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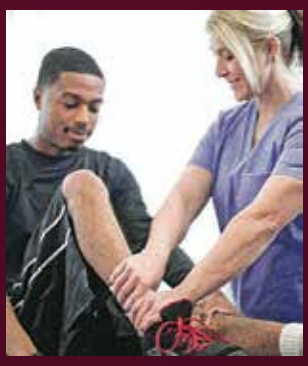
COLLABORATION:
Key to Advancing Healthcare




OUR COVER

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

Meaningfully depicted in the cover of the 2018 Journal is the theme: "COLLABORATION: Key to Advancing Healthcare" Advancing Healthcare is one of the objectives of UPINHF, and certainly one of the reasons for its founding. As shown, metaphorically UPINHF is a simple machine consisting of many wheels and many more cogs that function to create a magnitude of force to move the healthcare needle a little further.

With collaboration, advanced technology is shared allowing a wide range of tools necessary to enable healthcare professionals to work together as a team ---- networking, teleconferencing, consulting, etc. Collaboration allows individuals to connect and communicate thereby share expertise, resources, essential interaction and the much-needed peer feedback, resulting in the desired synchrony and precision of the outcome. Collaboration strengthens confidence in every endeavor , it eliminates the towering barriers of doubt and uncertainty. (ncb)

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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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.

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EDITORIAL

On behalf of the IFNAH's Editorial Board, Editors, Advisory Board and Editorial Consultant, we cordially welcome you to the second edition of the International Forum for Nursing and Healthcare published by the University of the Philippines International Nursing and Healthcare Forum (UPINHF INC).

UPINHF INC 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. Mely De Leon, a member of the advisory board, had the idea that the educational component of the yearly alumni forum be published in the nursing journal so that those who were not able to attend the event could read the lecture presentations and workshops in our annual publication. The idea came into fruition with the encouragement and intellectual guidance of Dr. Dula Fara-on Pacquiao, one of the editors and peer reviewers.

The IFNAH Editorial Board also aims to improve global recruitment of scholarly works or articles to the journal and increase the healthcare community's perception of IFNAH as an international forum for nursing and healthcare services, education and research.

This year we are proud to present the 2018 Nurse Scientist fellowship award to Sarla F. Duller, PhD, ANP-BC, RN for the publication of her research manuscript in the maiden issue of the journal. We are also proud to present the 2018 Nurse/Coach Mentor award to Dr. Lourdes Marie Tejero for mentoring Dr. Sarla F. Duller.

The IFNAH Editorial Board is working on converting the journal into a modern online publication to keep up with the publishing trend in the digital age. This will help improve the journal's environmental footprint. We are proud to announce that IFNAH obtained the International Standard Serial Numbering (ISSN 2637-4161). A single ISSN uniquely identifies a title regardless of language or country in which

published, without the burden of a complete bibliographic description. The United States ISSN within the Library of Congress is responsible for assigning ISSN to serials published in the United States.

We applaud the professional and academic expertise of all our contributors and thank them for their highly informative manuscripts

Congratulations to the IFNAH editorial board. IFNAH is moving forward towards the right direction collaborating with everyone in Advancing Healthcare.

Sincerely,

Magdalena Laparan Ongkiko
BSN, MSN, RN/CCRN
Chairman, Editorial Board

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

Life is a splendid gift. There is nothing small about it.
~ Florence Nightingale

Call For Manuscripts

Submission Deadline: May 15, 2019

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)

Ayurvedic Medicine: Implications for Nursing

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Abstract

Complementary and alternative medicine (CAM) has grown in popularity worldwide. The World Health Organization (WHO) estimates that 80 percent of people worldwide use herbal medicines and other alternative medicines to combat illness and they support the integration of CAM into the mainstream medical systems to improve the quality of care. Due to the increased divergence of American cultural groups, nurses are finding themselves faced with a variety of transcultural encounters and nursing care concerns. Transcultural nursing has become essential to all nurses and they are challenged to use transcultural knowledge to improve care. The practice of Eastern holistic health and medicine are offered to advance transcultural nursing. An ancient, natural, holistic system of Indian medicine, Ayurveda is gaining interest in CAM (Lewith et al, 2006). The purpose of this paper is to explore the safety of Ayurvedic medicine in the context of evidence-based practice and its implications in nursing.

Introduction

Ayurvedic medicine is actively practiced in India and is gaining popularity across the globe. Ayurvedic medicine is "multimodality, comprehensive, prevention-oriented system of natural medicine derived from the traditional Vedic knowledge of India" (Fields et al, 2002). Individuals from diverse ethnic and cultural backgrounds use CAM. The call for health care services to be diverse also means that health care providers needs to be responsive to the holistic needs of patients and clients who vary in terms of socio-economic status, spirituality, religious, ethnic and cultural backgrounds, sexual orientation, and disability. The interest in CAM is growing especially in the US, UK, Canada, and Australia (Fearon, 2006).

Background of Ayurvedic Medicine

Ayurveda is one of the oldest medical systems in the world and has been practiced in India for 4,000 years. It is a holistic and sophisticated system encompassing balance of body, mind, and spirit as well as balance between people, their environment and the larger cosmos. Ayurveda is a Sanskrit word derived from two roots-ayur, which means "life" and veda, or "knowledge" and translates literally to the science of life. Ayurveda is undergoing a renaissance both in India and throughout the West. Ayurveda is an intricate system with a tradition of integrating that which is useful from other systems. It emphasizes the interdependence of the health of the individual and the quality of societal life and supports the collective health of society such as pollution control and appropriate living conditions (Tomlison, 2002).

Ayurveda views nature and people as made up of five elements or qualities. These elements are earth, fire, water, air, and space and contain both matter and energy. As they interact, they give rise to all that exists. People are a composite of these five elements, which combine in various ways to govern mind, body, and spirit. Ayurveda sees the body as doshas (vital energies), dhatus (tissues) and malas (waste products). It is the dosha's job to assist with the creation of all the various tissues of the body and to remove any unnecessary waste products from the body.

Doshas are both structures and energy and are the mediators between body tissues, wastes, and the environment and are responsible for all physiological processes. The Sanskrit names for the three doshas are Vata, Pitta, and Kapha. As the driver or mover of the entire body, the Vata dosha is the most important. It is composed of the elements of air and space and is involved with all elimination, physical, and mental movement, and nervous function. If Vata becomes imbalanced, it can cause the other doshas to become imbalanced. The Pita dosha is composed of the elements fire and water, governs enzymes and hormones, and is responsible for digestion, body temperature, hunger, thirst, sight, complexion, courage, and mental activity. The Kapha dosa, composed of the elements of earth and water, is the heaviest of the three doshas. It provides the structure, strength, and stability that the body needs. It is also responsible for lubrication, sexual power, and fertility. Vata, Pitta, and Kapha are present in every cell, tissue, and organ, but each person is made up of unique ratios of the three doshas. This individual is determined by genetics, diet, lifestyle, and emotions. Knowing one's body type is the key to balancing one's life in the way that nature intended. This balance goes beyond physical and mental health and includes personal relationships, work satisfaction, spiritual growth, and social harmony. As a rule, the strongest dosha in one's

constitution has the greatest tendency to increase, making people most susceptible to illnesses associated with an increase of that dosha. Few people are single-dosha types, most are two-dosha types with one dosha predominant but not the extreme. The dominant dosha gives people their primary reaction to the world, which are then moderated by the second dosha (Selby, 2001)

The seven dhatus or tissues are the structures of the body, are responsible for nourishment, and must be retained for health. They are rasa (plasma), rakta (blood cells), mamsa (muscle), meda (adipose), asthi (bone), majja (bone marrow), and shukra (reproductive tissue). In general, Ayurveda practitioners work to keep these tissues intact and healthy (Chopra & Simon, 2001).

The malas, or wastes are the nonretainable substances within the body. Urine, feces, and sweat, for example, need to be released and eliminated as the body rids itself of toxins. Excretion of the malas cleanses; thus, people are cautioned against inhibiting the body's natural function's, including sneezing, yawning, burping, urinating, defecating, and passing gases. Ayurveda encourages the expression of these urges in a way that is not offensive to other people (Chopra & Simon, 2001).

View of Health and Illness in Ayurvedic Medicine

When the doshas are balanced, individuals experience health on all levels: mental, emotional, physical, spiritual, and environmental. It is much more than the mere absence of disease. Mentally healthy people have good memory, comprehension, intelligence, and reasoning ability. Emotionally healthy people experience evenly balanced emotional states and a sense of well-being or happiness. Physically healthy people have abundant energy with proper functioning of the senses, digestion, and elimination. From a spiritual perspective, healthy people have a sense of aliveness and richness in life, are developing in the direction of their full potential, and are in good relationships with themselves, other people, and the larger cosmos. Environmentally healthy individuals have minimal economic, social, and political stress. Balancing one's dosha does not mean trying to achieve an equal portion of Vata, Pitta, and Kapha. One cannot change the ratio of doshas that are present from conception. Health is a balance of each doshas that is right for each individual. Doshas, however are responsive to people's habits, such as diet, exercise, and daily routines, which can either deplete or increase the doshas. While both states of imbalance lead to ill health or disease, increased doshas are more problematic than decreased doshas (Atreya, 2001).

Diagnostic Methods

Diagnosis in Ayurvedic medicine involves a holistic approach built on a comprehensive understanding of the person. The first question asked is not "What disease does this person have?" but "Who is this person?" The complete process of diagnosis considers physical, mental, and spiritual components integrated with the social and environmental worlds in which the person lives. In addition to using X-rays or other biomedical diagnostic tools, Ayurvedic practitioners diagnose by observing people, touching them, taking pulses, and interviewing them about their medical and family history, their lifestyle, and behavior patterns.

Pulse diagnosis is a highly specialized skill that requires great sensitivity. The general feel of the pulse is related to body type. Experienced practitioners can not only diagnose present diseases but can also tell what diseases the person has experienced in the past and which they are likely to develop in the future.Tongue diagnosis can also reveal the functional status of internal organs. A healthy tongue should be pink, clear, and shiny. A discoloration and/or sensitivity of a particular area of the tongue indicates dosha dysfunction. Ayurvedic practitioners do urine examinations as another way to understand dosha imbalances. A midstream specimen is collected first thing in the morning. Healthy urine should be clear without much foam. The practitioner also puts a few drops of sesame oil in the urine and examines it in the sunlight, the shape of the drop signifies which dosha is imbalanced. In addition, the practitioner also carefully examines the skin, nails, and lips (Tomlinson, 2002).

Treatment Modalities

Treatment is based on the premise that appropriate food, sleep, and sexual activity are three pillars of good health, supplemented by personal hygiene, massage, and exercise. Specific lifestyle interventions are a major preventive and therapeutic approach in Ayurveda. Each person is prescribed an individualized diet and exercise program depending on the dosha type and nature of the underlying dosha imbalance. Care is taken not to cause new symptoms by subduing the presenting symptoms. Herbal preparations are added to the diet for preventive or regenerative purposes as well as for the treatment of specific disorders. Yoga, breathing exercises, and meditative techniques are also prescribed by the practitioner. (Bhungalia & Kemp, 2002). In addition, Panchakarma, or Purification therapy is also part of the treatment regime. It involves five procedures, any or all of which can be chosen based on the person's general condition, the season, and the nature of the disease. The five therapies of Panchakarma are experienced over a week and involve purifying the body using sweating, emetics, purgatives, enemas, and nasal inhalation. This is commonly administered by an Ayurvedic physician with the help of many assistants, the benefits of Panchakarma are relief from long-standing symptoms, renewed health, and extended longevity (Selby, 2001).

Incorporation of Leininger's Theory of

Culture Care in Ayurvedic medicine

Providing culturally congruent care is major challenge to western nurses and Ayurveda is a radically different system of health care. The use of Leininger's modes of action derived from her theory of culture care can help nurses provide culturally congruent care to individuals who prefer Ayurveda to Western health care.

The first mode is Culture Care Preservation/Maintenance and a goal or action can be identified with practices based on care preservation and maintenance for healthy outcomes.

The second mode is Culture Care Accommodation/Negotiation and this provides the framework for implementing practices that embody the essence of the holistic nature of Ayurveda philosophy. Ayurveda emphasizes that humans come from mature and are an integral part of the universe. And healing is achieved through the balance of ones' constitution. To achieve and maintain balance dietary preferences, herbs, and meditation are considered. For example, control of dietary intake needs to be turned over to clients so their dietary selections will be consistent with Ayurvedic dietary guidelines. According to Ayurveda practices, correct dietary selections are critical to balancing the individuals unique body constitution. Ayurveda views medicine and diet complementary to each other rather than separate. Nurses would anticipate that clients would want to use Eastern herbs because within Ayurveda, herbs are used extensively to complement foods and consequently balance a wide variety of conditions. Culture care accommodation of these herbs would be essential for health and well-being in practicing culturally congruent nursing care. How one eats is as important as what you eat. The specifics of eating call for accommodation and provision of a calm atmosphere. Within the practice of Ayurveda, meditation is essential to bring the body into balance. Nurses need to be prepared to accommodate individuals who want to meditate. This means making provisions for an environment that is not only calm, but also free from interruptions and distractions.

The third mode is Culture Care Repatterning/Restructuring. This can be achieved by nurses who are familiar with the philosophy and practices of Ayurveda to make changes or restructure care practices in western settings. Some major repatterning and restructuring of care practices would be needed in nursing care practices in hospitals and other settings where Ayurveda practices were integrated into Western professional nursing practice.

