19 and in the end we will triumph because we care, we share a part of ourselves and we are committed to do the best as patient advocates.



Reliability of the Young-Fadok Stoma Quality of Life Scale

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Abstract

Purpose: The purpose of this study is to determine if the Young-Fadok Stoma Quality of Life Scale is reliable in a younger population of persons living with IBD and a stoma. **Design:** A cross-sectional study to assess reliability of the Young-Fadok Stoma Quality of Life Scale. **Subjects and Setting:** 81 participants recruited through convenience sampling from the online discussion boards of the United Ostomy Association of America and Reddit.com. **Instruments:** The Young-Fadok Stoma Quality of Life Scale consisting of 21 items in order to measure health-related quality of life (HRQOL) in individuals living with a stoma. **Methods:** HRQOL was assessed through the Young-Fadok Stoma Quality of Life Scale in individuals living with a stoma to determine if this instrument was reliable in measuring HRQOL in this population. Internal consistency assessed reliability. **Results:** Cronbach's alpha coefficient for part one and all subscales, except body image/sexuality, was greater than or equal to 0.70. **Conclusion:** The findings supported reliability in this sample except for the body image/sexuality subscale. Results also indicated a positive HRQOL in this sample. Limitations include a convenience sample recruited only from online discussion boards and a mean age of 40 years with 50% of the sample having a diagnosis of IBD. Further research is needed in participants under the age of 40 years living with IBD and a stoma, perceptions of clinicians caring for these individuals, and patient education and resources provided to persons anticipating or living with a stoma.

Reliability of the Young-Fadok Stoma Quality of Life Scale

Introduction

The surgical creation of an intestinal stoma is a common procedure for the treatment of various intestinal conditions. In order to divert fecal contents, a stoma or surgically fashioned opening in the abdominal wall is created (Martin & Vogel, 2012). Approximately one million persons in the United States and

Canada are currently living with a stoma with an increase of about 10,000 each year (Poppek et al., 2010). The surgical formation of a stoma results in an alteration in physiological function. Individuals living with a stoma may experience psychological, spiritual, and social effects in addition to the immediate physiological changes.

An outcome measure used in healthcare practices for the treatments of a disease is health-related quality of life (HRQOL). HRQOL is a particularly essential goal when cure is unrealistic, such as in chronic conditions that may be the underlying etiology of the creation of a stoma (Armstrong & Caldwell, 2004). HRQOL is a complex phenomenon encompassing physical, psychological, spiritual, and social well-being that defines a person's overall satisfaction with life as a result of current health status, disease, and treatments (Armstrong & Caldwell, 2004; Bulkley et al., 2013). Many individuals living with an ostomy are dealing with physiological, psychological, spiritual, and social deficits, as well as medical and surgical treatments for an illness. Therefore, HRQOL is an important outcome to take into consideration when providing care for these persons.

A review of the literature revealed that a negative impact upon physical, psychological, spiritual, and social well-being is postulated as a result of stoma creation (Baxter et al., 2006; Grant et al., 2011). Mahjoubi et al. (2012) reported that the presence of a stoma has the potential to negatively impact all aspects of life. A decreased quality of life in these individuals may result from depression, anxiety, sexual problems, fatigue, body image deficits, peristomal skin conditions, leakage of appliance, challenges working, difficulties in traveling and leisure activities, and interference with life as a whole was found to occur in numerous prior studies of individuals living with a stoma (Anaraki et al., 2012; Erwin-Toth et al., 2012; Grant et al., 2011; Knowles et al., 2013; Mahjoubi et al., 2012; Poppek et al., 2010). Limited research and instruments measuring aspects of HRQOL unique to individuals with a stoma are avail-

able. A reliable HRQOL instrument for persons living with a stoma is necessary in order to measure patient outcomes, evaluate post-operative interventions, understand negative impacts upon life as a whole, and determine patients at risk of poor HRQOL following the surgical creation of a stoma (Baxter et al., 2006; Grant et al., 2011).

The Young-Fadok Stoma Quality of Life Scale was created in order to develop a validated measure for HRQOL in individuals living with a stoma. This is a 21-item scale that measures overall satisfaction with life, as well as life satisfaction across the six domains of work/social function, sexuality/body image, stoma function, financial concerns, and skin irritation (Baxter et al., 2006). However, this instrument has only been used in two samples with participants of a mean age of about 50 years, mostly Caucasian, and large percentage of females (Baxter et al., 2006; Knowles et al., 2013). In addition to a need for further research, as well as a reliable HRQOL instrument unique for individuals with a stoma, a full representation of the subpopulation living with an ostomy is essential in this research. The limited research that has been conducted in persons living with a stoma has involved persons with a mean age of about 50 years, mostly Caucasian, and mainly a diagnosis of colorectal cancer (Baxter et al., 2006; Knowles et al., 2013).

Presence of a stoma can be particularly distressing for young persons as it can exacerbate feelings of being different, as well as decrease self-respect and confidence (Savard & Woodgate, 2009). Additionally, a common etiology of stoma formation is inflammatory bowel disease (IBD), which is often diagnosed before the age of 20 years making it one of the most significant chronic diseases in younger persons (Savard & Woodgate, 2009). Approximately 10% of individuals with IBD will require an ostomy at some point, and IBD has continued to be a significant disease overtime with an increase from 1.8 million in 1999 to 3.1 million in 2015, as well as the only disorder not declining in total number of ostomies since 1980 according to

the registry of ostomies from the United Ostomy Association of America (Dahlhamer et al., 2015; Fleshman & Lewis, 2007; Katz et al., 2013). Stoma formation can be a cure in certain conditions, such as colorectal cancer or ulcerative colitis, a sub-type of IBD, but underlying disease process may remain active in other disorders including Crohn's diseases, as subtype of IBD, despite the presence of a stoma. The authors of four studies researching participants living with stomas identified pain and fatigue as negatively impacting HRQOL with three studies focusing on the disease course of IBD (Abdalla et al., 2016; Grant et al., 2011; Morris & Leach, 2017; Savard & Woodgate, 2009). Prior to stoma formation, pain was a common issue in persons with ulcerative colitis and found to hinder activities of daily living in those with Crohn's disease, but stoma formation did not fully alleviate this symptom as Abdalla et al. (2016) reported persons with active Crohn's disease and a stoma had worse pain and fatigue compared to persons with active Crohn's disease and no stoma (Morris & Leach, 2017; Savard & Woodgate, 2009). However, a solitary study did include younger participants living with Crohn's disease and an ostomy but a small sample size of 31 subjects recruited from only two hospitals in Australia limits the generalizability of these results (Knowles et al., 2013). Due to these potential negative impacts on all aspects of life in this subpopulation of younger individuals living with IBD and a stoma, understanding predictors of HRQOL is essential to provide optimal care for these persons. A reliable instrument to measure predictors of HRQOL is the initial step in this research, therefore, it is necessary to determine if the Young-Fadok Stoma Quality of Life Scale is appropriate in measuring HRQOL in individuals living with a stoma, in particular, younger persons living with IBD and a stoma.

A three-fold goal was established prior to conducting this study. The main purpose of this study was to determine if the Young-Fadok Stoma Quality of Life Scale is reliable in persons living with a stoma. Additional purposes of this study are to determine if the Young-Fadok Stoma Quality of Life Scale is reliable in younger persons living with a stoma, as well as reliable in persons living with IBD and a stoma.

Methods

Ethical Considerations

All sites involved approved this study. The Institutional Review Board at Rutgers

University approved this study. Moderators on the message boards of the United Ostomy Association of America and Reddit.com also approved this study.

Sample and Data Collection

Eighty-one participants were recruited through a convenience sampling strategy from the online discussion board of the United Ostomy Association of America and the ostomy discussion board or sub-reddit on reddit.com. The inclusion criteria for participants included current or past presence of a stoma, at least 18 years of age, and have the ability to read, understand, and write in English. A detailed description of this study was posted on the discussion board of the United Ostomy Association of America and the ostomy sub-reddit on reddit.com along with a link to the Young-Fadok Stoma Quality of Life Scale. Participants were given the opportunity to ask questions about the study that the principal investigator answered via the discussion board and resources for support were offered through the United Ostomy Association of America. All persons who met the inclusion criteria and were willing to participate were included in this study. Completion of the survey was considered to be informed consent.

Instrument

The Young-Fadok Stoma Quality of Life Scale was developed to assess quality of life in persons living with a stoma (Baxter et al., 2006). The authors of this tool defined quality of life as a multidimensional concept including the five domains of work and social function, body image and sexuality, stoma function, financial concerns, and skin irritation that address the manner in which a stoma affects these domains and overall life state (Baxter et al., 2006). Permission to use the Young-Fadok Stoma Quality of Life Scale in this study was granted by the authors of this instrument (Baxter et al., 2006).

The Young-Fadok Stoma Quality of Life Scale is a self-administered questionnaire that consists of a total of 21 items in two separate parts. Part one of this scale has participants rate overall satisfaction with life in general and over the past month on a scale from 0 to 100 with 0 indicating complete dissatisfaction with life and 100 indicating complete satisfaction with life (Baxter et al., 2006). Part two consists of 19 items that address the five domains described above rated on a 5-point Likert scale from never (1) to always (5) (Baxter et al., 2006). A score is computed for overall life satisfaction, the three subscales of work/social function, body image/

sexuality, stoma function, and the two additional items of financial concern and skin irritation with a lower score indicative of poorer quality of life and a higher score indicative of higher quality of life (Baxter et al., 2006).

This tool was found to be valid and reliable in the pilot study and a secondary follow-up study. In the pilot study, overall quality of life was found to be reliable ($\alpha = 0.89$) and all subscales were found to be reliable ($\alpha = 0.76-0.89$) (Baxter et al., 2006). This questionnaire was also re-administered to participants of the pilot study three weeks after initial completion that revealed sufficient test-retest reliability ($\alpha = 0.93$ for overall scale and $\alpha = 0.75-0.86$ for subscales) (Baxter et al., 2006). For participants of the pilot study, extreme group validity was found in all three subscales, as well as evidence of convergent validity as noted through strong correlations between the short-form 12 (SF-12) and work/social function scale (0.69 for physical scale and 0.67 for mental scale), moderate-to-strong correlations between the SF-12 and stoma function scale (0.39 for physical scale and 0.69 for mental scale), and moderate correlation between the mental health scale of the SF-12 and sexuality/body image (0.49) (Baxter et al., 2006). In the follow-up study, strong internal consistency reliability was found for the overall scale and subscales ($\alpha > 0.76$). However, these samples included participants that had a mean age of 50 years, were mostly Caucasian, had mainly a diagnosis of colorectal cancer, and included more females than males (Baxter et al., 2006; Knowles et al., 2013).