Ayurveda and Western health care are at times similar and complementary. For example, modern western practitioners use drugs to attack the invader; whereas with the Ayurvedic approach the individuals' physiology and immune system are strengthened with the use of food supplements and herbs. Both the Western and Eastern Ayurvedic approaches emphasize nutrition and exercise and contribution of spirituality to health.

Leininger's three modalities for decisions and actions is an excellent nursing guide for assessing client needs and to provide ultimately culturally congruent nursing care to those individuals who prefer Ayurvedic to Western health care practices. Nurses are living in an exciting time in nursing in which many new ideas regarding concepts of transcultural care, health, and environmental context can be discovered with transcultural nursing theory (Presswalla, 1994).

Benefits of Ayurvedic Medicine in certain disorders

Pathak-Gandhi (2017) conducted a review to share the role of Ayurveda's insights, traditional usage, and investigations for translational, integrative applications to manage idiopathic Parkinson's disease. Parkinson's disease is a complex multi-system neurodegenerative disease. Major treatment goals are to increase striatal dopamine levels and/or reduce its breakdown. As the disease progresses, a steady increase in the level of levodopa is needed. However, higher doses cause motor complications of dyskinesis and dystonia and compromise medical treatment. Ayurveda offers a natural source of levodopa from the seeds of Mucuna Pruriens which have a long standing safe use. Clinical studies have shown pharmacokinetic profile distinct from synthetic levodopa, which is likely to reduce the untoward motor complications. Additionally, its seed extracts have shown neuroprotective benefits which are unrelated to levodopa.

Postpartum depression (PPD) is a major depressive disorder affecting 6.5% to 30% of all childbearing women. It is marked by a sad mood or loss of interest and five of the following: appetite disturbance, anxiety, psychomotor disturbances, low energy, irritability, cognitive impairment, and suicidal and/or homicidal ideation. Without treatment, the symptoms of PPD substantially increases the risks of chronic and treatment-resistant depression and suicide. Ayurvedic medicine can offer an alternative healthcare paradigm that can expand the treatment modalities for patients experiencing PPD. The three pillars of health can be promoted by putting healthy fats back in the diet, through massage, dietary changes, promoting adequate sleep and rest, and promoting a low stress and regular daily routine. This can decrease the depressive symptoms in women with PPD who are concerned about the side effects of antidepressants medications in their newborn infant. Ayurvedic medicines can offer an adjunct therapy that could be used in concert with antidepressant medications and counseling therapy (Posmontier, 2009).

Implications for Nursing: Patient Safety

Like other CAMs, Ayurvedic medicine may be taken by patients who are also accessing conventional health care. A cultural

assessment tool can be incorporated into nursing assessment strategies to obtain information regarding patients who use traditional medical regimens, such as Ayurvedic medicine. As part of the assessment, information about the patient's use of Ayurvedic medicine can be obtained to build a holistic understanding. As part of the rapport and trust building, nurses can gain a wider picture of the patient's lifestyle, including attitudes towards Ayurvedic medicine. Alerting the patients to the potential complications of Ayurvedic treatment interfering with conventional medical treatment can lead to disclosures about taking Ayurvedic medicine thus promoting patient safety. Nurses need to be exercise sensitivity and non-judgmental approaches to patients when obtaining information about use of Ayurvedic medicine. (Williamson, 2006).

Although most nurses are not educated in Ayurvedic medicine, as nurses we can integrate many principles into our professional practice. Ayurveda teaches self-discovery and self-understanding; it encourages people to learn how they maintain their health and how and when they become sick; and it advocates lifestyle changes to maximize one's well-being (Fontaine, 2005).

Conclusion

Ayurveda is a natural, holistic approach to health that stresses balancing the whole person rather than fighting diseases. Ayurveda practices emphasize that the mind, body, and spirit are intimately connected and treatment is directed towards mobilizing the individual's innate capacity for self-healing (Presswalla, 1994).

It is concluded that an awareness of Ayurvedic medicine may help nurses to be cognizant of its benefits and potential complications if it is used with conventional medicine. Introducing CAM in the nursing curriculum will help to prepare future nurses to provide holistic care. Although the therapeutic value of Ayurvedic treatment is yet to be fully established through randomized control trials, its potential in terms of health promotion, nutrition and spirituality are acknowledged in the emerging literature (Narayanaswamy, 2006).

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Collaboration in Health Promotion to Achieve Sustainable Development

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Objectives:

1. Discuss the role of health promotion to achieve sustainable development
2. Provide examples of collaboration to promote health for sustainable development

Abstract:

On 25 September 2015, the 194 countries of the United Nations General Assembly adopted a bold new vision for the future entitled Transforming our world: the 2030 Agenda for Sustainable Development. The 2030 agenda identifies 17 Sustainable Development Goals (SDGs) that aim to "ensure that all human beings can fulfill their potential with dignity and equality in a healthy environment" (WHO, 2017). World Bank (2018) compiled internationally comparable statistics about global development and presented relevant indicators to illustrate the data on each of the 17 SDGs.

Sustainable Development Goal #3 focuses on ensuring healthy lives and promoting well-being for all people at all ages. The Shanghai Declaration 2016 (during the 9th Global Conference for Health Promotion held in Shanghai, China) recognizes health and well-being as essential to achieving sustainable development and reaffirms health as a universal right, an essential resource for everyday living, a shared social goal and a political priority for all countries (WHO, 2017).

WHO Western Pacific Region (WPR) also recognizes that health promotion increases people's control over their health through actions that address the determinants of health in individuals and communities, which in turn contributes to the achievement of the Sustainable Development Goals (WHO, 2018). People should be prompted to make healthy lifestyle choices by ensuring that the healthiest lifestyle choices are socially validated. There is also the urgent need to address risks to health through greater engagement and coordination to reach individuals across all settings and sectors. This is since many health challenges originate and can be addressed beyond the health sector.

WHO recommends a number of areas for which health promotion activities might be usefully focused: physical activity; screening and disease management programs for NCDs; promoting education about good health; healthy cities as a platform for health literacy; generating revenue for health promotion activities through taxes on tobacco and alcohol; greater involvement of non-state actors and the private sector in inclusive decision-making; establishment of a strong evidence base to design, build and target health initiatives; high-level advocacy by WHO in relation to other sectors; and technical guidance for health literacy and healthy lifestyles, including by specially trained professionals and cross-sectoral communicators (WHO, 2018).

Some examples of collaboration in health promotion are showcased in the prevention and control of NCDs in different countries in the Western Pacific. For example, the roll-out of the WHO Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings where there is a collaboration between doctors, nurses, midwives, pharmacists, continued to be successful. Collaboration between health, trade and legislation sectors has bear fruit with the impressive gains in tobacco control with comprehensive national laws and local policies that ban smoking in public places, graphic warning labels on tobacco products, taxes on tobacco and unhealthy foods and alcohol control laws. Public and private partnerships can also be seen in some programs promoting healthy and active lifestyles, community outreach and overall health systems strengthening.

Collaboration in health promotion is key to achieving sustainable development. Promoting health demands coordinated action by all concerned – political leaders from various sectors and from different levels of governance, from the private sector and from civil society. Successful health promotion initiatives should be multisectoral and cross-disciplinary in nature and should integrate the capacity-building expertise of other sectors.

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Increasing Student Nurses' Breastfeeding Knowledge, Level of Confidence, and Role Modeling With an Educational Program

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Abstract

The purpose of this pilot study was to describe the effects of an evidence-based breastfeeding education program on the breastfeeding knowledge, level of confidence, and role modeling of undergraduate nursing students at a major metropolitan university. Maternity Registered Nurses (RNs) are the designated providers caring for breastfeeding women in the hospital setting. Many of these RNs lack evidence-based knowledge in breastfeeding (Ahmed, Bantz, & Richardson, 2011; AWHONN, 2015; Deloian, Lewin, & O'Conner, 2015). Nurses' breastfeeding knowledge is inadequate largely due to ineffective breastfeeding training in their undergraduate, prelicensure nursing education programs (Ahmed & El Guindy, 2011; Bozette & Posner, 2013).

This study administered a breastfeeding education program consisting of a lecture and clinical simulation to a convenience sample of 18 undergraduate students during their maternity nursing course. Marzalik's (2004) Breastfeeding Knowledge Survey and a post-simulation debriefing activity evaluated student learning outcomes. A paired t-test compared the mean scores of the knowledge survey pre to post intervention. The difference between the mean scores was statistically significant ($p < 0.001$), indicating a significant improvement pre to post intervention. The results of the descriptive analysis of the students' verbal self- reports of level of confidence and role modeling abilities indicated improvement post intervention. Bandura's Social Cognitive Theory (Bandura, 1977, 1986, 2001) guided the study.

Introduction

Breastfeeding is the method of infant feeding recommended by many professional maternal-child health organizations (American Academy of Family Physicians [AAFP], 2012; American Academy of Pediatrics [AAP], 2012; American College of Nurse Midwives [ACNM], 2011; American College of Obstetricians and Gynecologists [ACOG], 2013; Association of Women's Health, Obstetric and Neonatal Nurses [AWHONN], 2015; World Health Organization [WHO], 2013) Moreover, many government initiatives endorse breast milk as optimal for infant feeding. The national public health breastfeeding goals of Healthy People 2020 (U.S. Department of Health and Human Services [USDHHS], 2012), the U.S. Surgeon General's Call to Action on Breastfeeding (USDHHS, 2011a), and the Centers for Disease Control and Prevention's (CDC, 2014) Breastfeeding Report Card all reflect government mandates aimed at increasing the proportion of infants who are breastfed. Additionally, nongovernmental organizations have demonstrated their commitment to protecting human milk feeding. The Joint Commission (TJC, 2014) established a national quality performance measure to increase the rate of exclusive breastfeeding, while the WHO (2013) formulated the Baby-Friendly Hospital Initiative. The U.S. Breastfeeding Committee (USBC, 2010) developed core competencies in breastfeeding for healthcare professionals (HCPs).

The Healthy People 2020 breastfeeding objectives include a breastfeeding initiation target rate at discharge from the hospital of 81.9%, a continuation rate of 60.5% at six months, and 34.1% breastfeeding at one year. Target rates for exclusive breastfeeding are 44.3% for three months and 23.7% exclusive breastfeeding for six months (USDHHS, 2012). Breastfeeding rates in the United States remain below national goals. Currently, only 79% of women initiate breastfeeding, 49% continue to breastfeed at six months, and only 27% are still breastfeeding for the recommended year. Moreover, the exclusive breastfeeding rate at three months is 41%, and at six months the exclusive breastfeeding rate is 19% (CDC, 2014). These statistics demonstrate the need for interventions that promote and support breastfeeding initiation, continuation, and exclusivity.

Increasing the initiation, continuation, and exclusivity of breastfeeding is recog-

nized as a national health priority (USDHHS, 2011a, 2012; USBC, 2010; CDC, 2014). Contributing factors leading to low breastfeeding rates include maternal employment, returning to school, lack of support from significant others, and a paucity of breastfeeding role models (Engstrom, Meir, & DeCocker-Geist, 2013; Lauwers & Swisher, 2016; Wambach & Riordan, 2016). Moreover, cultural factors may negatively influence attitudes towards breastfeeding and result in low breastfeeding rates (ACOG, 2013; Chapman & Perez-Escamilla, 2012; Lauwers & Swisher, 2016; Lewallen & Street, 2010; Wambach & Riordan, 2016). Hospital practices can also contribute to low breastfeeding rates by their restrictive and unfriendly breastfeeding policies and procedures (Engstrom et al., 2013; Lauwers & Swisher, 2016; Wambach & Riordan, 2016).

Maternity Registered Nurses (RNs) are the key healthcare providers supporting new breastfeeding mothers in the hospital setting. Despite this critical role, many RNs lack evidence-based knowledge required to provide adequate care for breastfeeding mothers (Ahmed et al., 2011; AWHONN, 2015; Bernaix, 2000; Deloian, Lewin, & O'Connor, 2015; Spatz, 2010; Spear, 2006). Numerous studies have documented that student nurses are not being adequately instructed in breastfeeding knowledge in their prelicensure, undergraduate nursing education programs. This is largely due to ineffective breastfeeding training in their undergraduate nursing education programs (Ahmed et al., 2011; Bozette & Posner, 2013; Dodgson & Tarrant, 2007; Engstrom et al., 2013; Lawrence & Lawrence, 2011; Marzalik, 2004; Spatz, 2005; Spear, 2006). Most importantly, graduate nurses are not sufficiently trained to offer effective breastfeeding education to mothers (Ahmed & El Guindy, 2011; Bozette & Posner, 2013; Dodgson & Tarrant, 2007). These deficits may result in major obstacles to promoting breastfeeding and achieving the national breastfeeding target goals. This may, in part, contribute to mothers' breastfeeding difficulties (Engstrom et al., 2013). Several authors of research studies have demonstrated that the level of knowledge that nurses and other HCPs who support breastfeeding women have can directly impact the ability of a mother to breastfeed successfully (AWHONN, 2015; Bernaix, 2000; Deloian et al., 2015; USDHHS, 2011a). This suggests that there is a clear need for a standardized, evidence-based breastfeeding education program in the undergraduate nursing curriculum.

Background of the Problem

A primary factor contributing to low breastfeeding rates is the lack of adequate breastfeeding professional training in nursing education. This has been reported in many studies as a major factor contributing to new mothers' breastfeeding difficulties leading to low breastfeeding rates (Bozette & Posner, 2013; Dodgson & Tarrant, 2007; Engstrom,et.al, 2013). New mothers frequently receive inadequate breastfeeding support while in the hospital (Bernaix, Beaman, Schmidt, Harris, & Miller, 2010; Siddell, Marinelli, Froman, & Burke, 2003). Nurses are key in providing crucial support to new parents; however, studies have demonstrated that nursing graduates entering the workforce are not adequately prepared to assist and support breastfeeding mothers due to ineffective breastfeeding education. Most undergraduate, prelicensure nursing programs do not provide breastfeeding education as a required part of the curriculum (Ahmed, et.al, 2011; Dodgson & Tarrant, 2007; Bozette & Posner, 2013; Marzalik, 2004; Spatz, 2005).

Nurses are the healthcare providers (HCPs) who spend the most time with breastfeeding mothers and their lack of adequate breastfeeding training in undergraduate nursing education negatively affects their ability to provide breastfeeding support. This may contribute to low rates of breastfeeding initiation, continuation, and exclusivity (Bozette & Posner, 2013; Dodgson & Tarrant, 2007; Engstrom et al., 2013).

Based on the significant maternal and child health benefits of breastfeeding and the fact that nurses working in all areas of healthcare have contact with breastfeeding mothers, breastfeeding education should be incorporated as a permanent, standardized component of undergraduate nursing education. Effective breastfeeding education includes both didactic and clinical components. All nurses, not just maternity nurses, need to have a basic understanding of how to support breastfeeding mothers. Because breastfeeding is a health promotion activity that has public health implications, it should be included as a standard part of nursing education (Lawrence & Lawrence, 2011).

Significance of the Problem

The lack of breastfeeding education in undergraduate, prelicensure nursing education is a significant problem because breastfeeding offers many benefits to both infants and mothers (AAFP, 2012; AAP, 2012; ACNM, 2011; AWHONN, 2015; CDC, 2014; WHO, 2013) and the education of HCPs is an effective method of increasing breastfeeding rates (Engstrom et al., 2013; Lawrence & Lawrence, 2011; Wambach & Riordan, 2016). Breast milk is the ideal food for the infant. Infant benefits of breastfeeding include a decreased incidence and severity of diarrhea, respiratory infections, otitis media, bacteremia, bacterial meningitis, botulism, urinary tract infections, and necrotizing enterocolitis. Breastfeeding is also associated with a 36% reduced risk of sudden infant death syndrome and a reduced incidence of asthma, atopic dermatitis, and eczema. Additionally, breastfeeding is linked to a reduction in the risk of celiac disease, inflammatory bowel disease, childhood leukemia, and lymphoma, as well as a reduction in both Type I and Type 2 diabetes mellitus. Breastfed infants have lower rates of obesity and overall have higher IQs (AAP, 2012). Maternal benefits of breastfeeding include more rapid involution of the uterus, resulting in a decreased incidence of postpartum hemorrhage; increased child spacing secondary to lactational amenorrhea; decreased risk of Type 2 diabetes mellitus, rheumatoid arthritis, and cardiovascular disease; and reduction in breast and ovarian cancer (AAP, 2012). Additionally, breastfeeding has been associated with significant behavioral benefits such as increased maternal-infant bonding and the development of a strong mother-infant attachment (Kennell and Klaus, 2011).

Supporting mothers who initiate and exclusively breastfeed for approximately the first six months of their infants' life and continue breastfeeding for at least one year promotes positive maternal and infant health outcomes and is uniformly recommended as the optimal method of infant feeding (AAFP, 2012; AAP, 2012; ACNM, 2011; ACOG, 2013; AWHONN, 2015; CDC, 2014; USDHHS, 2011a, 2012; WHO, 2013). Improving the well-being of mothers and infants is an important public health goal as their health is a significant factor in determining the health of the next generation.

Purpose

The purpose of this pilot study was to describe the effects of an evidence-based breastfeeding education program on increasing breastfeeding knowledge, level of confidence, and role modeling of undergraduate students in a maternity nursing course at a major metropolitan university in New Jersey.

Research Question

What are the effects of a breastfeeding education program on increasing the student

nurses' breastfeeding knowledge, level of confidence, and role modeling competencies?

Definition of Variables

A conceptual definition of breastfeeding knowledge is the degree to which a student nurse demonstrates expertise in breastfeeding knowledge. An operational definition of breastfeeding knowledge is the score on the Marzalik Breastfeeding Knowledge Survey.

A conceptual definition of breastfeeding level of confidence is the degree to which a student nurse self-assesses the ability to perform breastfeeding support skills.

A conceptual definition of breastfeeding role modeling is the level of self-efficacy that a student nurse has to role model the behaviors necessary to support a breastfeeding mother successfully.

Both breastfeeding level of confidence and breastfeeding role modeling were operationalized by the post simulation scenario student nurses' responses to debriefing questions such as "*How do you feel the simulation went?*" and *"How confident are you in supporting the breastfeeding mother?"* were asked of the student nurses to evaluate level of confidence. The question *"Describe your ability to role model the behavior necessary to successfully support breastfeeding mothers"* was asked of the nursing students to evaluate role modeling ability.

Conceptual Framework

Albert Bandura's social cognitive theory provided a useful theoretical framework to guide this research study. Role modeling and self-efficacy are central concepts of the theory. Self-efficacy is the belief that an individual has the ability to perform certain tasks and that achieving those tasks will lead to a desired outcome (Bandura, 2001). It is vital that maternity nurse faculty teach student nurses basic knowledge and skill in breastfeeding. They must also support students in developing a strong sense of self-efficacy. Additionally, student nurses must support new mothers' sense of self-efficacy by expressing confidence in their capabilities to breastfeed successfully. This is most effective when student nurses provide the teaching and support that will lead to mothers' mastery of the necessary skill to breastfeed successfully. A mother's self-efficacy will increase when she gains skill, knowledge, and confidence in breastfeeding (Lauwers & Swisher, 2016). Just as nurse faculty model the desired behavior to their students, students provide opportunities for skill development through role modeling the desired behavior to their patients—in this case, new mothers on the hospital maternity unit. Bandura's (2001) focus on learning through role modeling the desired behavior is a concept that is central to this research study. Students who observe a trained, expert nurse are enabled to foster the professional role (Bahn, 2001). By modeling the behavior of the expert, trained nurse as she supports the breastfeeding mother, student nurses may incorporate, internalize, and, most significantly, demonstrate effective support and teaching to breastfeeding mothers.

Literature Review

Dodgson and Tarrant (2007) evaluated a breastfeeding education intervention for baccalaureate nursing students at a major university in Hong Kong. In comparing a sample of 111 student nurses receiving a breastfeeding education intervention consisting of 10 hours of didactic instruction and an 8-week perinatal clinical rotation with a control group of 162 nursing students, Dodgson and Tarrant reported that students receiving the intervention had improved breastfeeding knowledge. This was measured by an investigator-made knowledge survey consisting of 19 true or false items. The control group was comprised of student nurses in their first or second year of nursing school, whereas students in the experimental group were in their third or fourth (senior) years of study.

A pilot program was implemented by Bozette and Posner (2013) in an undergraduate nursing program at a major North American university investigating whether the inclusion of an evidence-based and comprehensive single 90-minute lecture on breastfeeding would increase students' knowledge of breastfeeding. A pretest and posttest survey method was used with a one-group comparison design. Cronbach's alpha coefficient for the knowledge questionnaire was 0.79, indicating an acceptable degree of reliability (Grove et al., 2013). Twenty-four students completed both pretest and posttest. The breastfeeding education program was statistically significant for increasing breastfeeding knowledge scores ($t = -7.29$, $p = < 0.005$); however, because this sample was small, the findings may not be generalizable.

Ahmed and El Guindy (2011) looked at student nurses' attitudes towards breastfeeding; they modified Brodribb et al.'s (2008) Breastfeeding Knowledge Questionnaire to measure breastfeeding knowledge. This adapted survey had a Cronbach's alpha of 0.72. The Iowa Infant Feeding Attitude Scale (De la Mora, Russell, Dungy, Losch, & Dusdieker, 1999) was used to measure attitudes towards breastfeeding; Cronbach's alpha of this scale was 0.77. The purpose of these studies was to describe the current state of breastfeeding education in undergraduate nursing education programs. The authors' findings revealed that nursing students' knowledge of breastfeeding was inadequate and attitudes towards breastfeeding were neutral.

Bunik et al. (2006) investigated the breastfeeding knowledge of pediatric residents by sampling 48 of the residents at Children's Hospital in Oakland, California. This study revealed significant increases in knowledge, attitudes, and experience in breastfeeding and demonstrated that a hands-on, clinically focused breastfeeding curriculum model was an effective strategy for teaching breastfeeding to pediatric residents.

Similarly, Law et al. (2007) measured the breastfeeding knowledge of 108 registered midwives from the United Kingdom after an educational intervention and used an unrelated comparison group of 27 student midwives as the control group. The outcome of the pretest-posttest training study demonstrated that midwives' knowledge of breastfeeding increased after receiving the 4-hour education intervention, whereas student midwives' breastfeeding knowledge remained unchanged. The authors noted that the impact of training had a major effect on the improvement of all participants, regardless of their years of midwifery experience.

In the study completed by Ingram (2006) in the United Kingdom, the participants consisted of 50 primary care HCPs: 29 general practitioners, 18 health visitors, and 3 midwives. All of the participants completed an initial questionnaire (pretest) on breastfeeding knowledge and attitudes and subsequently received a breastfeeding education intervention. Four to six weeks after the training session, another questionnaire (posttest) was completed that demonstrated significant improvement in the participants' attitudes towards breastfeeding and knowledge.

The Holmes et al. (2012) study evaluated the effects of a breastfeeding education program on the breastfeeding knowledge, attitudes, and beliefs of family medicine physicians. It was designed to determine if participation in the training program improved not only physicians' knowledge but also patients' breastfeeding outcomes. Very few researchers have examined both breastfeeding provider knowledge and its effect on patients' breastfeeding rates. The results of Holmes et al.'s study demonstrated that a breastfeeding education program improved both physicians' knowledge and patients' breastfeeding

exclusivity as well as duration rates. The physicians who participated in the training had improved clinical outcomes. Their patients had significantly higher rates of any breastfeeding at four and six months and of exclusive breastfeeding at four months.

Tender et al.'s (2014) quasi-experimental study evaluated three strategies aimed at educating pediatric residents about breastfeeding in a time-efficient manner. Thirty-nine first-year pediatric residents were assigned to one of three groups: (a) shadowing an International Board Certified Lactation Consultant (IBCLC) for 1 hour; (b) attending a 3-hour parent breastfeeding class; and (c) viewing a 25-minute DVD on breastfeeding basics. The pediatric residents' breastfeeding knowledge and skill were assessed utilizing a pretest-posttest design. Their clinical management skills were evaluated by participation in a breastfeeding simulation scenario using a clinical scoring form developed to assess their performance. Eleven residents shadowed an IBCLC, 16 watched the breastfeeding DVD, and 12 observed the breastfeeding class. The authors' results demonstrated significant improvement in knowledge and confidence between all groups; however, the IBCLC group showed more improvement in knowledge

($p = .02$). All groups performed equally well in the simulation scenario, with no significant differences demonstrated between the groups. Despite this study's limitations which included a small sample size and the lack of a control group, its findings that support the value of offering both a didactic and a clinical training component when providing breastfeeding education are significant. Additionally, the study demonstrated that IBCLCs are valuable breastfeeding educators not only for patients but for HCPs as well.

Bernaix et al. (2008) performed a quasi-experimental, pretest-posttest study with a convenience sample of 64 NICU nurses. The researchers administered a 4-hour educational intervention designed to improve breastfeeding knowledge. NICU nurses' lactation knowledge was measured by an investigator-made instrument, the Nurse Lactation Survey (NLS). The NLS was comprised of 24 items in a true/false/unsure format. This survey was administered to the nurses pre and post educational program. Cronbach's alpha for this scale was 0.55. Content validity for the survey was established by a consensus of two certified lactation consultants and two doctoral-prepared nurse researchers. Lactation knowledge scores post education intervention improved. Mean scores increased from 13.42 pretest to 18.25 posttest. The authors' findings suggested that a short, 4-hour breastfeeding intervention was as effective for increasing NICU nurses' breastfeeding knowledge as compared with an 8-hour breastfeeding education program for NICU nurses (Siddell et al., 2003).

Siddell et al. (2003) administered an 8-hour breastfeeding education program designed to improve NICU nurses' knowledge and attitudes about breastfeeding to a convenience sample of 40 NICU nurses. A nonequivalent comparison control group consisted of 38 pediatric staff RNs who occasionally were "floated" to work on the NICU. Data were collected with a pretest-posttest questionnaire. The purpose of this study was to determine if the breastfeeding education program improved NICU nurses' knowledge and attitudes about breastfeeding. The investigator-made breastfeeding education questionnaire consisted of 19 questions: seven knowledge items and 12 items that assessed nurses' attitudes towards breastfeeding. Cronbach's alpha of this scale was 0.72. No content validity documentation was reported for this tool. The scores after the educational program of the NICU nurses (the intervention group) showed more improvement in breastfeeding knowledge and positive attitudes than the control group (pediatric nurses). The results of this study suggested that education can increase breastfeeding knowledge and improve attitudes towards breastfeeding in NICU nurses. The effect of the education program on NICU nurses' breastfeeding knowledge and attitudes was positive and significant. Of particular note is that breastfeeding rates at discharge increased from 49.5% to 59% in the year following the educational intervention. This suggests that the educational program may have had some effect on these increases.