Data Analysis

The statistical software IBM SPSS version 23 was used to conduct the statistical analysis in this study. Descriptive statistics were analyzed to assess the characteristics of this sample. Reliability was assessed through internal consistency of this scale as a whole, as well as each subscale. Normality of data was assessed and plotting all data from the subscales and two additional items revealed data to be linear.

Results

Sample Characteristics

Eighty-one total participants completed The Young-Fadok Stoma Quality of Life Scale. Of these 81 participants, 44.4% were male, 55.6% were female, 4.9% were Asian, 4.9% were African American, 4.9% were Hispanic, 85.2% were Caucasian, 38.3% were single, 55.6% were married, 1.2% were sepa-

rated, and 4.9% were divorced. In regards to type of ostomy, 55.6% had an ileostomy, 43.2% had a colostomy, 1.2% had a urostomy, 25.9% had a temporary ostomy, and 74.1% had a permanent ostomy. Diagnosis etiology of stoma formation included 27.2% with Crohn's disease, 23.5% with ulcerative colitis, 19.8% with colorectal cancer, and 29.6% with a diagnosis designated as other.

Age of participants ranged from 19 to 78 years with a mean age of 43.8 years and standard deviation of 15.8 years. Participants had an ostomy present for a range of 0.1 to 60 years with mean length of time of 9.4 years with standard deviation of 14.3 years. Demographic statistics are presented in Table 1.

Basic Results

Scores for part one of this questionnaire in the form of overall life satisfaction in general and overall life satisfaction in the last month, as well as part two subscales of work/social function, body image/sexuality, and stoma function plus two additional items of financial concern and skin irritation were calculated. The subscales in part two were based upon satisfaction in life in general. All possible scores ranged from 0 indicating worst possible score to 100 indicating best possible score. A higher score is indicative of a better quality of life.

For overall life satisfaction in general, scores ranged from 7 to 93 with a mean score of 75.9 and standard deviation of 21.8. Scores for overall life satisfaction in the last month ranged from 7 to 93 with a mean score of 72.4 and standard deviation of 24.1. For work/social function subscale, scores ranged from 8 to 100 with a mean score of 67 and standard deviation of 22.1. Scores for body image/sexuality subscale ranged from 15 to 100 with a mean score of 65.7 and standard deviation of 19.8. For stoma function subscale, scores ranged from 8 to 96 with a mean score of 60.3 and standard deviation of 21.1. Scores for financial concern ranged from 0 to 100 with a mean score of 64.8 and standard deviation of 34.2. For skin irritation, scores ranged from 0 to 100 with a mean score of 60.2 and standard deviation of 25.6. Scores are presented in Table 2.

Assessment of Reliability

Reliability was assessed for part one of this scale and subscales through calculation of internal consistency in the form of Cronbach's alpha. A Cronbach's alpha of 0.70 was considered to be acceptable with a value greater than 0.80 considered superior (DeVellis, 2010). Part one including the two items of

overall life satisfaction in general and overall last satisfaction in the last month was found to be reliable ($\alpha = 0.96$). Part two of this scale including three subscales and two additional items was determined to be reliable ($\alpha = 0.91$). The subscales of work/social function ($\alpha = 0.85$) and stoma function ($\alpha = 0.79$) were found to be reliable. In regards to the body image/sexuality subscale, Cronbach's alpha was equal to 0.64, which is below the accepted level of reliability. Reliability statistics are presented in Table 3.

Discussion

The results of this study suggest that the Young-Fadok Stoma Quality of Life Scale is reliable in measuring quality of life in persons living with a stoma. Assessment of internal consistency showed reliability with Cronbach's alpha ranging from 0.79-0.96 for part one and the subscales of work/social function and stoma function. The subscale of body image/sexuality had a Cronbach's alpha equal to 0.64 indicating there may not be reliability for this subscale. With the exception of the body image/sexuality subscale, the internal consistency in this study aligned with that determined in the pilot study of the Young-Fadok Stoma Quality of Life Scale ($\alpha = 0.76-0.89$) (Baxter et al., 2006). This scale was also noted to be reliable in an additional study with an overall internal consistency greater than 0.76 but only 31 participants were included (Knowles et al., 2013).

This sample included a greater number of younger participants as ages ranged from 19-78 years with a mean age of 43.7 years compared to a mean age of 50 years in the prior two studies (Baxter et al., 2006; Knowles et al., 2013). Additionally, 50% of sample in this study had a diagnosis of IBD with only about 20% with a diagnosis of colorectal cancer. This percentage of participants with IBD was larger than prior studies where most participants had a diagnosis of colorectal cancer that led to stoma formation.

The results of this study showed that The Young-Fadok Stoma Quality of Life Scale was found to be reliable in this study as internal reliability coefficients were satisfactory at alpha greater than or equal to 0.70 with the exception of the body image/sexuality subscale. In the pilot study, the sexuality/body image subscale was found to be reliable ($\alpha = 0.79$). The items included in this subscale may not fully represent the phenomenon of sexuality/body image in this sample or younger persons living with IBD and a stoma. Additionally, some participants noted that they had difficulty completing the items in-

cluded in this subscale as they were currently not sexually active due to lack of a partner. Further research is necessary to determine if this subscale is reliable in this younger population living with stomas and IBD.

Numerous individuals require the formation of a stoma each year and many of these stomas may be permanent. However, there is minimal information regarding the HRQOL of these individuals and factors influencing HRQOL. Additionally, there is a common belief that the presence of a stoma will negatively impact HRQOL. The results of this study showed that satisfaction with life was positive despite the presence of a stoma with a mean score of 75.9 for overall life satisfaction in general and 72.4 for overall life satisfaction in the last month, as 100 was the highest score possible and a higher score is indicative of better quality of life. The mean scores of all subscales plus two additional items were lower than overall life satisfaction but, as they ranged from 60.2 to 67, they were indicative of a higher satisfaction with life as all were above a median possible score of 50. In regards to the subscales, the highest mean score was 67 for work/social function and the lowest mean scores were 60.3 for stoma function and 60.2 for skin irritation. This suggests that persons with a stoma are able to work and/or function socially despite the presence of the stoma, however some may suffer from an inadequately constructed stoma or require more patient education regarding stoma function and care.

The results of this study indicate that the presence of does not negatively affect satisfaction with life. Additionally, individuals with a stoma are able to function professionally and socially, have minimal or no negative effects upon sexuality and body image, and have limited financial concerns regarding ostomy supplies. Finally, it appears as though stoma function and skin irritation do not negatively affect satisfaction with life but may pose greater negative impacts compared to other factors. To ensure satisfaction with life despite the presence of an ostomy, it may be essential to educate clinicians about positive satisfaction with life despite presence of a stoma, as well as factors contributing to this good quality of life. Clinicians can then adequately discuss the impact of stomas on life, provide appropriate patient education, and suggest helpful patient resources, such as support groups.

Further research should include HRQOL in persons living with a stoma and perceptions about stomas among healthcare providers, as well as education and resources provided to

Appendix

Table 1

Demographic Statistics

	Frequency	Percent	Minimum	Maximum	Mean	Standard Deviation
Gender	36 Male	44.4 Male				
	45 Female	55.6 Female				
Race/ Ethnicity	4 Asian	4.9 Asian				
	4 African	4.9 African				
	American	American				
	4 Hispanic	4.9 Hispanic				
	69	85.2				
	Caucasian	Caucasian				
Marital Status	31 Single	38.3 Single				
	45 Married	55.6				
	1 Separated	Married				
	4 Divorced	1.2				
		Separated				
		4.9				
		Divorced				
Ostomy Type	45	55.6				
	Ileostomy	Ileostomy				
	35	43.2				
	Colostomy	Colostomy				
	1	1.2				
	Urostomy	Urostomy				
Ostomy Surgery Type	21	25.9				
	Temporary	Temporary				
	60	74.1				
	Permanent	Permanent				
Diagnosis	22 Crohn's disease	27.2 Crohn's disease				
	19 ulcerative colitis	23.5 ulcerative colitis				
	16					
	Colorectal CA	19.8 Colorectal CA				
	24 Other	CA				
		29.6 Other				
Age			19	78	43.7	15.8
Ostomy Years			0.1	60	9.4	14.3

Table 2

Young-Fadok Stoma Quality of Life Scale Scores

	Minimum	Maximum	Mean	Standard Deviation
Overall Life Satisfaction in General	7	100	75.9	21.8
Overall Life Satisfaction in Last Month	7	100	72.4	24.1
Work/Social Function Subscale	8	100	67	22.1
Body Image/Sexuality Subscale	15	100	65.7	19.8
Stoma Function Subscale	8	96	60.3	21.1
Financial Concern Item	0	100	64.8	34.2
Skin Irritation Item	0	100	60.2	25.6

Table 3

Reliability Statistics

Scale	Number of Items	Coefficient Alpha
Part 1	2	0.96
Part 2	19	0.91
Work/Social Function Subscale	6	0.85
Sexuality/Body Image Subscale	5	0.64
Stoma Function Subscale	6	0.79

patients anticipating or currently living with a stoma. In order to further improve HRQOL, more research regarding factors that may affect stoma function and skin irritation, such as surgical construction of stoma and patient education, is necessary. Increasing understanding of HRQOL, as well as factors that impact HRQOL in persons living with a stoma is essential in order for clinicians to provide holistic care to this population. Holistic care that focuses not only on symptom relief, but also psychological health and functioning in daily life is of particular importance in individuals living with a condition in which a cure is unrealistic. Therefore, as HRQOL is an outcome measure that can resemble adequate holistic care, all aspects contributing to HRQOL should be considered in the care of individuals living with a stoma.

Conclusion and Limitations

This study found that The Young-Fadok Stoma Quality of Life Scale was reliable in terms of internal consistency with the exception of the body image/sexuality subscale. Further research is necessary to determine reliability in this subscale. Compared with the other two studies using this scale, this study made use of a younger sample of a mean age of 43.8 years with a greater percentage living with IBD and ostomy creation compared to colorectal cancer. However, in order to determine if this scale is valid and reliable in younger persons living with IBD and a stoma, further research is needed in a greater number of individuals aged 20 to 30 years.

The results of this study suggest that there is a positive satisfaction with life despite the presence of a stoma with stoma function and skin irritation posing possible negative impacts upon life satisfaction. Prior research has indicated a negative satisfaction with life as a result of stoma formation. However, as this study shows this belief may be inaccurate, it is important to conduct further research regarding HRQOL in persons with a stoma, perceptions of clinicians caring for persons with a stoma, as well as education and resources provided to persons anticipating or living with a stoma and IBD.

Limitations of this study include recruitment from online discussion boards only excluding those not making use of this technology. Additionally, a convenience sampling strategy was used to recruit participants. Finally, the tool used is based upon self-report. Areas for further investigation include a greater number of participants under the age of 40 years, a greater number of persons with IBD, perceptions of healthcare providers regarding stomas, patient education and resources provided to stoma patients, and further assessment of the reliability of the body image/sexuality subscale in the aforementioned population.

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We are but visitors on this planet. We are here for ninety or one hundred years at the very most. During that period, we must try to do something good, something useful with our lives. If you contribute to other people's happiness, you will find the true goal, the true meaning of life.

Dalai Lama

The Effect of School-based Meditation on Power and Well-Being: A Pilot Study

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Abstract

The purpose of this pilot study was to examine manifestations of inner sense of power and well-being over time in persons who participate in a school-based meditation program. A quasi-experimental single group design was used with an intervention of meditation sessions facilitated by the principal investigator. The theoretical framework of Rogers' science of unitary human beings was utilized for this study in conceptualization of power and well-being. A convenience sample (N=21) consisted of a college community of students, faculty and staff, who attended an 8-week meditation program. When mean scores of wellbeing and power were compared, the results show definite improvements between week 1 to week 8 with noticeably significant changes in: wellbeing ($p=0.00$) and power ($p=0.00$).

Introduction

Meditation and other mindfulness-based stress reduction strategies have been shown to promote self-care and well-being (Irving, Dobkin, & Park, 2009). Approximately 75% of the world population relies on some form of complementary and alternative medicine (CAM) approaches (Khan, et al., 2020). Meditation is one of the ten most commonly used CAM therapies and has been utilized as a part of complementary and alternative medicine for physical and mental well-being for many years (National Institutes of Health, 2019).

In addition to its benefits for improvements in health, many medical and health care organizations incorporate meditation in various settings for enhancing quality of life (Park, 2013). Recently, as meditation programs are increasingly being utilized as an academic strategy for students' emotional and behavioral management, school-based meditation programs seem to be expanding worldwide (Wisner, Jones, & Gwin, 2010).

According to Doe (2019), the purpose of school education is to grow and enhance individual abilities in order to build a life of value and to coexist with others harmoniously. More frequently, meditation has been used in school-based programs to enhance

a humanistic education focus (Doe, 2019; Lee, 2010), and research studies have demonstrated its significant benefits for students' mental health (Kim & Hong, 2016; Yoo et al., 2016; Yoo, Lee, Yu & Yun, 2019). However, only a few number of research studies have examined the effect of school-based meditation programs on a college community of students, faculty and staff in terms of well-being and power enhancement. In particular, meditation research studies examining power enhancement within college communities is very rare; and only one research study (Kim, Park & Kim, 2008), was found which reported significant improvements in meditation group, when using Power as Knowing Participation in Change Tool (PKPCT) to observe for changes with chakra meditation. This study hopes to fill that gap and shed some light on possible beneficial effects of a meditation program for the college community.

Theoretical framework

The central focus of Rogers' science of unitary human beings (1970, 1992) is human beings and their environment, where both are irreducible wholes in continuous and mutual process. The four concepts, or postulates as referred in her theory, are energy fields, openness, pattern, and pandimensionality. Her three principles of homeodynamics consisted of integrality, resonancy, helicity; and in particular, within the principles of resonancy and integrality, meditation is a higher frequency wave pattern (Lo, Huang & Chang, 2003; Kim, Park & Kim, 2008).

The meditation is one way to fully experience pandimensional awareness of the integrality of human-environmental mutual process (Kim, Park & Kim, 2008), where pandimensional awareness transcends ordinary time and space (Rogers, 1990, 1992). The conceptualization of power (Barrett, 1986) and well-being (Guelder et al., 2005) in this study derived from Rogers' science of unitary human beings (1970, 1992).

Purpose statement

The purpose of this research study was to examine manifestations of inner sense of

power and well-being over time in persons who participate in a school-based meditation program.

Research question

The following research questions were addressed:

- 1) What is the pattern of change in power over time in persons who participate in a meditation program?
- 2) What is the pattern of change in well-being over time in persons who participate in a meditation program?

Literature review

Meditation was originally developed in Eastern cultures thousands of years ago (Kim, Park & Kim, 2008). Krishnamurtii (as cited in Lee, 1995) defined meditation as "the emptying of the mind of all the things that the mind has put together" (p. 378); as result of emptying of the mind, one can experience an extraordinary space of freedom. Kabat-Zin (1990) described meditation with emphasis on being where you are now and not trying to get somewhere else. It is one of the major self-directed approaches people use for benefits of calmness, inner peace, and relaxation (Bonadonna, 2003). As more and more evidence of benefits of meditation emerge, utilization of meditation programs in schools has increased to manage classroom behaviors and to enhance academic environments by alleviating student stress (Wisner et al., 2010). The expansion of school-based meditation is a world-wide phenomenon (Yun et al., 2017). Meditation research studies on college students included improved perception (Helber, Zook, & Immergut, 2012), enhanced counseling service effects (Kurash & Schaul, 2006), and utilization of meditation as a part of the main college curriculum (Kim, 2012).

Most of the meditation research studies have concentrated on students rather than faculty or staff. To date, only two meditation studies have examined college communities of student, faculty and staff. Kim, Park and Kim (2008) explored power and well-being of college students, faculty and staff, and found statistically significant changes in power and

Farewell, Our Beloved Friend



DR. VICTOR CARBONEL RIVERA

UP College of Medicine, 1966

April 5, 1942 - April 4, 2020

Passed away due to COVID-19 Complications



Vic and Mila Rivera



The Rivera Clan, celebrating Vic & Mila's 50th Wedding Anniversary, Ireland

Dr. Vic Rivera's favorite passage:

*Be strong and of good courage;
Do not be afraid nor be dismayed,
For the Lord your God is with
you wherever you go.
Joshua 1:9*

*You will be missed, you will
always be remembered*

~The Nightingales~



The Nightingales, UPCN'67

L-R: Gerrie Barangan-Korten, Josie Francisco-Villanueva, Fe Balmaceda-Edralin,
Mila Castro-Rivera, Connie Orillo-Oliveros, Merle Flores-Borrero

well-being. Lederer and Middlestadt(2014) examined beliefs about meditation among faculty, staff and students, and found intent to meditate was significantly predicted by attitudes, perceived norm, and perceived behavior control.

True Self Meditation

The meditation utilized in this study focused on mind cleansing, which primarily employs self-reflective activities to examine one's past experiences and self-centered perspectives (Woo, 2008, 2011, 2013). The main principle of this meditation method centers on discarding attachments in order to return to one's original mind (true self). Through the cleansing method of self-reflection, negative sets of subjective mind (false perceptions) can be identified and cleansed away, which can then lead to expansion of a universal consciousness and development of positive sets of true mind (Yun, 2014). With this type of meditation, other beneficial effects include increased understanding of self and others, and transformation of individual's world-perspective, resulting in various positive psychosocial effects, as shown in research studies sampling diverse age population from kindergarten to college, and adult to geriatric populations (Yun et al., 2017).

Power

Power can be simply stated as an inner strength that individuals have. According to Barrett (1986), power is the capacity to participate knowingly in a change. The capacity for power is manifested by awareness, choices, freedom to act intentionally, and also being involved in creating change. Using the conceptualization by Rogers (1990, 1992), power in meditation is being conceptualized in this study as "a health patterning modality whereby a person experiences pandimensional awareness of integrality of a human-environmental mutual process" (Kim, Park, & Kim, 2008, p. 51).

Well-Being

Conceptualization of well-being for this study was from Gueldner's (2005) description of well-being based on Rogers' (1992) perspectives of homeodynamics using three principles: resonancy, helicy and integrality. An individual's sense of well-being is associated with manifestations of the principles, in "a higher frequency (resonancy) and increasing diversity (helicy) of energy field patterns within the mutual human-environmental field process (integrality)" (Kim, Park & Kim, 2008, p. 52).

Research design and methodology

A single group, quasi-experimental design was used with the intervention of meditation sessions facilitated by the principal investigator. The focus was to document changes in power and well-being as persons engage in a two-month meditation program. The sessions were provided three times a week, with each time duration of approximately 30 minutes. To document attendance in each session, the participants were asked to complete an attendance log each session.

Sampling method

A convenience sample (N=21) consisted of a college community of students, faculty and staff, who attended an 8-week meditation program at a mid-size, Catholic private university. Repeated email blasts from Director of Student Activities as well as faculty announcements to the students, faculty and staff members of the college community were sent notifying them of availability of the meditation program; pamphlets and flyers were also posted and available throughout the campus notifying potential participants about the exact times and places of the sessions.

The participants and setting

The targeted population was any college community-affiliated persons (faculty, students, and staff) who voluntarily attended the meditation sessions offered three times a week. The eligible participants who has at least graduated from high school, or obtained a GED were included in the study: the minimum educational level of a high school diploma was required to be able to complete the instrument Power as Knowing Participation in Change Tool (PKPCT) used in this study. Non-university affiliated persons and anyone under the age of 18 were also excluded from the study.

The IRB approval was obtained from the university and the participants were informed of the background of this study, purpose, procedures, potential risks and benefits, confidentiality, voluntary participation, research participants' rights, and contact information of the researcher. The consents were obtained at the first meditation session held on the campus.

Data Collection

The principal investigator was present to facilitate all meditation sessions and to collect data. The participants were asked to complete three forms of questionnaires: demographic data questionnaire, Power as Knowing Participation in Change Tool (PKPCT) and Well-

Being Picture Scale (WPS). Permissions for PKPCT and WPS instruments were obtained from the authors. The data were collected at the very first meditation session, and at the end of the program.

This study used the Power as Knowing Participation in Change Tool (PKPCT) (Barrett, 1989) and the Well-Being Picture Scale (WPS) (Gueldner et al., 2005). The PKPCT consists of 52 items in four subscales: awareness, choices, freedom to act intentionally, and involvement in creating changes. Each subscale contains the same 13 semantic differential adjective pairs (i.e., timid-aggressive and free-constrained), with each item being rated from one to seven points. Higher scores indicate higher perceived power. The WPS is a 10-item, non-language based pictorial scale. The tool consists of ten picture pairs with a 7-point semantic scale to indicate how participants are feeling at a particular moment. Higher scores indicate a higher sense of well-being.