Similarly, an intervention study by Bernaix et al. (2010) tested the effect of a breastfeeding education program on improving the knowledge, attitudes, and beliefs of maternity nurses. A convenience sample of 240 RNs (206 RNs in the experimental group and 34 RNs in the control group) participated in a self-study breastfeeding module with a quasi-experimental, pretest-posttest design. The authors used two questionnaires upon study entry and again after completion of a self-study module. To measure attitudes and beliefs about breastfeeding, the investigators used a 64-item Nursing Support for Breastfeeding Questionnaire (NSBQ) (Bernaix, 2000). Responses to each of the 64 questions were based on a 7-point Likert-type scale format. Cronbach's alpha for this survey ranged from 0.75 to 0.93. To measure breastfeeding knowledge, they used a 50-item Breastfeeding Comprehensive Knowledge Survey instrument (Harris & Miller, 2005). The Spearman-Brown coefficient for this tool was 0.73. Content validity was established by a consensus of 10 lactation consultants and one physician. Posttest scores for nurses in the intervention group revealed a significant improvement in breastfeeding knowledge and more positive attitudes and beliefs than the nurses in the control group. The knowledge mean scores increased for the nurses receiving the educational program by 14% (64% to 78%). The knowledge mean scores of the nurses in the control group changed minimally from 61% to 62%. These results suggested that the education intervention was effective in improving the knowledge, attitudes, and beliefs of maternity nurses. In addition, nurses' intention to provide support to postpartum breastfeeding mothers improved post intervention.

Methodology

This pilot study utilized a same group pretest and posttest design. A convenience sample of eighteen undergraduate nursing students in the maternity undergraduate nursing course participated in this pilot study. These students were enrolled in the Two Year Track, Accelerated Bachelors of Science in Nursing (A.B.S.N.) degree program at a large private university in New Jersey.

A comprehensive, evidence-based breastfeeding education program was incorporated into the undergraduate maternity nursing course. This additional breastfeeding program was added to both the didactic and clinical components of the course.

A web-based breastfeeding education program, Wellstart International's Lactation Management Self-Study Modules, Level I, 4th Edition (Wellstart International, 2013), provided the didactic training for the nursing students. This free, online breastfeeding education course is available at http://www.wellstart.org/self-study-module-pdf. Wellstart International is a nonprofit organization dedicated to providing excellent breastfeeding education to medical, nursing, and nutrition healthcare providers. (Lawrence & Lawrence, 2011). This breastfeeding didactic education program was completed in class during a 90-minute lecture.

The Wellstart International breastfeeding education program is comprised of three modules: Module One—Breastfeeding: A Basic Health Promotion Strategy in Primary Care; Module Two—Basics of Breastfeeding:

Getting Started; and Module Three—Common Breastfeeding Problems. Topics discussed included anatomy and physiology of breastfeeding, breastfeeding basics, common problems of breastfeeding and management strategies, psychosocial and cultural factors, hospital policies and procedures and their impact on breastfeeding, national public health, Healthy People 2020 breastfeeding objectives (USDHHS, 2012), and identification of community breastfeeding resources and referrals (Wellstart International, 2013).

In addition to the Wellstart International breastfeeding education modules, the didactic component of the breastfeeding education program included realistic demonstrations of proper breastfeeding positions, correct attachment and latch-on, and the importance of skin-to-skin contact. This was demonstrated by the researcher using a wearable breastfeeding training simulator and a breastfeeding doll that represented a newborn. Additional breastfeeding materials distributed to the students included "Your Guide to Breastfeeding" (USDHHS, 2011b). This is a comprehensive, 47-page pamphlet that addresses many breastfeeding topics including: breastfeeding benefits, breastfeeding techniques, common breastfeeding questions and concerns, breastfeeding physiology, breastfeeding in special circumstances, and breastfeeding resources. All of the students received a fact sheet, "Breastfeeding" (USDHHS, 2014). This fact sheet focuses on the practical "how-tos" of breastfeeding.

A 45-minute to 1-hour mother-infant breastfeeding dyad simulation scenario provided the nursing students with clinical, hands-on skills in the management of common breastfeeding concerns. This incorporated assessing infant feeding, including signs of adequate milk intake and assisting with problem-solving strategies for common breastfeeding challenges such as sore nipples, proper latch-on, and correct positioning. A standardized patient (SP) trained in breastfeeding portrayed the breastfeeding mother. The breastfeeding doll represented the newborn. The SP wore the breastfeeding simulator that allowed for a realistic simulation of breastfeeding. The simulation scenario mimicked clinical reality and replicated clinical practice.

The students were instructed in the breastfeeding education program during their first and second class meetings. The faculty course coordinator requested that this additional breastfeeding education program be incorporated into the maternity nursing course. The faculty member responsible for teaching this class granted permission to add this content to the course.

Students were tested twice, one week apart, each time utilizing the same questionnaire. The pretest was administered to this sample of nursing students before participating in the intervention. The students took the same survey as a posttest after participating in the intervention to determine mean differences in scores.

The breastfeeding education program consisted of a web-based breastfeeding education program, Wellstart International's Lactation Management Self-Study Modules, Level I, 4th Edition (Wellstart International, 2013), and a mother-infant breastfeeding dyad simulation scenario. The breastfeeding simulation scenario was developed by the author of this study who is a certified nurse midwife, women's health practitioner, and certified lactation counselor, and trained in both maternity nursing and simulation. Content for the breastfeeding simulation scenario was derived from the AAP Breastfeeding Residency Curriculum (AAP, n.d.). The scenario script was modified to reinforce content discussed in the breastfeeding lecture. A panel of three experienced maternity nursing educators reviewed the scenario for content accuracy and validity. They unanimously agreed on the educational value of the scenario and endorsed it.

Student nurses' breastfeeding knowledge was measured by Marzalik's (2004) 39-item pretest and posttest breastfeeding knowledge instrument. Level of confidence and role modeling were assessed by students' self-reports describing their experiences participating in the breastfeeding simulation scenario. Examples of questions from this survey include: Formula-fed infants have more ear infections than breastfed infants and A mother may continue breastfeeding if she has developed mastitis. These questions relate directly to the breastfeeding training objectives. This breastfeeding questionnaire's Cronbach's alpha coefficient was 0.79, indicating an acceptable degree of reliability. The content validity of Marzalik's measurement instrument was established by a review of the survey by 10 experts in the field of lactation or maternity nursing education. Seven of the 10 experts needed to endorse an item for it to be considered valid. Only endorsed items were retained.

Marzalik's instrument was scored from 0 to 39. The questionnaire was administered as a pretest during the first recruitment meeting with the nursing students in their maternity lecture class. The same survey, the posttest, was administered one week later, immediately after the students received the didactic and clinical breastfeeding education intervention. The level of confidence and role modeling competencies were collected from student nurses' verbal self-reports during the debriefing activity. Examples of questions asked during this session included: How confident are you in providing support to a breastfeeding mother? and Describe your ability to role model the behavior necessary to successfully support breastfeeding mothers.

Using a scale from 0 to 10 where 0 represented no confidence and 10 represented completely confident, nursing students self-evaluated their level of confidence. Role modeling ability was assessed by students' responses to questions regarding this competency.

Demographics. Eighteen students in the Two Year Track, A.B.S.N. degree program currently enrolled in the maternity nursing course participated in this study. Table 1 presents the demographics of the participants. Twelve students (66.7%) were female and six (33.3%) were male. The majority of the students (44.4%) were between the ages of 22 to 25 years. Students aged 26 to 29 years, 30 to 33 years, and 34 years or older comprised 16.7%, 27.8%, and 11.1% of the sample, respectively. Fifty percent of the students were White/Caucasian. Students of other races/ethnicities included Asian, Black/African American, and Hispanic/Latino comprising 16.7%, 5.5%, and 11.1% of the sample, respectively. Three students (16.7%) identified themselves as having two or more races/ethnicities. All 18 students (100%) were taking the maternity course for the first time. Only one student (5.5%) reported working in a maternal-child setting caring for breastfeeding mothers. Of the 18 students, four (22.2%) had breastfed an infant and seven (38.9%) had experience assisting a mother with breastfeeding.

Outcomes. Eighteen students (100%) participated in this pilot study to determine if participation in an evidence-based breastfeeding education program would increase their breastfeeding knowledge, level of confidence, and role modeling. The breastfeeding education program consisted of participating in a breastfeeding lecture and a simulation scenario focusing on assisting a breastfeeding primipara on the postpartum unit. The student nurses' breastfeeding knowledge, level of confidence, and role modeling—were measured by the Marzalik's (2004) 39-item pretest and posttest breastfeeding knowledge survey and evaluated by student self-reports during the debriefing activity.

The breastfeeding lecture was based on Wellstart International's Lactation Management Self-Study Modules (Wellstart International, 2013). After the lecture, the students were randomly assigned to one of three groups for the breastfeeding simulation scenario exercise. Each group consisted of six students. The researcher followed best practices in designing and implementing this simulation scenario, as described by Jeffries' (2005) foundational work in using simulation as a teaching strategy in nursing education. Each student was required to portray a maternity nurse working on the mother/baby unit assisting a breastfeeding primipara on postpartum day one. The SP playing the role of the breastfeeding mother asked the students questions about breastfeeding. Examples of questions included: *"My nipples hurt really bad when she breastfeeds, is that normal?"* and *"Are there any benefits to breastfeeding my baby?"* This breastfeeding simulation exercise provided the students with the opportunity to learn through hands-on experience and engage in a realistic and challenging clinical breastfeeding scenario.

The student nurses' breastfeeding knowledge was measured by Marzalik's (2004) breastfeeding knowledge instrument. This 39-item pretest and posttest breastfeeding knowledge survey was administered to the student nurses to assess the effectiveness of the breastfeeding education program.

A paired t-test was used to compare the mean scores of Marzalik's (2004) breastfeeding survey pre and post educational program. The student nurses' pretest scores on the Marzalik questionnaire ranged from 18 to 35 and the mean scores were 24.8 (SD = 4.6). Post-intervention scores ranged from 26 to 38 and the mean scores were 32.9 (SD = 3). The difference between the mean scores pre and post intervention was statistically significant at $p < 0.001$). This indicated that there was a statistically significant increase in breastfeeding knowledge after the intervention.

The variables of breastfeeding level of confidence and role modeling were evaluated by the post-intervention discussion or debriefing session following the breastfeeding simulation scenario. All of the students agreed that the simulation scenario complemented and reinforced the theoretical didactic component of the breastfeeding education program. In response to the debriefing question *"How confident are you in providing support to a breastfeeding mother?"* 15 students (83%) stated that post simulation, they were very confident in their ability to provide this support. On a scale from 0 to 10 where 0 represents no confidence at all and 10 represents completely confident, 10 students (55%) reported that they would select 9 on the scale. Five students (28%) rated their level of confidence at 8 on this scale. The remaining three students (17%) selected a score of 7 on this scale. Additionally, students' comments included: *"After participating in the breastfeeding simulation, my level of confidence increased because the simulation allowed me to role model the behavior of the instructor playing the role of the nurse midwife"* and "*Learning in the safe, non-threatening environment of the breastfeeding simulation will help me to feel more confident in my ability to assist real-life breastfeeding mothers on the maternity unit."*

A confounding variable was that some of the students had more breastfeeding knowledge and experience than others before the intervention. Four of the students (22%) had breastfed infants. Seven students (38.9%) had assisted a breastfeeding mother. One student (5.5%) worked in a setting that cared for breastfeeding mothers.

Discussion

Albert Bandura's social cognitive theory provided the conceptual framework for this study. Bandura's (1977, 1986, 2001) central concepts of role modeling, self-efficacy, and social learning were evident as the guiding principles in the study.

Nursing students were provided with the

Results

Table 1

*Demographics (*N = 18)

		n	%
Age			
	22-25	8	44.4
	26-29	3	16.7
	30-33	5	27.8
	34 or older	2	11.1
Gender			
	Male	6	33.3
	Female	12	66.7
Race/Ethnicity			
	Asian	3	16.7
	Black/African American	1	5.5
	Hispanic/Latino	2	11.1
	White/Caucasian	9	50.0
	Two or more races/ethnicities	3	16.7
First Time Enrolled in Maternity Nursing Course			
	Yes	18	100
	No	0	0
Work in Setting Taking Care of Breastfeeding Mothers			
	Yes	1	5.5
	No	17	94.5
Ever Breastfed an Infant			
	Yes	4	22.2
	No	14	77.8
Ever Assisted With Breastfeeding			
	Yes	7	38.9
	No	11	61.1

opportunity to increase breastfeeding knowledge, level of confidence, and role modeling by modeling the desired behavior. In the breastfeeding simulation scenario, each student portrayed a maternity nurse assisting a new mother with breastfeeding on the postpartum unit. This scenario offered the student nurses the experience to role play and model the desired behavior.