Data Analysis and Results

A convenience sample (N = 21) of university faculty, students, and staff participated in this study. Most participants were female (86%), 46 years of age and above (68%), married (63%), white (80%)with at least Bachelor's degree (76%) and faculty/staff (76%) (Table 1). 76% of participants had no previous meditation experience, with the rest (24%) with 6 months to one year of the experience. SPSS 21.0 was used for all data analyses.

The general trend showed improvements in power and wellbeing scores in the group. When mean scores of wellbeing and power were compared, the data analysis showed a definite increase in both scores; albeit small, as the participants continue their meditation practices from week one to week eight.

A one sample t-test (Table 2)showed a significant increase ($p = 0.00$) in power from week one (255.29) to week eight (278.8) with standard deviation of 11.426 and 8.964 respectively; and a significant increase ($p = 0.00$) in well-being from week one (42.48) to week eight (52.11) with standard deviation of 43.542 and 46.816 respectively. Four subscales of PKPCT also showed statistically significant improvements in awareness, choices, freedom to act intentionally, and also being involved in creating change as shown in Table 3.

Nonparametric correlations using Spearman's rho was used to compare wellbeing and power from week one to eight. It showed value of 0.713 ($p= 0.021$) for the first week; and

In Memoriam
Leonora Pilao Dwyer Robb
1951 - 2020



Beauty and brains, nurse extraordinaire, poet, artist, writer, wife, mother, aunt, friend

PINTIG (Pulse) was her brainchild — UPCN '72's very own yearbook — the first in college's history

Fare thee well, sweet friend.
May flights of angels sing thee to thy rest.

In loving memory from your UPCN '72 classmates

Table 1

Demographic Characteristics (n = 21)

Variables	n	%
Gender		
Male	3	14
Female	18	86
Age		
18-25	3	14
26-35	2	9
36-45	2	9
46-55	8	39
Above 55	6	29
Marital status		
Married	13	63
Widowed	3	14
Divorced	1	4
Separated	0	0
Never married	4	19
Race		
Caucasian or white	17	80
Black	3	14
Asian	1	4
Education		
Associate degree	5	24
Bachelor's degree	6	29
Master's degree	7	33
Doctoral degree	3	14
University affiliated status		
Faculty	4	19
Student	5	24
Staff	12	57
Meditation experience		
None	16	76
6 months to 1 year	5	24
More than 1 year	0	0

value of 0.667 ($p=0.050$) for the 8th week. There were no significant correlations with the number of meditation sessions attended by the participants on power ($p=0.593$) and wellbeing ($p=1.00$).

Discussion

Meditation and self-reflection

The meditation method used in this study focuses on self-reflection; it is defined as observing one's state of mind (Moon, 2015). The practice of self-reflection entails observing one's life experiences in a process of self-discovery and self-completion (Oh, 2011).

The process of self-reflection to observe inner states of mind or problems can be useful in that it can contribute to self-growth and well-adjustment to life changes.

When examining education research studies on self-reflection, Lee, Kim, and Jang (2013) developed self-reflective activities to alleviate low self-esteem in college students on academic probation due to poor performance; and Na (2012) reported benefits of self-reflective journaling in college freshmen to explore the self. College students who consistently practiced self-reflective meditation experienced enhanced self-objectivity with beneficial psychological effects of in-

creased self-awareness and self-regulation of emotion (Cheon, 2010); and happiness index scores increased to the extent that self-reflective meditation was practiced in nursing students (Kim & Hong, 2016). Furthermore, effective mentoring, reflection workshops, and a positive mindset toward school life were vital for students' school adjustment (McDermid, Peters, Daly & Jackson, 2016).

Manifestations of inner sense of power and well-being

Nurses need to be cognizant of different modalities which can facilitate individuals'

Table 2

One sample t-test of variables (n=21)

Variables	Week 1 M±SD	Week 8 M±SD
Well-being (p= 0.000)	42.48±43.542	52.11±46.816
Power (p= 0.000)	255.29±11.426	278.8±8.964

M=mean; SD = Standard Deviation

power and well-being by strengthening the human-environment relation. Using Rogers' (1970, 1992) science of unitary human beings as a theoretical basis, the self-reflective meditation program was conceived as a health patterning modality, through which a person experience pandimensional awareness of integrality of human-environment mutual process. There are diverse ways individuals manifest their health patterning modalities (Rogers, 1990); and as a non-invasive modality, the meditation program was shown to be effective in promoting patterns of change in power and well-being in this study.

It was proposed that through the meditation, the patterns of change in variables of power and well-being would emerge. Although the statistical data analysis didn't show a correlation between the number of meditation sessions attended and changes in well-being and power, the results did demonstrate significant increases in power and well-being from the first week to the last week as the participants continued to attend the program.

Barrett (1986) conceptualized power based on Rogers' (1970) postulate of knowing participation and defined power as one of the ways humans create their realities by actualizing selected potentials, as manifested by awareness, choices, freedom to act intentionally, and involvement in creating changes; "being aware of what one is choosing to do, feeling free to do it, and doing it intentionally" (Barrett, 1986, p.175). As shown in Table 3, the four subscales of PKPCT show definite increases when observing for patterns of change in power over time.

Guelnder et al., (2005) conceptualized well-being within Rogers (1992) theory and described well-being based on Rogers' three principles of homeodynamics. A person's experience of a sense of well-being is associated with manifestations of a higher frequency; and also increasing diversity of energy pat-

terns within the mutual human-environmental field process (Kim, Park & Kim, 2008). When observing for the pattern of change in well-being over time with the meditation program as a health patterning modality, there was a significant increase shown in well-being for persons who participated in the meditation program.

Documented meditation benefits

Subjective well-being relates to adequate satisfaction and joy that people feel in their lives; however, the sense of happiness or well-being can differ in varying degrees depending on one's own individual value systems and standards of happiness/well-being (Veenhoven, 1988). Many meditation studies report improved well-being: higher sense of well-being, reduced anxiety and better study habits in nursing students (Rajagopal, Pugazhanti & George, 2012); a significant correlational relationship was found between meditation experience and well-being with more years of meditation experience resulting in a higher sense of well-being (Baer, Lykins, & Peters, 2012).

A study of college freshmen and sophomores using several mindfulness techniques, including meditation, experienced reduced stress and anxiety and increased holistic wellness (Baker, 2012). Two pilot studies explored the use of meditation in registered nurses. Gauthier, Meyer, Grefe, and Gold (2015) noted decreased stress in pediatric intensive care nurses who participated in meditation prior to their shift. In their study of nurses and midwives, Fourer, Besley, Burton, Yu, and Crisp (2013) found decreases in stress, depression, and anxiety with the use of a mindfulness-based stress reduction strategy.

Meditation practices can also improve concentration and focus, as shown in studies which reported that college students who meditated for longer times had improved concentration and focus (Davidson, Gole-

man, & Schwartz, 1976). In addition, some brain research studies indicated enhancement in concentration and focus (Cheon, 2010); and increase in ability to concentrate in students who practiced mantra meditation (Shin, 2009).

Limitations and recommendations

Several factors limited the ability to generalize the study findings. This study was conducted at a mid-size, Catholic private university in the northeastern part of United States. Although the study showed significant results, the sample size was too small. In addition, there may have been a volunteer bias with the convenience sampling.

Although there have been many studies exploring the effects of meditation on college students; currently, there are only two meditation research studies which investigated meditation effects in college communities of student, faculty and staff. Despite the small sample and being conducted at a single institution, this pilot study findings indicated that the meditation may be useful in a college setting as a stress management or as part of a wellness program. Further inquiry is needed to explore how meditation and other mindfulness-based stress reduction strategies may be beneficial to faculty, staff, and students of a college community.

Conclusion

This pilot study adds to the growing body of research about meditation-based stress reduction strategies in school settings. In this study, power and well-being were specifically examined in the college community of students, faculty and staff; and the result showed that power and well-being increased with continued participation in the meditation sessions. The findings indicate that the meditation may be useful in a college setting as a stress management and wellness program to boost well-being and power.

Table 3

Subscale mean scores of Power as Knowing Participation in Change Tool (PKPCT)(n=21)

Subscale variables	Week 1 M±SD	Week 8 M±SD
Awareness (p= 0.000)	62.95±9.85	69.67±10.71
Choices (p= 0.000)	63.24 ±11.92	69.11±13.44
Freedom to act intentionally(p= 0.000)	64.00±13.98	68.67 ±12.31
Creating change(p= 0.000)	66.33 ±13.06	71.33 ±12.58

M = mean; SD = Standard Deviation

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Using Video Monitoring with Video Technician for Fall Prevention

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Abstract

Never events, a term first introduced in 2001 by Ken Kizer, are “errors in medical care that are clearly identifiable, preventable, and serious in their consequences for patients, and that indicate a real problem in the safety and credibility of a health care facility” (CMS.gov, 2006, para. 2). Falls among elderly nursing home residents are classified as never events and has placed nursing homes under increased pressure to eliminate falls since they are the leading cause of trauma and fatal injury for this population (King, et al., 2018, National Council on Aging, 2019).

The purpose of this Evidence-Based-Practice (EBP) project is to determine if nursing staff training on the use of video monitoring with a video technician will reduce the falls rate for patients aged 65 years and older residing in a long-term care facility. The unit already had a video monitoring with a 2-way communication system and a video techni-

cian alerting the staff who were not trained. Prior to the EBP implementation a retrospective falls rate data was collected for a period of three months and was compared with the data obtained after the nursing staff training was conducted. The falls rate before the EBP nursing staff training was 73% and the falls rate after the training was 27%. The mean difference was 46%. The t-test results showed a significant difference at $p=.001$ level in patient falls rate after nursing staff training on video monitoring with a video technician. This practice is consistent with literature and should be adopted to reduce falls rate in nursing homes.

Introduction

In 2007, the Centers for Medicare and Medicaid Services (CMS) announced that Medicare would no longer pay for additional costs associated with many preventable errors, including those considered “never

events” (USDHHS, 2019a.) Private insurers such as Aetna and Horizon Blue Cross Blue Shields also adopted the CMS policy for non-payment of “never events” such as falls in the nursing homes and many strategies to prevent falls have been implemented in these settings (Aetna, 2019, Horizon, 2013).