The nursing students' participation in both the breastfeeding lecture and the simulation scenario led to an increase in their breastfeeding knowledge, level of confidence, and role modeling. The breastfeeding simulation exercise provided the students with a unique learning opportunity that reinforced theoretical and didactic knowledge. This was demonstrated by role modeling the clinical practice behaviors of a maternity nurse assisting and supporting a first-time mother with breastfeeding. Moreover, the researcher portrayed a nurse midwife in the simulation scenario, and this gave students additional opportunities for learning through role modeling the desired behavior and identifying with the role model. Nursing students who observe HCPs practicing evidence-based breastfeeding support can more readily transform their knowledge into behavior when assisting a breastfeeding mother (Marzalik, 2004).

Positive student learning outcomes were evidenced by improved posttest scores and students' self- reports after participation in the educational program. Statistical analysis results revealed a significant difference in pretest and posttest scores on Marzalik's breastfeeding knowledge instrument. Students verbally self-reported increased level of confidence and role modeling post simulation.

Limitations. This pilot study had several limitations that include the use of a small, convenience sample of A.B.S.N. degree students, the lack of a control group, and the test-retest effect. These limitations were potential threats to the validity of the findings. Moreover, all of the students attended the same private university in one geographical location.

A.B.S.N. degree students are second-degree students and may not necessarily represent the majority of prelicensure, undergraduate nursing students. Because of differences in students' personal and professional experience with breastfeeding, it was not possible to account for these extraneous variables. Additionally, the qualitative data derived from the students were not adequately addressed. In the post-intervention discussion or debriefing session, students provided comments and shared their thoughts and feelings about the educational program. Students shared what they felt went well, what they would do differently the next time, anything they felt uncomfortable with, something they would like to know more about, if they felt that the breastfeeding lecture helped them to provide breastfeeding support to the SP, and how their level of confidence and role modeling were affected by participating in the simulation activity. Student nurses' subjective self-reports of level of confidence and role modeling were another limitation of this study. Further research is necessary to establish valid and reliable quantitative tools to measure confidence and role modeling.

Recommendations and Implications

The findings of this pilot study demonstrated that incorporating a comprehensive and evidence-based breastfeeding education program into the undergraduate maternity nursing course increases student nurses' breastfeeding knowledge, level of confidence, and role modeling. Recommendations involve changing the standard undergraduate nursing education curriculum to incorporate a comprehensive and evidence-based breastfeeding education program that includes a didactic and clinical component and should become a permanent part of undergraduate nursing education.

Maternity RNs are the key HCPs supporting new breastfeeding mothers. They have a primary role in significantly influencing new mothers' decision to breastfeed. These nurses provide care for new breastfeeding mothers by assisting and supporting them to breastfeed successfully. Despite this critical role, many RNs lack the evidence-based knowledge required to provide adequate care for breastfeeding mothers (Ahmed et al., 2011; Bernaix, 2000; Spatz, 2010; Spear, 2006). Although some hospitals support breastfeeding and try to fill learning gaps in breastfeeding knowledge by offering hospital-based breastfeeding training programs to newly hired maternity nurses, this is not a standard of practice. Moreover, these in-service training programs vary considerably in content and quality based on the size of the hospital and availability of breastfeeding resources (Lauwers & Swisher, 2016).

The findings of this pilot study revealed that additional evidence-based breastfeeding education embedded into the required undergraduate maternity nursing course increased student nurses' breastfeeding knowledge and self-reports of level of confidence, and role modeling. The recommendation is to make evidence-based, comprehensive breastfeeding education a standard and permanent component of undergraduate nursing education. This may increase the likelihood that graduate nurses entering the workforce will be sufficiently prepared to support breastfeeding mothers.

The results of this study cannot be generalized to similar populations because only a small convenience sample of nursing students participated in the study. The recommendation is for further research replicating this study using an experimental design with randomized, larger samples of nursing students from diverse geographic locations. Additionally, breastfeeding level of confidence and role modeling were not adequately measured. Valid and reliable instruments to measure level of confidence and role modeling need to be developed. Future studies will provide stronger evidence of the effects of the breastfeeding educational program on student nurses' breastfeeding knowledge, level of confidence, and role modeling. This will affirm the need to establish a permanent, standardized breastfeeding education program in undergraduate, prelicensure nursing education.

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Nurses in the Biodesign and Translational Process

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Abstract:

Translational Medicine is usually described as "bench to bedside" research where results from laboratory studies are translated to actual use at the bedside. The biodesign process in translational medicine include (1) needs finding; (2) needs screening; (3) concept generation; (4) concept screening; (5) strategy development; and (6) business planning. Nurses contribute most in the clinical aspects of the process, beginning with needs finding. Specific roles that nurses took in the translational process as well as applications of technology in nursing care are discussed in this article. Teamwork among health professionals and other disciplines, and partnerships with agencies are key in the moving innovations to commercially viable products.

Have you ever wondered if there could be a better way to infuse that solution, or a gadget to facilitate that nursing procedure? If at some point in your clinical work, such searching for better ways ever crossed your mind, you are at the first step in the biodesign process, an integral part of Translational Medicine.

Translational Medicine is usually described as "bench to bedside" research where results from laboratory studies are translated to actual use at the bedside. It is utilizing those advances in science for the benefit of patients and communities. The National Institutes of Health delineated the different phases of Translational Research: Type 1 (T1) translation refers to the scientific discoveries for human health in controlled conditions (e.g., laboratory). Type 2 (T2) translates these promising research outcomes to the clinical or community setting where uncontrolled factors exist. Type 3 (T3) translation often refers to the actual practice of the intervention or use of the device. Type 4 (T4) involves policy adoption of the intervention in a much wider scale (Mulnard, 2011). It can be gleaned that this whole translational process involves mainly research at those different levels: basic science research, clinical trials, post market evaluation, and policy research. This suggests that translational medicine is an arduous journey.

Biodesign and Translational Medicine Programs

Some health professionals and institutions have taken a more pragmatic approach on the translational process. To cite, Stanford University instituted its Biodesign program to train leaders in the biomedical technology innovation. The Biodesign innovation process as described by Yock, et al. (2015) include (1) needs finding; (2) needs screening; (3) concept generation; (4) concept screening; (5) strategy development; and (6) business planning. These stages complement the three main phases of Biodesign – identify, invent, and implement (Nimgaonkar, et al., 2013). The fellows in the 10-month Biodesign program receive a month long bootcamp of didactics on engineering and business fundamentals for technology innovation. Afterwards, they have an intensive clinical immersion for two months wherein they followed members of the health team in the health facility with the intent of finding their needs. The next step is needs filtering wherein they identify promising ones based on impact of the disease, market analysis, and other supporting information. 'Needs specifications', similar to customer specifications, are described for the prioritized needs. It's only halfway through the program that the fellows invent and build prototype to address the needs specified. These inventions are further ranked using the Pugh method based on the following filters: intellectual property, regulatory and reimbursement pathways, technical feasibility and business model. Later on, the fellows plan for the implementation phase consisting of detailed analysis of the intellectual property trajectory, regulatory pathway, reimbursement scheme, engineering hurdles, business model and venture or corporate funding projections. Within the program, discussions were conducted about ethical and legal implications of medical technology innovation, as well as clinical trials, conflict of interest, etc. (Brinton, 2013).

Other institutions that offered Translational Medicine programs include the University of California Berkeley (UCB) and UC San Francisco (UCSF). They jointly offer the Master in Translational Medicine (MTM) which I recently completed. It is a one-year degree program that integrates the engineering, clinical and business aspects of translational medicine. Students take up the core classes on bioengineering, clinical needs and strategies, and business/entrepreneurship. Elective courses are likewise under these categories, with students choosing specific classes at UCB and UCSF that would be most useful for them. Throughout the year, the students work on a capstone project per team, where they undertake translational steps that include prototype development, intellectual property, reimbursement, and regulatory landscapes. Hence, the students gain the knowledge and experience developing medical innovations for careers at medtech companies, ranging from start-ups to established firms, consulting or research.

In these Biodesign and Translational Medicine programs, interdisciplinary teamwork is key. In the MTM program, students come from engineering, clinical and life sciences backgrounds. Their capstone project teams are a mix of these backgrounds, thereby providing different perspectives in working on the translational steps that require that mix of skills set. Clinicians are adept in explicating on the medical scenarios while engineers provide the technical expertise for the medical innovation. Those with business and regulatory backgrounds help shape the business model and delineate the regulatory pathway as well as the intellectual property landscape. All together, they bring the medical innovation from a raw idea to a viable product to the bedside.

In the Stanford Biodesign program, their fellows comprise of engineers, physicians, scientists, and business graduates. In forming the biodesign team, it goes beyond the mixing of physicians with engineers. The aim is for the different "innovation personalities" to synergize: (a) builder – leads in design and prototyping; (b) organizer – keeps team on track; (c) researcher – digs on literature; (d) clinicians – elucidates on the complexities of bringing technology to clinical practice (Brinton, et al., 2013). Thus, the team dynamics integrate not only by discipline but also by team function.

Nurses in the Translational process

In the thick of this translational process, where is the nurse? The nurse can be in any step of the way – from needs finding to strategy implementation, or on top of the whole process. Christian (2014) reported a number of clinical researchers spearheaded by nurses to advance pediatric nursing practice. Meanwhile, the study nurse in the colorectal cancer translational research provided direct assistance to patients for monitoring, surveys, training about protocols and biological samples collection. The involvement of the nurse simplified the procedures required for the study as well as maintained standard quality (Rigotto, et al., 2017). In genomic sequencing research, Taylor (2017) described the unique role of nurse scientists to examine patient reports on DNA sequencing and communicate genomic information to patients and families. Nurses are working to bridge the gap between omic research results to clinical application. They translate genetic information into concrete action plans for the patients.

In Biodesign, I would say that nurses could contribute most in the clinical aspects of the process. At the outset, nurses play a pivotal role in the first step – needs finding. At times, it is the nurse who experiences the need in his/her clinical practice and would look for ways to address it. Since it is the nurse who is at the bedside 24/7, he/she is in a position to determine what would be best for the patient. In Biodesign, the focus is not on the innovation but it should be the patient, the focal point of the healthcare system, without whom the healthcare would not have existed.

One technology that nurses can explore its use to address some clinical needs is bioprinting. Three dimensional (3D) Bioprinting is a subcategory of 3D printing and it is beneficial to regenerative medicine. It pertains to the process of generating repair tissues using the cells of the patient (Li, 2018). Bioprinting is something that may not obviously seem applicable to Nursing practice. Or maybe nurses have not dug in deep enough. Bioprinting may be used for wound healing, an area which nurses deal with directly and extensively.

In bioprinting for wounds, the cultured skin cells of the patients mixed with biomaterials are used to fabricate customized skin through a 3D bioprinter. Moreover, it has been shown that bioprinting may also be done 'in situ' which means that cells may directly be printed onto wound sites (He, et al., 2018). Nurses can then use the bioprinting technology to aid in their care of patients with wounds especially those with very challenging conditions. Nurses can customize the bioprinted product according to the needs and circumstances of the patients.

Another application of bioprinting that I think would be useful in nursing care is the prevention of sore and cracked nipples of nursing mothers. This is one of the maladies of breastfeeding, and yet mothers have to continue breastfeeding their babies despite the pain and discomfort. It is best if this condition is prevented altogether. A number of remedies for sore nipples are enumerated in literature, from proper latching to ointments, including antibiotics. Nipple shields are recommended as short-term measure for premature infants but not for long term use (Kent, et al, 2015). I propose that personalized bioprinted nipples be used as 'shield' to prevent sore nipples that will not interfere with the proper sucking and feeding of the baby. This entails bioprinting of a specialized skin. However, the current technology may not be able to produce an exact copy of the skin around the nipple, it suffices to have an appropriate shield for the nipple that is soft and pliable and will not interfere with breastfeeding.

I believe that as nurses get more exposed to the technological tools that can aid in nursing care, more innovations for nursing care will be generated. As a matter of fact, a number of schools of nursing in the USA are now integrating innovations in the BS Nursing curriculum. To cite, the University of Connecticut School of Nursing challenge their undergraduate students to identify healthcare problems and subsequently find innovative solutions. These student nurses form collaborative groups with fellow students from other disciplines like engineering, business, IT, computer science. These student groups pitch their ideas in 'Shark Tank' activities, etc. They acquire an entrepreneural mindset for innovations that will aid in Nursing care ("Igniting the Innovative Spark", 2018).

Teamwork and Partnerships

Whether in the undergraduate, graduate or professional practice spheres, nurses need to team up with other disciplines to be able to translate innovative ideas into viable products, systems, approaches for patients and population groups. This has been demonstrated at University of Utah where medical students were teamed up with business, law, design and engineering students. After four years of implementation, 91 novel medical devices were developed and 24 new companies were put up (Loftus et al., 2015). As for Stanford's Biodesign program, more than 440,000 patients were reached by the technologies developed during the program, and more than 1,000,000 people were aided by the solutions initiated by their alumni (Wall, et al., 2017).

Leadership should engender the appropriate environment and institutional support to make innovation happen. Institutional culture is the key to team science. Lee and Jabloner (2017) enumerated several aspects of this which include: incentivizing clinical collaborations, establishing clear policies on potential conflicts, cultivating shared ideologies and values, instituting flat hierarchies, and normalizing iteration and flexibility. Geographic and social proximity of health sciences schools with engineering and business schools engender collaboration towards innovating to address the healthcare needs identified. Collaborative creativity is further fostered when competition and conflict on ownership are mitigated through clear policies. The informality in 'flat hierarchies' where academic status and position are minimized, fosters rapid building of social collaborations. In innovation, iteration and fluidity are expected. The ability to continually evaluate and pivot as needed is necessary to arrive at a viable innovation.