Despite efforts by nursing homes to eliminate falls, the goal of zero falls has been difficult to achieve (Mergenthaler & Harper, 2015). In fact, the evidence regarding the efficacy of specific fall prevention programs has been mixed (USDHHS, 2019b). With the elderly nursing home population expected to increase to 3 million by 2030 (CDC, 2012), unless effective fall prevention interventions are implemented, achieving zero falls among elderly nursing home patients will remain difficult to realize.

Significance of the Problem

There are over 40 million people aged 65



and older in the U.S. Out of this population, five percent reside in nursing homes (CDC, 2012) and statistics regarding falls as never events occurring for this population are significant. An elderly patient in a nursing home will have 2.6 falls per year and 35 percent of nursing home falls occur in patients who cannot walk (CDC, 2012). Between 16 percent and 27 percent of nursing home falls are related to environmental hazards, such as inadequate lighting or slippery floors within the nursing home (CDC, 2012). Ten to 20 percent of nursing home falls result in serious injury including intracranial injuries (ICIs) and fractures, which pose a significant risk for post-fall morbidity and mortality (CDC, 2012).

The financial costs of falls for nursing homes are significant. In 2015, the CDC (2016) estimated the direct cost of all fall injuries for persons over age 65 was more than \$50 billion. It is important to note that this figure includes all people over 65, not just those in nursing homes. However, because falls are more common in long-term care settings, and nursing home residents are more prone to serious complications after a fall (Becker & Rapp, 2010), it is reasonable to conclude that injuries among this population make up a disproportionate amount of the total costs.

The numbers are not only high in the aggregate, but also for the individual. In a study of adults 72 and older, the average cost of health care after sustaining a fall injury was \$30,000 (CDC, 2016a). For hip fractures specifically, the cost of operative intervention has been estimated to be \$49,900 to \$65,300 (Judd & Christianson, 2015).

Falling can be viewed as a form of nursing home neglect. A wrongful injury or death lawsuit may be brought against a nursing home if the fall is caused by failure to provide a reasonably safe environment, failure to maintain adequate health and safety policies or failure to provide the required standard of care and medical treatment (Jacobs, 2014). Legal costs can range from \$100,000 to \$1 million dollars. Juries can and have awarded judgments of thousands to millions of dollars to plaintiffs (Jacobs, 2014).

Clinical Problem

Is nursing staff training on the use of a video monitoring with a video technician effective in reducing the falls rate among patients 65 years or older residing in long term care facility compared to the usual practice of staff monitoring?

Review of Literature

A quasi-experimental study by Davis et

al., (2016) was done to determine the prevalence of patient falls and self-harm using in-room sitters and video monitoring and its associated costs at Tampa General Hospital, a 1,007-bed non-profit academic medical center. Participants included adult medical surgical patients in the Cardiology unit and Neuroscience units. Video equipment used for the study was supplied by the hospital's security system. This equipment allowed 6-16 patients to be simultaneously monitored. For a 4-year study period, sitter usage and video monitoring was implemented in each of the 2 units at varying times. Results showed that video monitoring had a lower cost per patient day than sitters. There was a significant decrease ($p < .001$) in salary cost per patient sitter day without a significant increase in patient falls or self-harm events when video monitoring was used on a unit for most of the patients requiring constant observation. There was no significant difference in the prevalence of falls in the two units, but a downward trend in falls per 1,000 patient days was detected during the study. The study was unable to evaluate self-harm events in relation to the use of sitters or video monitoring because of the rareness of these events occurring. During the first year of implementation the facility was able to save over \$500,000 and annually since year one.

Burtson and Vento's (2015) descriptive study conducted at the University of California San Diego Health System (UCSDHS), a 595-bed Magnet-designated hospital with 2 inpatient locations in urban areas of Southern California. In response to the CMS policy of non-payment for hospital-acquired conditions prompted sitter use at the hospital as a fall prevention intervention but sitter use was unpredictable and costly. This study was implemented using a mobile video monitoring program with a standardized nurse-driven protocol aimed at making significant reductions in sitter-related staffing costs. Nine units that had high rates of falls at one hospital location were selected to implement video monitoring. This was combined with a nursing-driven sitter protocol and administrative oversight. For control purposes, another location was selected that would only apply the nursing-driven sitter protocol and administrative oversight without mobile video monitoring. The study was conducted for 2 years and the results showed that the video monitoring program with nursing-driven sitter protocol and administrative oversight resulted in a 53.6% reduction in 57.8 full-time employees and a savings of \$1,718,823. Total cost for the program was \$82,482. While

there was an overall 40.3% in reduction in sitter staffing costs in the control location, there was a 47.1% reduction in combined sitter and video monitoring in the experiment location. Most importantly, during the intervention, UCSDHS outperformed or equaled benchmarks for falls per 1,000 patient days (8/8 quarters and fall injury per 1,000 patient days (6/8 quarters).


Hardin et al., (2013) conducted a study using hospitals selected from a national health system of 56 hospitals. Out of the 56 hospitals, 17 reported fall rates of more than 2.7 falls per 1,000 patient days for the last three of four quarters. From among these 17 hospitals, 10 were randomly chosen to participate in the study.

Five thousand eight hundred and seventy-one (5,871) patients consented to the study with the knowledge they could opt out at any time. Data was collected over a 6-month period resulting in a sample of 26,352 patient days for the intervention units and 25,483 patient days for the control units. Results indicated 185 falls occurred during the study, with 101 falls occurred in control units and 84 falls occurred in the intervention units. There were 3 serious injuries in the control hospitals as opposed to 1 in the intervention hospital. Hardin et al., (2013) stress that no falls occurred when both the Webcams and the Virtual Bed Rails were in use.

Cournan et al., (2018) used a sequential cohort design to study a video monitoring system as a fall prevention intervention. The setting for the study was a 31-bed brain surgery unit of a 115-bed freestanding inpatient rehabilitation facility in upstate New York. This unit was selected because a majority of falls occurred on this unit while it was already equipped with 15 cameras (10 fixed in-room ceiling mounted and 5 portable units with speakers). As fall scales were deemed unreliable to determine patients' fall risk, the nurse manager's clinical judgment was used to determine patients most at risk of falling and patients who could benefit most from video monitoring. Consent for patients to participate in the video monitoring intervention was not required from patients, family, or physicians because the hospital considered video monitoring akin to sitter usage.

The results showed that prior to intervention, falls in the brain surgery unit averaged 10.26 falls per 1,000 patient days. A year after intervention, falls in the unit averaged 6.87 falls per 1,000 patient days, which was statistically significant.

Sand-Jecklin et al., (2018) used a quasi-experimental pre-post design to evaluate a



***"... all things work for good
for those who love God, who
are called according to His
purpose." (Romans 8:28)***

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centralized video monitoring with staff training as a fall prevention strategy at a large teaching medical center in the mid-Atlantic region. Video cameras were installed in 14 rooms of a mixed neuroscience unit, medicine unit, and 2 medical-surgical units. The cameras were connected to a central monitor and staff was trained in all aspects of patient video monitoring procedures. Six months of data was collected prior to the intervention for all four units and was collected for six months after implementation of the intervention. Results showed that there were 74 falls over 19,021 patient days before implementation for all units combined, amounting to 3.9 falls per 1,000 patient days. Data for the 4 units after implementation of video monitoring indicated 51 falls over 18,323 patient days, amounting to 2.8 falls per 1,000 patient days. This result reflected a fall rate decrease of 28.5%.

In a study by Browne and Sterne (2015), a targeted video surveillance program was implemented at Greenwich Hospital. To begin the program, rooms were equipped with cameras and audio capability to ensure communication between patient and video technician and appropriate signage was placed in rooms stating the rooms were under video surveillance. In addition, staff were trained in usage of video monitoring; while, patients and their families received verbal education and written information about the video monitoring program. The study, which was launched in June 2012 and was conducted on a medicine unit with a high percentage of geriatric patients, began with four beds and was expanded to 14 beds within 6 months. During a 2-year period and roughly 2,500 patients later, only two falls occurred, neither of which resulted in injury. Data showed that many potential falls were avoided through the video monitoring program. Moreover, even with video equipment costing \$52,000 and an additional \$30,000 to construct a central monitoring station, the hospital managed to save \$250,000 attributed to reduced sitter costs.

Quigley et al., (2019) conducted a study on 71 hospitals between 2017, and 2018, patients aged 18 years and older underwent video monitoring with a video technician. The purpose of this study was to determine if video monitoring with a video technician, patients' age, staff engagement, and alarm response time have an effect on fall rates. It also explored if the rate of adverse events (fall, room elopement, and line, tube, or drain dislodgement) vary by age group, and the potential cost savings difference between video monitoring with a video technician and

1:1 sitter usage. For study purposes, patients were grouped by age 18–64, 65–84 and >85.

Using AvaSys, a telehealth solution that includes a video monitoring device that is either permanently installed or mobile in the patient's room, an audio-video feed was transmitted across each of the 71 hospital's secured wireless network to a workstation where a video technician interacted with up to 16 patients at once. The primary bedside nurse selected appropriate patients for video monitoring, based on nursing judgment and hospital-specific policies, and worked with the monitor staff to set up and individualize video monitoring. Patients were deemed high risk for an adverse event based on factors such as altered mental status, acuity, agitation, and impaired mobility. During surveillance, the monitoring staff learned the patient's behaviors and verbally engaged the patient before adverse events occurred. The top 3 adverse events prevented were assisted and unassisted falls, room elopement, and line, tube, or drain dislodgement.

As video monitoring staff observed and intervened, data were captured automatically from the system into a national database. The data were stored securely via cloud for ease of data export and analysis with RStudio® software.

Between July 1, 2017, and May 31, 2018, 15,021 patients were monitored for a total of 942,482 hours (39,270 patient days). The average length of surveillance was 62.7 hours. Video technicians spoke with patients for an average of 15.8 times per day (616,006 total verbal interventions) and activated 1.6 alarms per patient day (61,003 total alarms). The average alarm response time was 15.8 seconds. Adverse events that were observed and reported included a total of 59 falls witnessed by video technicians (44 or 75% were unassisted falls and 15 or 25% were assisted). None of the patients fell more than once. Adults younger than 65 years old were more likely to fall during surveillance than patients 65 years or older ($p = .002$). The oldest age group (>85 years old) experienced the lowest rate of falls per 1000 days of surveillance (0.38). There were 106 incidents of dislodgement that occurred. The oldest age group also experienced the lowest rate of line, tube, or drain dislodgements per 1000 days of surveillance (2.30). Twenty-seven patients eloped from their rooms. Patients between the ages of 65 and 84 years had the lowest elopement rate per 1000 patient-days (0.42). The overall fall rate was 1.50 falls per 1000 days of surveillance, and the unassisted fall rate was 1.12 per 1000 days of surveillance.

Patients who experienced a fall had 20.5 verbal interventions per patient day, compared with 15.7 verbal interventions per patient day for those who did not fall ($p = .0005$). The falling group also had a significant higher number of alarms than the non-falling group, namely, 2.38 and 1.55. Video monitoring alarm response time for patients who experienced unassisted falls was slower at 19.2 seconds, as compared with the aggregate response time of 15.8 seconds. Video monitoring with a video technician to patient ratio of 1:12, the total number of required full-time equivalents is reduced by 92% to 38 full-time equivalents. The actual cost savings are contingent on the hourly wages of the one-to-one sitters and monitoring staff. There were no differences in alarm or verbal intervention rates between the 3 age groups. Somewhat less engagement from video technicians, as measured by verbal interventions and alarm rates, was noted for patients 65 years old or younger. Bedside caregivers were noted to respond more slowly to alarms from patients in the youngest age group.

The literature provides evidence that video monitoring can have an impact on reducing the number of falls that occur as never events. The literature also shows that video monitoring with video technician can be a cost-effective alternative to sitter usage.

Methodology and Implementation

This evidence-based practice project aims to change the fall reduction strategy of a 36 bed subacute unit with high falls rate at a skilled nursing facility in New Jersey. Based on 36 occupied beds, the unit's fall rate for October 2019 was 4.3 falls per 1,000 occupied beds; for November 2019, it was 6.6 falls per 1,000 occupied beds; and for December 2019, it was 4.04 falls per 1,000 occupied beds. In addition, this unit already had the necessary video monitoring equipment with a 2-way audio communication system and a video technician monitoring patients who have been identified as high risk for falls. However, the nursing staff were not trained to use the system in preventing falls effectively.

A nursing staff training program was developed for this project with permission from the Nursing Administrator of the facility and approval from the Institutional Review Board (IRB) of Fairleigh Dickinson University. Flyers about the training program were created and posted on various locations of the facility such as the lobby, staff lounge and bathrooms to recruit participants.

The training program consisted of educational materials covering the background and

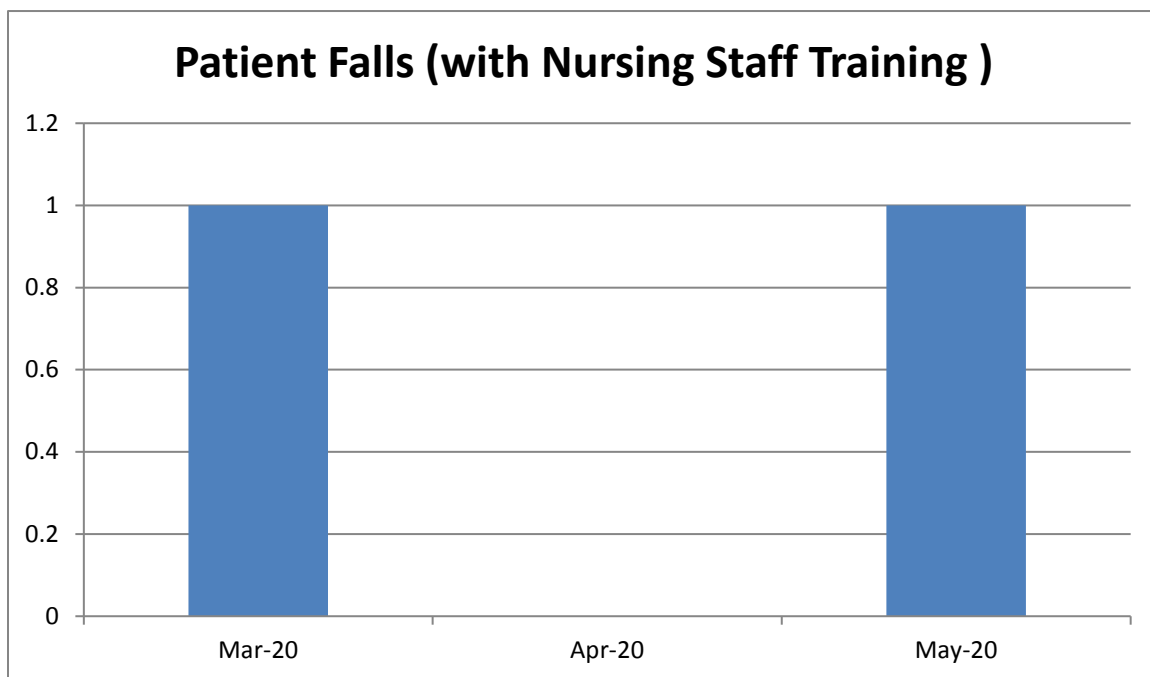
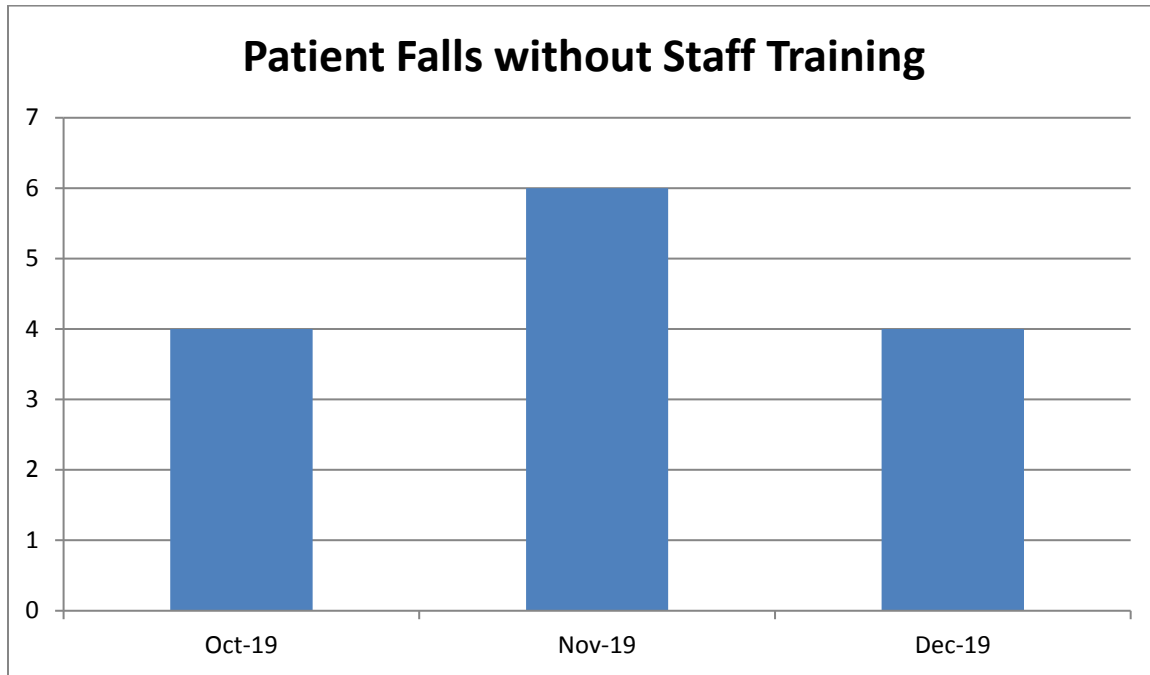
significance of increased falls rate of the residents in the facility, the average direct cost of one patient fall with or without serious injury and the estimated cost to the institution. The educational training also emphasized the importance of falls prevention and responding promptly to the video technician’s call via the device. The video monitoring system, the role of the video technician, the role of the nursing staff and the process used to moni-

tor the patients were explained using a Power Point presentation. The video monitoring system has a 2-way audio communication. The video technician who monitors the patient in the room verbally engages the patient while alerting the nurse to intervene promptly before the patient attempts to get out of bed without assistance. Questions and answers followed the presentation.

A total of 32 nursing staff were trained. A

mandatory five 40-minute sessions were held. At the beginning of each session all nursing staff signed in to monitor attendance. An evaluation form for the training was completed at the end of each session by all attendees. The evaluation showed favorable responses and comments including: “The information provided was very helpful to me. I will continue to practice what I have learned today”. “Wonderful in service, learned a lot”, “Very

Table 1. Retrospective fall rate data and EBP fall rate data



educative, insightful and informative training”, “training should be given often to staff”, “Now I know why falls prevention is critical in our facility”.

After the training, the Fall Reduction Team consisting of the Director of Nursing, the Nurse Educator, the Unit Managers, and an RN. The Fall Reduction Team responsibilities included collection of falls rates following the educational training on the use of video monitoring with a video technician

The data was collected from the patients 65 years and older with a high risk for fall in the surgical unit after the RN staff training. The data was collected for 3 months after the training in March, April, May, 2020 and compared to a retrospective data collected before the training in October, November, December, 2019.

Results

Demographics

A total of 36 patients (17 women and 19 men) from the Long Term Care Unit D at the facility in New Jersey participated in the project. All of the patients were aged 65 and older with the oldest patient being 96 years old. The median age was 73. In addition, all of the patients who participated in the EBP project were identified as high fall risks. During the project, two patients died and four were transferred to another facility or went home. However, whenever a bed became available, it was filled by a new patient within 24 hours. As a result, 30 beds were consistently occupied during the implementation of the EBP project.

Outcomes

Nursing staff training on the use of a video monitoring with a video technician was implemented in this long term care facility in January, 2020. Data collection after the training was done in March, April and May, 2020. A paired t-test was used to determine if there was any significant difference between the falls rate after nursing staff training on video monitoring with a video technician and the falls rate before nursing staff training on video monitoring with a video technician. Retrospective data collected in October, November and December 2019 showed that there were 14 falls reported and after the training, 2 falls were reported for March, April and May, 2020(see Table 1). The result of this EBP project indicates an improved patient falls rate reduction by 46%. The falls rate before the EBP project was 73% and after the project it was 27%. The paired t-test showed a sig-

nificant difference in patients falls rate after the nursing staff training on the use of a video monitoring system with a video technician at the $p=0.001$ level.

Evaluation

Implementing the EBP project in the Long Term Care Unit D was easier because the facility already had video monitoring with audio capability installed in patients’ rooms. There was also a control center on the unit for a video technician to monitor patients. However, there was no staff training on using this system. The fall rates after the staff training showed that the use of video monitoring with a technician is effective in reducing falls.