Moving on from micro to the macro level, bringing the innovations to the mainstream requires partnerships among the academia, industry, government and non-government organizations (Portilla & Alving, 2010). One such catalyst is small business funders who bridge the gap between innovation and commercially viable product. These funding agencies foster social entrepreneurship through capital support and venture philanthropy (Shic, et al., 2015).

Teamwork and partnerships are key in bringing innovations to the bedside. In collaboration with other disciplines, nurses are active players in this process. They are in a position to identify the needs of patients whom they take care of round the clock. Moreover, their inputs are valuable for the iteration and evaluation of the innovation since they bring the perspective of the patient to the table. The innovation has value in as much as it is beneficial to the patient, the focus of the healthcare system.

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Collaborative Leadership for Health Equity

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Abstract

Promoting health equity particularly for vulnerable populations must address social inequalities. Health advocacy and community empowerment requires broad-based collaboration and partnerships to build social capital and capacity for changing or developing social policies with high impact on people's lives. Collaborative leadership for health equity is grounded on the principles of social justice and human rights, advocacy and empowerment, cultural competence and development of social and human capital.

Global Trends

We are confronted by trends impacting health of populations, globally. These trends call for a different way of understanding why certain groups are in poorer health than others and how to reverse these patterns of health vulnerabilities. Epidemiological trends of morbidity and mortality, worldwide are attributed to social inequalities that create cumulative advantages or disadvantages in populations that are manifested in differential health statuses. Human groups manifest in their physical and mental health status the practical realities of their lives through a process of embodiment. *Embodiment* is mediated by the people's differential exposure to the material and social environments where they are born, live, grow, work and age (Krieger, 2012). Our lived environment exposes us to material comfort or deprivation, social acceptance or oppression, security and safety or a life of chronic stress. Our differential exposure to negative or positive life conditions determine largely our resistance to illnesses and ability to cope with stressors, our life chances in society and ultimately our health status. Exposure to unrelenting life stressors produce allostatic load effects resulting in a cascade of pathologies in the brain and multisystems of the body that are manifested in proclivity towards risky behaviors, chronic diseases, and pyschoemotional disorders (McEwen, Nasca & Gray, 2015).

Social determinants of health explain roughly two-thirds of why we get sick and only a third can be attributed to lack of access to health care (Marmot et al. 1991). However, when access to quality care is determined by one's status within the social hierarchy it becomes a significant factor in maintaining health and well-being. Marmot's study of employed white British civil servants with equal access to healthcare found a social gradient effect on their health status. Those in lower employment grade had poorer health than those in the higher echelon. Marmot (2006) coined this phenomenon as the social status syndrome - poor health is conditioned by the lack of active participation and recognition in society based on one's position within the social hierarchy. In the United States, the poor, minorities, indigenous groups and those without legal status have the highest rates of poverty, being uninsured, and disease mortality (CDC, 2014).

Another trend is the changing conceptualization of health. The Ottawa Charter for Health Promotion (WHO, 1986) recognizes the significance of patient and community empowerment in transforming health of individuals and populations. Health promotion is defined as the process of enabling people to increase their control over and to improve their health. Health is viewed as a resource for everyday life emphasizing social and personal resources, as well as physical capacities. To reach a state of complete physical and social well-being, an individual or group must be able to identify and realize their aspirations, satisfy their needs and change or cope with their environment.

The Ottawa Charter (WHO 1996) has proposed that health is more than just a state of physical and mental well-being. Rather, it is the capacity to control, change or act on one's situation to enhance health and well-being. Health therefore is achieved through an empowerment process that enables individuals and communities to do what is best for them and transform their lives. Such capacity for change however is dependent on one's resources and abilities to create conditions that support health. Surveys of residents of different countries around the globe have validated that higher income, education and position are predictors of better health status (Babones, 2010). While education is certainly an individual achievement, certain groups have limited opportunities open to them. The differential effect of education on health is offset by generous government programs that support health and well-being (OECD, 2014).

In the climate of western capitalism, health care has become big business dominated by large corporations with loyalties to their owners and investors. As posited by Marx, capitalism skews priorities towards the powerful and privileged owners in order to accumulate more capital and maximize profits (Elwell, 2016). While Marx identified inherent conflicts between the capitalist owners and laborers, patients and consumers of healthcare services do not necessarily fit either group. They are largely the object of these systems and are extremely powerless in influencing how these systems work. Healthcare professionals by virtue of their training occupy command positions within this capitalist structure of health care who unwittingly or willingly become the implementers of programs and policies that can further the power and financial coffers of the owning class and further oppress the consumers (Barrone, 2015).

Price gouging and corporate mergers to eliminate competition and postpone generic drug availability in the market are some of the capitalistic practices by pharmaceutical companies. These companies have decreased their overall expenditures on Research and Development while expanding their executive salaries and corporate profits. Development of new drugs is motivated by potential market return, thus ignoring much needed initiatives for diseases such as malaria and Ebola that are prevalent in poor countries (Leo, 2016).

These global trends result in health inequities, which occur within the same region in a society and in different countries of the world. Health inequities are created by inherent and perpetuated social inequalities (Braverman, 2014). Wealthier countries in the West such as the United States, Canada and the United Kingdom are plagued by higher rates of poverty. Global epidemiological patterns have shown that in nations with greater wealth inequalities, wide health disparities exist between the rich and the poor (Wilkin-

son & Pickett, 2015). All wealthy nations except the US have organized their healthcare systems as variants of a single payer system where a single public or quasi-public agency organizes health care financing to collect the money from users, purchase services in bulk, and negotiate rates and payment schemes with providers (Chaufan, 2015). The US is the only industrialized nation without a universal healthcare system for all its citizens. The lack of universal healthcare system and high costs of healthcare in the US are intimately linked both economically and historically.

Approaches toward social determinants of poor health require social changes that go beyond caring for individual patients who are sick and disabled. Social changes and empowerment of vulnerable populations occur in communities where they live long before they get sick. Health promotion is beyond disease-based care and clinical care for ailments. It is more than providing excellent clinical care and individualized nursing care of the sick. It begins and ends outside of healthcare organizations in places where people live, grow, work and age. Health promotion emphasizes correction of social inequalities emphasizing advocacy and empowerment of the most vulnerable groups in society, empathic understanding of the struggles of others and commitment to address them through social justice. This ethic of care addresses social determinants of poor health through collaborative power to temper the influence of the privileged groups in society. While built on individual skills, effective collaboration needs to have a strong, consistent and committed group effort to create significant impact on groups and communities that need help the most.

Objectives

This presentation aims to: a) describe the competencies of collaborative leadership for health equity, and b) explain the significance of collaborative leadership in building human and social capital for health. Collaboration that transforms the lives of populations and communities is built on leadership, social conscience and genuine interest in diversity. It is built on the knowledge of the sociopolitical, economic and historical processes that fosters empathic understanding of people's lives and compassion for the vulnerable.

A vulnerable group is a disadvantaged segment of the community requiring utmost considerations because of limited capability to protect themselves from intended or inherent risks and inability to make informed choices (Shivayogi, 2013). Vulnerability is created by multiple and cumulative risks experienced through the life course that may not be directly related to health such as low socioeconomic status and discrimination (Frohlich & Potvin, 2008). Exposure to multiple risk factors and a greater number of comorbidities are more frequent in vulnerable populations, e.g. persons with low-income, the less educated, racial and ethnic minorities, aboriginal peoples, those who experienced discrimination and violence, etc. According to Phelan, Link & Tehranifar (2010), risk factors and their accumulation are the expression of fundamental causes linked to one's position in the social structure which generate exposure to other risks.

Partnership vs. Collaboration

Successful partnerships and collaborations are built on an in-depth understanding of the community and its people and prolonged engagement with them that is built on mutual trust and reciprocity. Partnership is a close cooperation between two or more parties having specified and joint rights and responsibilities, and equal share of the risks as well as the rewards (National Coalition of Homeless Veterans, 2016). Partners join forces in pursuit of a shared goal, commitment, rights, and obligations to participate and will be affected equally by the benefits and disadvantages arising from the partnership. Partnerships require mutual trust and respect for each other in order to create joint teamwork, coalitions, and eliminate boundaries among them (Carnwell & Carson, 2005).

By contrast, collaboration involves cooperation with less formalized set of responsibilities or involvement than a formal partnership. A collaborative exists when several people pool their common interests, assets, and professional skills to promote broader interests for the community's benefit. Fundamentally, the relationship between collaborators is non-hierarchical, and shared power is based on knowledge and expertise, rather than role or title (Henneman, Lee & Cohen, 1995). The defining attribute of collaboration is the sharing of expertise in a joint venture for an agreed purpose. While effective collaboration needs some of the same attributes of partnership such as team work, mutual trust and respect, and a highly connected network; there are however, lower expectations of reciprocation and less sharing of risks and rewards than with a formal partnership. It is important to create and nurture both types of relationships to strengthen community capacity to obtain services, resources, and power for health achievement.

Competencies of Collaborative Leadership

The ultimate purpose of collaborative leadership and partnerships is achievement of health equity by reversing the societal forces that create cumulative disadvantages and marginalized existence of some groups. Social change requires broad coalition that translate individual empowerment to community empowerment. Health equity is only possible when vulnerable communities gain access to societal goods and goodwill that allow them to benefit proportionally from what society can offer. Health equity is possible through social structural changes that give voice and empower the vulnerable sectors of society.

Ethical Orientation

Collaborative leadership needs to be oriented toward social justice where all citizens are afforded fair access to societal goods, goodwill and protection. In his Theory of Justice, John Rawls (1971) has argued that a just society exists when the most vulnerable are rendered less vulnerable. Social justice is the fair and just relation between the individual and society. The principles of social justice provide a way of assigning rights and duties in the basic institutions of society and define the appropriate distribution of benefits and burdens of social cooperation (Rawls, 1971). The current global trend in social justice emphasizes breaking barriers to social mobility, creating safety nets, and economic and environmental justice. The movement from patient advocacy to health advocacy reflects the growing recognition that health equity is achieved through social structural changes and social justice to ameliorate the causes of cumulative disadvantages and vulnerability. Advocacy is founded on the principle of justice and fairness by ensuring that each person is given his or her due. Justice and fairness are closely related and often used interchangeably. According to John Rawls (1971), the stability of a society depends upon the extent to which the members feel that they are being treated justly. Lack of fairness and unequal treatment have led to social unrest, disturbances, and strife.

Upholding individual welfare and dignity of each member should provide protection of the basic human rights that include the right to health (International Council on Human Rights Policy, 2012). Access to health services based on one's employment unfairly disadvantages workers whose income and employers are unable to provide for such benefit. In fact, most Americans on Medicaid have at

least one family member who is working but does not make enough to buy health insurance or whose employer is unable to provide this benefit. Many actively employed Americans make meager wages to support themselves and their families or live in neighborhoods with decent schools, low crimes, and healthy environments (Iceland, 2012).

According to the World Health Organization (WHO,1995), advocacy for health is a combination of individual and social actions to gain political commitment, policy support, social acceptance and systems support for a particular health goal or program. Such action may be taken on behalf of individuals and groups to create life conditions conducive to health and the achievement of healthy lifestyles. Health advocacy encompasses direct service to the individual or family as well as activities that promote health and access to health care in communities and the larger public. Advocates support and promote the rights of the patient in health care, help build capacity to improve community health and enhance health policy initiatives focused on available, safe and quality care. According to Rees (1991), health advocacy aims for protection of the vulnerable and empowerment of the disadvantaged encompassing activities to represent the under-privileged, disadvantaged or sick to promote their rights or redress power imbalances. Advocacy addresses the structural determinants of health inequities and barriers to health beyond the control of individuals. It promotes community participation and development as well as empowerment of disadvantaged individuals or groups to represent themselves and lobby for their own health needs. Health advocacy may include challenging powerful anti-health interests, acting as a channel for mediating and negotiating between opposing forces in the interests of positive health; and forming coalitions.

Wallerstein and Bernstein (1994) prefer community empowerment because it is a social-action process by which interactions occur in the social context of human relationships at home, in communities and institutions. Community empowerment is both a process and an outcome in which individuals and groups act to gain mastery over their lives in the context of changing their social and political environment. Institutions and communities become transformed as people who participate in changing them become transformed. Community empowerment is a basis for health care reform as individuals are connected and engage with others in the community to identify common problems, goals, and strategies for personal and social capacity building to transform their lives (Wallerstein & Bernstein, 1994). Indeed the notion of empowerment originated by the Brazilian philosopher, Paulo Freire emphasized the need for individual and community empowerment (Carroll & Minkler, 2000).

Cultural Competence

Collaborative leaders have an empathic understanding of vulnerable communities and genuinely feel compassion for their suffering. They are committed to engage in these communities to make a difference in their lives. They motivate others and the organizations where they work to help eliminate social inequalities, which are the root causes of health disparities. Collaborative leaders are skilled in working with diversity, showing respect and appreciation of differences, and harnessing these differences towards a common goal. Cultural competence is built upon a fundamental respect for human dignity – a perspective that motivates one to treat all people with respect, fairness and as co-equals in the work towards achieving health equity.