Recommendations

Based on the findings of this EBP project, it is recommended that the facility incorporate regularly scheduled nursing staff training on the use of their existing video monitoring with a video technician. Since patients’ rooms are already equipped with video monitoring and audio capability, this should not be difficult and costly for the facility. The results of this evidence based project supports the use of video monitoring and a video technician with appropriate nursing staff training. Although this technology is expensive, the cumulative savings in reimbursement from CMS and the cost of caring for patients who fall especially if they sustain injury will outweigh the cost of staff training and implementing video monitoring with a technician. To be effective, nursing staff training programs should be done in facilities using this technology. The results of this EBPh project is consistent with the published studies and should be used by similar facilities to reduce falls rate at the national level.

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Evaluating the Implementation of Urban Community-Oriented Health Initiatives and Activities within a Curricular Context

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Introduction/ Background

Globally, seventy-one percent (71%) of deaths are caused by noncommunicable diseases, thirty-seven percent (37%) coming from the low-income countries while eighty-eight percent (88%) from high-income countries. In 2016, more than half of the deaths worldwide were caused by the top ten causes of deaths including the ischemic heart disease and stroke as the world's biggest killers. (WHO, n. d).

All age groups in the Philippines are affected by noncommunicable diseases (NCDs), primarily cardiovascular diseases, cancers, chronic lung diseases and diabetes (WHO, 2017). According to the WHO Statistical Profile, ischemic heart disease, stroke, chronic lung disease and lower respiratory infections still remained the leading causes of death in the Philippines (WHO, 2015). According to the Philippine statistics, the number one cause of death for many years now is still the diseases of the heart. In 2016, 22% the country's total deaths are from the Diseases of the heart. According to Department of Health, hypertension remained the fourth leading cause of morbidity in the country until the year 2010. However, in 2016, it became the third leading cause of morbidity in the Philippines. (DOH, 2016).

There are no national health promotion services that are delivered to impact on the mitigation of health risks and prevention of non-communicable diseases (NCDs). In order to prevent consequences brought about NCDs, health promotion activities are needed to be planned for and delivered to specific targeted population-at-risk. In 2003, Department of Health introduced an integrated approach for the prevention and management of NCDs anchored on healthy lifestyle strategies. To help support the government's initiatives, community-oriented activities were conducted at the local level (Delos Santos et al, 2012).

At present, there has not been a study conducted to evaluate the community-oriented health promotion activities that were implemented locally, at the extent of their imple-

mentation and delivery. As such, the conduct of process evaluation is deemed necessary to monitor and evaluate the community-oriented health promotion activities. (Rosecrans, et al., 2008; Griffin, et al., 2010; Hall, et al., 2012; Rabei, 2009; Fotu, 2011). Results from this study will serve as rational basis for modification of certain components of a program. The following are objectives of this study: (1) describe the community-oriented health promotion activities conducted in the City of Manila in terms of dose delivered (inputs), program reach (attainment of targets), program fidelity, and client satisfaction and (2) identify barriers and facilitators in community participation. Through this, active and continuous improvement of the activities will be ensured.

Methodology

This study is a cross-sectional descriptive study using multiple methods of meta-synthesis and qualitative interviews. All community-oriented health programs conducted by the University of the Philippines College of Nursing (UPCN) from 2012-2015 were reviewed. These community-oriented health promotion programs are organized by the third-year nursing students as part of their curriculum requirement for the field experience in urban communities where the students are expected to demonstrate competence in assessing the health needs of communities through the application of the epidemiologic approach in public health nursing. The conduct of the health programs is documented in the accomplishment reports and community diagnoses. The community diagnosis document which serves as basis to formulate activities that will address the identified health needs and problems of the community within the context of the curriculum, were also reviewed. The community diagnoses and accomplishment reports of these health programs were summarized according to the following: health problems identified, program activities, results of process evaluation, facilitators of participation, barriers, and client satisfaction of the programs implemented.

Key informant interviews were done among two sets of population: the implementers who are composed of the local health team and barangay officials, and the beneficiaries who are composed of the residents of the barangays, to know their perceptions on barriers and facilitators for participation, and program satisfaction for proper program implementation. Participants were selected through purposive sampling, and according to the inclusion criteria: residents aged 18 years old and above and have lived in the community for at least a year prior to study implementation. Those who had problems with communication or cognition were excluded.

The study sites are the different barangays in the city of Manila where community-oriented health initiatives and activities are implemented through partnership with the local health departments and local government units of the City of Manila to provide learning environment to address the public health nursing competencies of the nursing students. As part of the curriculum, the students have the opportunity to develop and strengthen competencies in actual clinical and community settings engaging different levels of clientele (individuals across developmental stages, families, population groups and communities) in varied stages of the health and illness continuum towards higher levels of wellness and provides students the opportunities to assume roles and responsibilities as providers of care, managers, leaders and researchers (UPCN, 2006).

Permission to conduct the study were coursed through the rural health physicians and barangay chairman. Interviews were transcribed based on actual words and phrases. Qualitative data were analyzed through content analysis and consensus by the researchers.

In this study, elements of process evaluation were used. Process evaluation is a continuous and multistep procedure conducted throughout the entirety of a program, from planning to implementation, until its completion. In the implementation stage, process evaluation is a good mechanism of monitor-

ing and tracking the reach and overall implementation of the program, and also in identifying existing and potential problems (Tolma, Cheney, Troup, & Hann, 2008).

There is no consensus on the key elements of process evaluation. However, several authors consider the following components: fidelity, dose delivered and received, reach, recruitment, context and implementation (Linnan & Steckler, 2002; Saunders, Evans, & Joshi, 2005; Rosecrans et al., 2008; Tolma, Cheney, Troup, & Hann, 2008). Despite these variations in literature in terms of the key process evaluation components, in this study, only the four constructs were utilized: (a) dose delivered, (b) program reach, (c) program fidelity, and (d) client satisfaction. Dose delivered refers to the number of intended units of intervention provided. Reach, also called participation rate, is the proportion of intended target audience and is usually reflected by attendance. Fidelity is the degree of conformity of the program implementation to the plan. Lastly, client satisfaction is the degree of approval of participants with the intervention itself and with their interaction with the interventionists (Saunders, Evans, & Joshi, 2005).

This study was approved by the UP Manila Research Ethics Board. Informed consent was obtained from the key informants. The privacy and the rights of the participant, as well as the element of voluntary participation were emphasized. A non-affiliated co-investigator obtained informed consent and conducted the interviews to avoid participant vulnerability. The study posed no more than minimal risk to the participants

Results

There were 14 community-oriented health promotion initiatives organized by the UP College of Nursing students in twelve barangays during the 4-year community partnership. These programs focused on the following identified non-communicable and communicable health problems: hypertension (6 out of 12), malnutrition (5 out of 12), mental health issues (1 out of 12); upper respiratory tract infection (1 out of 12), parasitism (1 out of 12) and other common childhood illnesses (1 out of 12) (Table 1).

Fidelity, Dose, Reach and Client Satisfaction

Seven population barangays received a combination of two or more programs that focused on the same key population: preschoolers and school-aged children received a mixed program on malnutrition and com-

List of Health Problem	# of programs conducted
Non-communicable diseases	
Cardiovascular disease and risk factors (e.g. Hypertension, Smoking, Drinking)	7
Malnutrition	5
Mental health issues	2
TOTAL	14 (92%)
Communicable diseases	
Common childhood illnesses (e.g. parasitism, upper respiratory tract infection, others)	5
TOTAL	5 (8%)

Table 1: Condition/disease addressed by community initiatives in UPCN, 2012-2015

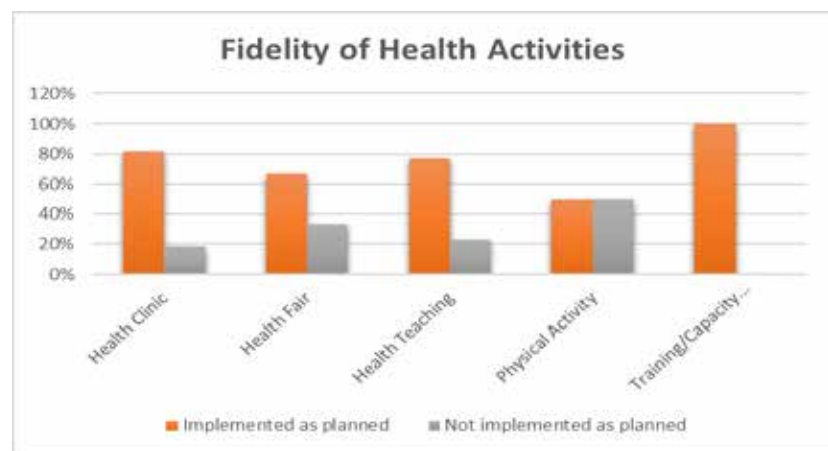


Table 2: Fidelity of community-oriented health programs activities, UPCN, 2012-2015

mon childhood illnesses (e.g. parasitism, upper respiratory tract infection and others) while adolescents received a mixed program focusing on healthy lifestyle promotion (e.g. smoking, drinking) and mental health issues.

There were a total of 58 health activities composed of health clinics (assessment and health teaching), health fairs (health teaching and recreational activities), health teachings, and capacity-building trainings. Out of 58 health activities of the community-based health program of the barangays, 43 (74%) health activities were implemented as planned, while the remaining 15 activities (26%) were adjusted in consideration to time and physical availability of the participants, reaching desired number of participants, the suggestions of the participants, weather, and

venue (Table 2).

Out of the 58 activities, 28 activities (48%) reached more than half of their target number of attendees, 7 (12%) reached less than 50% while in 23 activities (40%), it was not reported whether target participants were met (Table 3).

Most of the activities (51 out of 58, 88%) were conducted only once per barangay, such as the health fairs, physical activities and trainings while some activities were implemented in different areas to cover more participants (Table 4).

An overall program client satisfaction was reported by student implementers in 11 out of 12 community sites while one student group did not assess client satisfaction.

Factors of Community Participation:



Table 3: Reach of community-oriented health programs activities, UPCN, 2012-2015

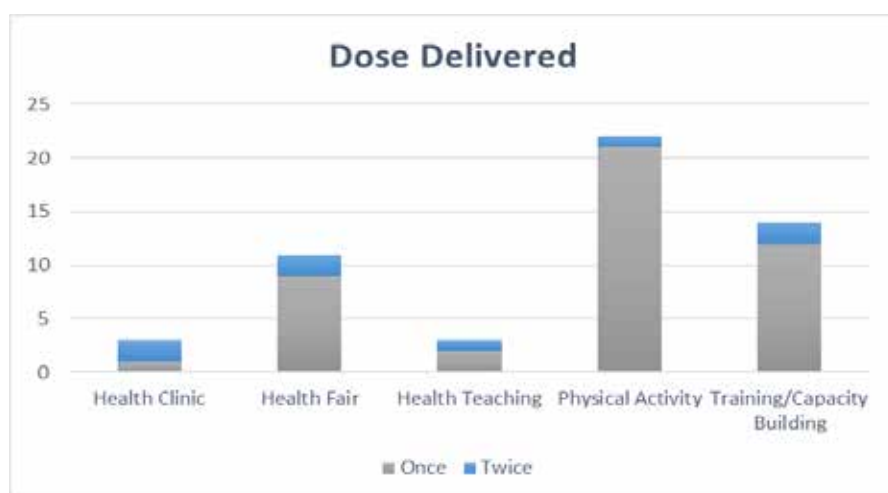


Table 4: Dose delivered of community-oriented health programs activities, UPCN, 2012-2015

Challenges, Motivation and Barriers

Factors of community participation were summarized from the interviews done by the students as reflected in aggregate in the accomplishment reports, and additional interviews done as part of this study. Fifteen (15) key informants were interviewed from a sample of three barangays where the health promotion activities were implemented. The informants were composed of six members from the local health team, five community residents, and four persons from the local government unit. Three clusters of motivational factors were identified, namely, good recruitment and information dissemination, interest in the program activities, and participant's perceived benefits.

Good Recruitment and Adequate Information Dissemination

Student implementers commonly reported good recruitment and information dis-

semination activities as the cited motivation of participation in 11 out 12 community sites, such as utilization of IEC materials, making rounds in the community, being organized by UP, and involvement of the community, health or school officials in the recruitment and invitation of the community. This was consistent with the interviews:

"Invited by the barangay official." (Resident #1)

"We provided flyers, went around the community, informed the Chairman" (Health official #1)

"It depends on the pulling power of the recruiters" (Health official #2)

"Awareness of the program" (Health official #3)

Interest in the Program

Program participants verbalized that activities were exciting and interesting, and they wanted to gain additional knowledge

and awareness about health status, as factors for participation reported in 8 out of 12 community sites. This was consistent with the interviews:

"Additional learning." (Resident #2)

"Enticing" (Health official #2)

"They want to become healthy" (Health official #4)

Perceived Benefits

Program participants were motivated by the actual and perceived beneficial outcomes of the health promotion activities, in 2 out of 12 community sites. This was the most common theme identified in the interviews (6 out of 15 informants):

"Free, free BP." (Resident #3)

"There is free food, snacks." (Resident #5)

"They see the good outcome" (Health officer #2)

"Beneficial for them" (Health officer #4 & #5)

Barriers of Participation

Four clusters of barriers to participation interviews yielded four clusters of barriers to participation, namely preoccupation with other activities, lack of perceived benefit, lack of support and venue concerns.

Preoccupation with Other Activities

Non-participants commonly cited competing priorities as reasons for not being able to participate, such as lack of time, scheduling conflicts, busy with work, preoccupied with household chores, busy with childrearing, in 9 community sites. Conflicts on schedule was also the commonly cited reason in the interviews:

"Busy, I have something to do, schedule not feasible." (Resident #1)

"I cannot leave my child who is still so young" (Resident #2)

"Community's priority is to do household chores, and especially in the morning, there is work" (Health official #2)

Physiologic Constraints

Non-attendees cited physiologic constraints as reasons for non-participation, in 9 community sites, such as non-conducive environment and far distance of the venue. This was not reported in the actual interviews.

Lack of Support

Non-participants were not aware of the programs conducted, in 8 community sites, and there were not enough recruitment skills. This was the least cited reason in the inter-

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view:

"I was asleep in the morning, I did know."
(Resident #3)

"They are lazy, they need support"
(Health official #2)

Lack of interest and perceived benefit

Non-attendees were not interested with the program activities, in 5 community sites. This was reported in the interviews:

"They will not receive any benefit"
(Health official #2)

"No actual benefit to be received. That's only free BP, no medicine." (Barangay official # 4)

"I am not interested. It was only for children." (Resident #6)

Discussion

Program fidelity Most of the health promotion activities were implemented according to plan. However, 15 of the said activities needed modification in terms of flow of activities due to unanticipated situations. The number of target participants should be reached to start the activities and these are affected by bad weather conditions, poor recruitment skills, conflicts in schedule, and unavailability of resources (i.e. unavailability of venue).

Program Dose Most of the activities were introduced and implemented in the barangay only once during the field experience and continuous implementation would necessitate manpower, financial, and other resources. These community-oriented activities were largely organized by the students, while the local health teams and government units offered administrative support. This is done only once since the course is only offered every second semester of every school year. Moreover, aside from conducting health promotion activities, students conduct family health nursing which is also one of the major curricular requirements. The health promotion activities primarily focused on raising awareness and consciousness of the community, risk factor assessments and consultations, and skills education towards healthy lifestyle and health monitoring. Capacity building seminars were also done in some barangays.

These community-oriented health promotion activities need to be fully recognized and embraced by the community, given the political and administrative support and adequate capabilities to implement the activities (Krishnan, Ekowati, Baridalyne, et al., 2010). Continued follow-up and monitoring must also be done to ensure effectiveness and

sustainability, which is also consistent with other studies (Krishnan, et al. 2010; Rabei et al., 2009). Creating a partnership with stakeholders such as the local health team, the local government unit, the university, and other non-government organizations for manpower and financial resources through effective communication and endorsements could lead to an effective and sustainable program.

Program Reach In some barangays, program reach is high which can be attributed to effective and adequate information dissemination, strong support and recruitment skills of barangay officials, effective information, education, and communication materials and resources (e.g. sound system), participants' perceived benefits, availability of freebies, interesting and creative activities, and willingness of the participant to join the health promotion activities. Interesting and creative activities such as games, storytelling and school-based interventions can help in recruiting audience outside of the target population which resulted to a high attendance. Participation may be attributed to program satisfaction along with their willingness to join the activity and the perception of beneficial outcomes (Ingledeu & Markland, 2009). Distribution of educational materials and food encourages participants to join health programs (Rabei et al., 2009). Moreover, motivation to participate may be attributed to having desire to gain additional knowledge and having a positive environment.

On the other hand, program reach was low or modest in some barangays mostly due to preoccupation with other activities, poor information dissemination, conflicts in schedule, competing priorities, lack of support, and inconvenience. One obstacle to program effectiveness was the lack of support from the local government and community members which can be linked to low salience of health problems or lack of perceived priority for health. There were also lack of endorsements between the students, the health center, and the local government which hinders effective implementation. Other barriers identified were costs and lack of financial resources, shortage of manpower, and limitation of the available resource e.g. venue, time.

Satisfaction of the Program The stakeholders, namely the local health and government units and community residents were satisfied with the programs conducted in their community. The local health teams gained more clients while community residents gained additional knowledge on health promotion. This is because of the relevant health problems being identified by the students.

They are able to capture the health needs of the community through the use of proper data gathering methods. Also, the students are able to gain the trust and build relationships with the community members, hence, the gathered data are substantial and complete.

Motivational Factors of Participation. Motivational factors are classified into four clusters, namely, good recruitment and information dissemination, interest in the program, and participant's perceived benefits. Community members attend the community health activities because they perceive it as something beneficial and relevant to their health and quality of life. This is the result of the thorough conduct of community diagnosis in the community during the assessment stage. Moreover, building rapport and relationship is a vital factor to gain the community members' trust and a vital factor in the achievement of the objectives of the health promotion activities.

Barriers of Participation There were four clusters identified barriers of participation, namely preoccupation with other activities, physiologic constraints, lack of support, and lack of perceived benefit. Since the community-oriented health activities are part of the curricular requirement, students need to go to the community during official duty hours which, unfortunately, coincides with the busy schedules of the community members resulting to weak information dissemination. Another reason is that, students could not render or offer services beyond the curricular requirement making the people hesitant to join the program.

The barriers identified in this study is in consistent with other findings. The most common barrier was conflicts with or lack of time as perceived by target audience (Gatewood, Litchfield, Ryan, Geadelmann, Pendergast, & Ullom, 2008; McFerren, 2007). Furthermore, McFerren in her study (2007) identified barriers such as lack of awareness and lack of time or being busy taking care of their families, lack of political support to program implementation hinders the effectiveness of the program, as well as limited resources i.e. financial, manpower, space, and time, to implement the programs (Rabei et al., 2009). With these enumerated, the study results are consistent and can be categorized in the same way with a study by Bautista, Reininger, Gay, Barroso, and McCormick (2011) which described barriers into three, namely Personal Barriers (e.g. lack of interest, low salience for health, lack of perceived benefit, and inadequate knowledge/awareness), Physical Comfort Barriers (e.g. distance of the venue,



physiologic constraints), and Commitment Barriers (e.g. lack of time/preoccupation with other activities, laziness, and lack of political support).

Conclusion

It can be concluded that the community-oriented health promotion activities conducted in City of Manila have high fidelity, modest reach and limited dose delivered. The motivational factors identified were perceived benefits, good recruitment and information dissemination, and interest. Meanwhile, barriers identified were preoccupation with other activities, lack of perceived benefit, lack of support and venue concerns. Generally, the majority of the participants were satisfied. However, despite thorough planning and implementation, there are still challenges which persist in mobilizing the community towards health promotion.

Recommendations

First, community-oriented health promotion programs must be given administrative and political support from the local government unit and health team, and should also be linked to policies to promote reinforcement of behavior change (Rabei et al., 2009; Krishnan et al., 2010). These activities need resource generation in terms of financial, manpower, and physical, to fuel implementation and promote sustainability in the community.

Second, continuous collaboration between the community and the educational institution is recommended as well. Students are additional and qualified manpower resources which could effectively raise awareness and mobilize the community. Krishnan et al. (2010) also suggested linking health promotive interventions with recognized institutions to facilitate program planning,

implementation, evaluation and capacity-building using an academic approach.

Third, impact and outcome evaluation should also be conducted to have an overall evaluation these activities and results of evaluation will likely contribute to effective future implementation and sustainability of community-oriented health promotion activities.

Lastly, in terms of sustainability, it is recommended that the educational institutions should formalize an extension program with Local Government Units (where field experiences are implemented) so that this can be a venue for sustained health activities that are carried out by students.

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*“... the light shines in the darkness, and
the darkness has not overcome it.”*

(John 1:5)

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Tony & Tatess Abad
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