Culturally competent leaders understand the ethnohistory, social and cultural uniqueness of different groups and move these disparate perspectives towards a common conceptualization of the problem in order to strengthen coalition and cooperation among them. Externalization of individual experiences enable different perceptions, values and practices to merge into the realization of the root cause of one's suffering that is also shared by others. Externalizing suffering allows compassionate relationships to develop and the willingness to work with others for a common goal (Pacquiao, 2018). This is what has happened in the recent backlash towards President Trump's policy of separating migrant children from their parents which transcended political, religious, socioeconomic and gender differences.

Culturally competent leaders are adept at entering diverse communities, seeking pathways through their gatekeepers and promoting trusting relationships with diverse groups. They enhance effective coalitions by maintaining a global perspective and awareness of the potential impact of an action or lack of it on various populations. Critical reflection on decisions require empathy and compassion for disadvantaged groups rather than the powerful voices motivated by self-interests. Decisions are carefully analyzed and judged based on the impact on the most vulnerable. Collaborative leaders must use evidence to confront misinformation and competing self-interests among groups. Diversity provides strength when different values and priorities are guided by empathy, compassion and principles of human rights protection.

Capacity to build Social Capital

The French sociologist, Pierre Bourdieu first analyzed the basis for social class distinctions in society. He observed that social positions within the social hierarchy is gained through capital. There are different types of capital: a) Economic capital is related to a person's fortune and revenues that can be monetized and institutionalized in property rights; b)

Cultural capital is the primary cause for status and relative positions in a society, which is transferred by family and education and may be institutionalized in the forms of educational credentials, dispositions and intellectual qualifications or human capital that is achieved by the individual himself through educational qualifications or material symbols such as expensive cars, homes, etc. and d) Social capital, which represents a person's entirety of social relations or network of actual or potential resources that can be legitimized by the family, group or class membership that allow access to material and immaterial resources, information and knowledge (Walther, 2014).

Vulnerable populations lack economic and cultural capital but their social capital can be developed. Collaborative leaders can enhance their social capital by strengthening their bonding capital, strong ties with extended families, co-ethnics, and immediate neighbors. Mutuality and reciprocity are more easily fostered among groups that have more frequent interaction with each other and see greater commonality of experience. However, poor people generally have poor families and neighbors with many deficits in both human and social capital. Collaborative leaders should foster development of bridging capital, bringing coalition with other communities with similar problems. This broadens the network of people outside one's own community and expands the framework for analyzing the problem. Effectiveness of these networks can be enhanced further by developing linking capital – connecting with outside groups with different capacities such as academicians, politicians, churches, etc. Linking capital is built by multilevel and intersectoral networks to bring different expertise to the community. While linking capital has weak ties with the community, it can offer much needed human and social capital for problem resolution (Eriksson, 2011).

In community engagements, collaborative leaders should determine the structure and process for building social capital. Immersion in communities, meeting people where they usually come together and knowing what activities they participate is important. Building social capital requires leaders to develop their own human capital (knowledge and expertise) and social network. Organizational affiliations and volunteering in local projects in the community can expand one's social and human capital. Leaders need to select specific groups and projects to be involved with as social structural changes require prolonged engagement and commitment. Social change requires individual empowerment that is only affirmed by community recognition of such empowered status. While leaders can work on increasing knowledge and skills of individual members, empowerment is not complete until society allows it. Thus health equity is not possible unless high impact social changes occur.

Summary

This presentation focused on three significant competencies of collaborative leadership for health equity: ethical orientation, cultural competence and capacity for building social capital. These competencies are salient in health promotion for vulnerable populations. The plight of these groups cannot be addressed unless society and the government take greater responsibility for their well-being. Empowerment for change for vulnerable groups is grounded in the principles of social justice and human rights, advocacy and empowerment, culturally competent leadership skills, and capacity building for health of communities. Collaborative leadership is founded on the knowledge that health is more of a capacity to transform lives of groups and populations that is basic to achieving a state of physical and mental well-being.

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Development and Pilot Testing of a Total Joint Arthroplasty Readmission Risk Assessment Protocol

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Abstract

Hospital readmission rate is a tangible outcome measure of quality of care provided by acute healthcare facilities. The purpose of this evidence-based project was to develop and pilot test a total joint arthroplasty (TJA) readmission risk assessment protocol to reduce 90-day readmission rate. Developed using rigorous scientific evidence-based methodology, the protocol was pilot tested in an orthopedic nursing unit. This protocol empowers nurses to recommend and/or apply intervention(s) for identified modifiable risk factors. Additionally, nurses can counsel and inform patients with identified non-modifiable risk factors for readmission. Prior to the implementation of the protocol, the readmission rate at this setting was 9.9%. After pilot testing, the 90-day readmission rate was reduced to 3%. Additional findings showed that the participants with an American Society of Anesthesiologist (ASA) score of ≥ 2, active smoking, body mass index (BMI) of ≤ 18 kg/m2 or ≥ 35 kg/m2, and the presence of two or more comorbidities were associated with readmission. Comorbidities associated with readmissions were coronary artery disease, diabetes, mental health issue, hypertension, pulmonary disease, and hypothyroidism.

Introduction

The Robert Wood Johnson Foundation's Care About Your Care Initiatives published a report called "The Revolving Door: A Report on U.S. Hospital Readmissions," devoted to improving care transitions when patients leave the hospital. It includes an analysis of Medicare data by the Dartmouth Atlas project and stories from patients and healthcare providers. The report looks at the issue of readmission in two ways: by the numbers and through the eyes of the people who live them (Goodman, Fisher, & Chang, 2013). According to Riza Lavizzo-Mourey (2013, p. 3), "the U.S. health care system suffers from a chronic malady-the revolving door syndrome at its hospitals. It is so bad that the federal government says one in five elderly patients is back in the hospital within 30 days of leaving."

Hospital readmission occurs when a patient is admitted back to a hospital within a specified time period after being discharged from an earlier initial hospitalization (Center for Medicaid and Medicare, 2016). Furthermore, hospital readmissions are sentinel events that often signal gaps in the quality of care provided to Medicare patients. Although some hospital readmissions are anticipated or planned, most are unexpected. Some anticipated readmissions are for the completion of patient care while other patients are readmitted for unrelated reasons. Readmission causes include inadequate discharge planning, poor care coordination between hospital and community clinicians, and a lack of effective longitudinal community-based care (Goodman et al., 2013).

The United States spent 18% of its national gross domestic product in healthcare in 2013 or around USD 2.9 trillion and is projected to spend a cumulative amount of USD 5 trillion by 2022. This projection is based on an aging population and the 30 million newly insured Americans due to the Affordable Care Act (Paxton et al., 2015). The Center for Medicare and Medicaid (CMS) spent USD 12 billion on Medicare hospital readmission. An estimated 76% of readmissions are preventable (Paxton et al., 2015). There has been little change in U.S. all-cause 30-day readmission rates. The surgical 30-day readmission rate was 12.7% in 2008 and 12.4 percent in 2010, while the medical 30-day readmission rate was 16.2% in 2008 and 15.9% in 2010 (Goodman et al., 2013).

In the healthcare institution where the project was conducted, the total joint arthroplasty (TJA) 90-day readmission rate for the first two months of the year 2017 was 5.4% and 9.9% respectively, more than double the national average of 3%. This readmission rate is a concern for the institution in its commitment to providing excellent care. The institution aims for a lower readmission rate than the current one to align with its commitment to excellence.

Purpose

The purpose of this evidence-based project was to develop and pilot test a readmission risk assessment protocol to reduce the readmission rates of TJA patients in an acute care healthcare facility.

Definition of Concepts

Hospital Readmission

Conceptually, a hospital readmission occurs when a patient is admitted to a hospital within a specified time period after being discharged from an earlier initial hospitalization (CMS, 2016). Operationally, hospital readmission is defined as TJA patients readmitted (all causes) within 90 days after hospital discharge, anchored on the date of index admission for primary TJA.

Readmission Rate

Conceptually, the readmission rate tracks the number of patients who experience unplanned readmission to the hospital after a previous hospital stay, and it is among the categorical data used to evaluate the quality of hospital care (Mayo Clinic, 2016).

Operationally, the readmission rate will be the total number of primary TJA admissions divided by the number of readmitted patients within a 90-day period after discharge from the TJA index admission date. The readmis-

sion rate will be calculated within the three-month project period.

Readmission Risk Assessment

Conceptually, a readmission risk assessment protocol is a guide for determining patients at greater risk for readmission (Kansagara et al., 2011). Operationally, the readmission risk assessment protocol will include the risk factors associated with TJA readmission identified in the literature review. Nurses complete the readmission risk assessment protocol immediately after surgery to identify patients at great risk for readmission.

Literature Review

The alarming increase in readmission rates following TJA (Zmistowski et al., 2013) and the rising costs and possible financial impacts of CMS reimbursement associated with these readmissions challenges healthcare institutions to improve outcomes (Clement, 2013; Lavernia, 2013). Although readmission rates do not reflect the quality of care (Lavernia, 2013), this outcome measure is a valuable metric in any EBP or Quality Improvement (QI) project. It provides a basis for evaluating the effectiveness of interventions designed to improve the care process.

Much of the literature has associated non-modifiable risk factors, including male gender, black race, increasing American Society of Anesthesiologists (ASA) score and advanced or increasing age with the likelihood of TJA readmission (Paxton, 2015; Pugely, 2013; Singh, 2013; Zmistowski, 2013; Inneh, 2014; Schairer, 2014; Tayne, 2014; Avram, 2013). The modifiable risk factors including increased BMI and smoking are associated with high readmission rates (Ayers, 2015; Clement, 2013; Mednick, 2014; Saucedo, 2014; Boraiah, 2015). In addition, comorbidities such as diabetes and cardiovascular disorders were found to be highly associated with readmission (Boraiah, 2015; Schairer, 2014). Modifiable risk factors including obesity and the comorbidities should be addressed prior to elective procedures to decrease hospital readmissions (Paxton, 2015).

Scant literature has associated increased operating times and the use of general anesthesia with higher odds of TJA readmission. (Inner, 2014; Tayne, 2015; Mesko, 2014). A plethora of literature has concluded that an increased length of stay in the hospital and discharge disposition other than home are associated with a higher risk of readmission (Clement, 2013; Khier, 2014; Mesko, 2014; Paxton, 2015; Schairer & Vail, 2014;Lavernia, 2013; Zmistowski, 2013).

Risk factors for TJA readmissions were well identified in the literature and provided compelling evidence of relevance and value. This scientific evidence represents a significant component in the development of a readmission risk assessment protocol to reduce TJA readmission rate.

Methodology and Implementation

The John Hopkins Nursing Evidence-Based Practice (JHNEBP) model and guidelines was used in the implementation of this EBP project. The practice question phase includes the identification of practice problems, while the evidence phase involves searching and appraising relevant literature to answer the practice questions. Finally, the translation phase includes the assessment of the evidence-based recommendations identified in the evidence phase for transferability to the setting (Newhouse et al., 2007). The development of the readmission risk assessment protocol was guided by the appraisal of guidelines for research and evaluation (AGREE) II instrument. Although the AGREE II instrument is used to critically assess published clinical guidelines, another purpose of using this instrument is to provide a methodological strategy for the development of guidelines (AGREE Next Steps Consortium, 2010).

Sampling Method

Patients were recruited based on Medicare Severity – Diagnosis Related Group (MS-DRG) 470 who were scheduled for elective total joint arthroplasty (TJA). All patients admitted to the orthopedic nursing unit post TJA were screened for readmission risk using the TJA Readmission Risk Assessment Protocol and were included as sample. The TJA Readmission Risk Assessment Protocol evaluate patients for both modifiable and non-modifiable risk factors. One hundred ninety eight (198) patients were included in the project. One hundred fifteen (115) patients with identified modifiable risk factors who received interventions were placed in the EBP group and 83 patients who did not receive any interventions were in the No EBP group.

Procedure

Interventions such as nicotine patch, smoking cessation program and nutritional counselling by nutritionists were applied for patients with identified modifiable risk factors (i.e., active smoking, BMI ≤18 kg/m2 or ≥ 35 kg/m2, and presence of ≥ 2 comorbidities). Additionally, the DNP student counselled and informed patient with identified modifiable risk factor(s) of their risk for readmission based on scientific evidence.

Description of the Setting

The project was conducted in a 687-bed capacity Level II trauma teaching medical center's orthopedic unit. The medical center is part of a large health system operating in Northern New Jersey and is magnet-designated. The Joint Commission has repeatedly awarded the unit, the orthopedic floor, with the prestigious Gold Seal Approval, the Disease-Specific Care Certifications for joint replacement programs in the knee and hip categories. In 2015, 2,028 primary TJA procedures were performed in this acute care healthcare facility.

Data Collection and Analysis

Institutional Review Board (IRB) approval from Fairleigh Dickinson University and the Health System were obtained prior to data collection.

Data was collected during the pilot testing period, March 15 to April 15, 2017. All patients admitted with Medicare Severity – Diagnosis Related Group (MS-DRG) 470 were identified and included in the study. This DRG refers to major joint replacement. The Total Joint Arthroplasty Readmission Assessment Protocol was used to assess the readmission risk of 198 patients included in the project at the time of admission to the orthopedic floor. Recommended interventions in the protocol were applied to patients with identified modifiable risk factors at the time of admission. The EBP group consisted of patients where the protocol interventions were applied. Patients with no identified modifiable risk factors and received no protocol interventions constituted the No EBP group. Both groups of patients were recruited on admission. Of the 198 patients, there were 115 patients in the EBP group and 81 patients in the No EBP group. Data collected include demographics (age, sex, and race), date of procedure, procedure type, and readmission risk factors. The readmission risk factors collected on both groups were both non-modifiable and modifiable. Non-modifiable risk factors were age, gender, race, American Society of Anesthesiologist (ASA) score ≥ 2, operating time ≥ 74 minutes, pre-operative blood transfusion, and corticosteroid use. The modifiable risk factors data collected were active smoker, body mass index (BMI) of ≤18 kg/m2 or ≥ 35 kg/m2, and presence of ≥ 2comorbidity.

TJA readmission rate a month prior to implementation, February 2017, was established at 9.9%. This group of patient who had

TJA is comparable with the patients in the EBP project. They have the same MS - DRG, admitted to the same orthopedic nursing unit, and cared for by the same healthcare providers but no TJA Readmission Risk Assessment Protocol was applied.

The post-implementation 90-day readmission rate included the number of TJA patients readmitted, with the index procedure date from day one of the pilot implementation up to the last day of the one-month period. The 90-day readmission rate was based on readmitted patient included in the pilot testing up to July 15, 2017. The All Patient Refined Medicare Severity – Diagnosis Related Group (APR-DRG) 301 and 302 was utilized in identifying readmitted patient included in the pilot testing period in evaluating the outcome of the protocol: the readmission rate.

Descriptive statistics were used to analyze the demographics and the readmission rate. Readmission rate risk factors were collected and compared between two groups. Two-sample t-test, Pearson chi-square, and Fisher's exact test (FET) were the statistics used to determine the significance of the difference between the two groups. The level of statistical significant set in FET was a p value of <0.05.

Result

Results of the data analysis of this project are presented in tables. The demographic data collected: age, gender, and race are presented in Table 1. The mean age in the No EBP group was 65.86 with a standard deviation of 11.15. The mean age in the EBP group was 66.76 and a standard deviation of 10.87. A two-sample t-test was used to see if there were significant differences in the median age of the two groups. The two-sample t-test has a p-value of 0.571 showing that there was no significant difference between the ages in two groups. The No EBP group was 34 (40%) male and 49 (60%) female. The EBP group was 49 (42%) male and 66 (58%) female. The Pearson chi-square test was utilized to compare whether there are significant differences in gender between the two groups. With a p-value of 0.18, there was no significant difference in gender between the two groups.

In terms of race, there were two (2) Blacks, 79 Whites, one (1) other (Hispanic), 1 unknown or declined to answer, and no Asian patient in the No EBP group. In the EBP group, there were four (4) Blacks, one (1) Asian, 104 Whites, one (1) others (Hispanic), and two (2) unknown or declined to answer. The Pearson chi-square test was utilized to compare whether there are significant differences in distributions in these two group. The Pearson chi-square p- value for all races was 0.717. The result means that there were no significant statistical differences between races in the two groups.

Non-modifiable risk factors collected were considered nominal data. Thus, the Fisher's exact test of independence was utilized to see if there were significant differences in these risk factors between two groups as shown in Table 2. As previously mentioned in the demographics, there were no significant differences in age between the two groups. The male gender in the No EBP group was 34 (40%) and 49 (42%) in the EBP group. The Fisher's exact test (FET) p-value of 0.884 showed no significant differences in risk of readmission between the two groups in terms of male gender.

There were two (2) and four (4) Black patients in the No EBP and EBP group respectively. There was no significant difference in the risk of readmission (p>0.999, FET) between two groups with regards to Black race. Seventy-four (89%) of patients in the No EBP group have an ASA score of >= 2 compared to the 113 (98%) patients in the EBP group. There was significant difference between the two groups in terms of ASA score as evidenced by a p- value of >0.009, FET. The operating time ≥ 74 minutes between two groups (67 patients in the No EBP group; 104 patients in the EBP group) showed no significant differences with a p-value of >0.06, FET. None of the sample from the two groups received a pre-operative blood transfusion, thus, this risk factor showed no significant differences in risk of readmission (p>0.999, FET). Lastly, the use of corticosteroid by seven (7) or 6% of patients in the EBP group when compared to the two (2) or 2% of patients in the No EBP group showed no significant statistical differences (p>0.308, FET).

The modifiable risk factors were collected and analyzed in Table 3 included active smokers , BMI (less than 18 kg/m2 or more than 35 kg/m2), and presence of two or more comorbidities. The data collected were nominal or categorical in nature with a small sample size, thus, Fisher's exact test was utilized for analysis. The 10 % active smokers in the EBP group when compared to active smokers in the No EBP group showed significant differences (p = 0.002, FET). The BMI risk factors of 44 patients in the EBP group showed a significant difference when compared with the No EBP group patient, p<0.001, FET. The presence of two or more comorbidities when compared between the two groups showed significant difference (p>0.001, FET).

Table 1

Demographics

Factor	No EBP (Mean±SD)	EBP (Mean±SD)	No EBP (*n*)	EBP (*n*)	*p*-value
Age	65.86±11.15	66.76±10.87			0.571
Male			34	49	0.817
Female			49	66	0.817
Race					
Black			2	4	0.717
Asian			0	1	0.717
White			79	104	0.717
Others			1	4	0.717
Unknown/declined to answer			1	2	0.717

Note. *n*=frequency

Table 2

Non-Modifiable Risk Factors

Factors	No EBP (Mean±SD)	EBP (Mean±SD)	No EBP (*n*)	EBP (*n*)	*p*-value
Age	65.86±11.15	66.76±10.87			
Gender (Male)			34	49	0.884
Race (Black)			2	4	>0.999
ASA Score (≥ 2)			74	113	0.009
Operating Time (≥ 74 minutes)			67	104	0.06
Pre-operative blood transfusion			0	0	>0.999
Corticosteroid use			2	7	0.308

Note. *n*=frequency

Fisher exact test (FET) was used to analyze the significance of difference in comorbidities between the two groups presented in Table 4. The level of significance was set to a p-value < 0.05. Cerebrovascular accident (CVA) and transient ischemic attack (TIA), when compared between two groups (0% No EBP; 3% EBP), showed no significant differences, p = 0.141, FET. Coronary artery disease (CAD) with 1% and 17% for No EBP and EBP group respectively showed a significant difference (p<0.001, FET). Diabetes from both groups (2% No EBP; 23% EBP) showed a significant difference, p<0.001, FET. History of blood clots from 1% of patients in the No EBP group, when compared with 4% of patients in the EBP group, showed no significant difference (p = 0.404, FET). Mental health issue was 10% in the No EBP group and 30% of patients in the EBP group, with a significant difference (p = 0.001, FET). Cardiac surgery between two group (1% No EBP group; 3% EBP group) showed no significant difference, p = 0.401, FET. Hypertension had a significant difference between the two groups at p = 0.001 level (37%, No EBP and 80%, EBP). Both COPD and bleeding disorder, when compared between two groups, showed no significant differences, p>0.999, FET. Pulmonary disease showed a significant difference between two groups (No EBP, 2% and EBP, 15%) at a p-value of 0.003, FET. Hypothyroidism showed a significant difference, p = 0.001, FET. Lastly, both psychoses and cancer showed no significant differences with a p-value of >0.999 and 0.221 respectively.

In summary, none of the demographics factors showed a significant level of differences between two groups. Among the non-modifiable risk factors, only the ASA score of ≥ 2 showed a significant level of difference between two groups. All modifiable risk factors (i.e., active smoker, BMI, and presence of comorbidities) have a significant level of differences between two groups. Lastly, the comorbidities that showed a significant level of differences between the two groups were CAD, diabetes, mental health issue, hypertension, pulmonary disease, and hypothyroidism.

The number of patients assessed with modifiable risk factors and protocol interventions applied were collected (Table 5). There were 12 active smoker patients wherein two (2) patients agreed to use the nicotine patch during the hospital stay. On the contrary, ten (10) patients refused the nicotine patch. Three (3) patients agreed to and enrolled in the smoking cessation program while nine (9) patients declined the program. No active smoker was readmitted.

There were 44 patients assessed with BMI as a risk factor for readmission. Thirty-five (35) patients identified with this risk refused nutritional counselling and only seven (7) agreed to see a nutritionist for weight management. Almost every patient (95%) was encouraged to enroll in an out-patient weight loss/gain program. Four (4) patients were readmitted with this risk factor. Two (2) patients were unable to be counseled due to communication barrier.

The presence of two or more comorbidities were identified in 91 patients, thus protocol interventions were applied. Complete and accurate admission reconciliations were completed in 46% of the patients. Additionally, ninety-three percent (93%) of the patients were able to continue their home medication unless contraindicated.

Table **3**

Modifiable Risk Factors

Factors	No EBP (*n*)(Percentage)	EBP (*n*)(Percentage)	*p*-value
Active Smoker	0(0%)	12(10%)	0.002
BMI	0(0%)	44(38%)	<0.001
Presence of Comorbidity	0(0%)	91(79%)	<0.001

Note. *n*=frequency

Discussion

Hospital readmissions as an outcome measure financially affect acute care health-

Table 4

Comorbidities Risk Factors

Comorbidities	No EBP (*n*)(Percentage)	EBP (*n*)(Percentage)	*p*-value
CVA/TIA	0(0%)	4(4%)	0.141
CAD	1(1%)	19(17%)	**<0.001**
Diabetes	2(2%)	27(23%)	**<0.001**
History of blood clot	1(1%)	5(4%)	0.404
Mental Health Issue	8(10%)	34(30%)	**0.001**
Cardiac Surgery	1(1%)	4(3%)	0.4001
Hypertension	31(37%)	92(80%)	**<0.001**
COPD	1(1%)	1(1%)	>0.999
Bleeding Disorder	0(0%)	0(0%)	>0.999
Pulmonary Disease	2(2%)	17(15%)	**0.003**
Hypothyroidism	5(6%)	27(23%)	**0.001**
Psychoses	0(0%)	1(1%)	>0.999
Cancer	5(6%)	14(12%)	0.221

Note. *n*=frequency

Table 5

Modifiable Risk Factors and Protocol Intervention

Modifiable Risk Factors	Number of patients identified by the protocol	Number of patient where protocol intervention was applied		Number of readmitted patient	Anecdote
		Nicotine Patch	Smoking cessation Program		Five (5) out of 12 received interventions
Active Smoker	12	2	3	0	
		In-patient nutritional counselling	Out-patient weight loss/gain program referral		
BMI	44	7	42	4	Thirty-four (35) patients refused nutritional counselling. Two (2) patients unable to communicate.
		Compete & accurate admission medical reconciliation	Continuation of home meds unless contraindicated		
Presence of comorbidities	91	42	85	4	

care facilities. The TJA 90-day readmission rate outcome of this pilot EBP project was 3.03%. This was a 6.87 % significant decrease from 9.9% TJA 90-day readmission a month prior to pilot testing. Surprisingly, none of the demographics (i.e ., male gender and Black race) showed association with readmission contraryto the findings of Paxton (2015), Pugely (2013), Singh (2013), and Zmistowski (2013). Age also was not correlated with readmission in this project contrary to the findings in the studies by Avram (2013), Clement (2013), Inneh (2014), Pugely (2013), Saucedo (2013), and Paxton (2015). These findings could be attributed to the small number of male and black patients included in the project as well as the mean age (41% male 3% Black; age 66.21 ±11.19). The findings of this project that age, race, and gender was not associated with readmission concurred with the studies of Khier (2014) and Mesko (2014).

Assessment of non-modifiable risk factors is an invaluable part of the protocol. Although no intervention can address the problem, understanding its statistical significant cannot be underestimated. Awareness of these risk factors give clinicians the upper hand in preventing readmission. This project found that only the ASA score of ≥2 was associated with readmission. This finding is similar to the study outcome of Inneh (2014). Additionally, the studies of Schaeffer (2015) associated the ASA score of ≥3 while Pugely (2013) Tayne (2015) associated higher ASA score with readmission. This finding could be ascribed to the number of patients with ASA score of ≥2, which is 98%. Additionally, the low threshold for ASA score set by the DNP student could have contributed to this result. Non-modifiable risk factors included in the protocol (i.e., operating time ≥ 74 minutes, pre-operative blood transfusion, and corticosteroid use) were not associated with readmission. The operating time which was not associated with readmission was contrary to the finding of Inneh (2015) and the pre-operative blood transfusion found in the study of Mesko (2014). Moreover, the no association of corticosteroid use to readmission in this project did not concur with the study of Mednick (2014) and Pugely (2013).

Assessment of modifiable readmission risk factors is the most critical part of this project. Identification of these factors allowed the nurse to intervene and prevent readmission. These risk factors include active smoker, BMI, and presence of comorbidities. The finding of this project showed the association of these risk factors to readmission.

Table 6

Readmission Rate

Outcome measure	Number of admitted patients	Number of readmitted patients	90-day readmission rate
Readmission rate before project implementation (February 2017)	181	18	9.9 %
Readmission rate after project implementation (March 15-April 15, 2017)	198	6	3.03 %
Decrease in readmission rate			6.87 %

Finding of this project that active smoking was associated with readmission concurred with the TJA 30-day readmission study by Ayers (2015). There were only two (2) and three (3) patients who agreed to use a nicotine patch and enrollment in a smoking cessation program. This was a small number of active smoker that agreed with the interventions and resulted in four (4) readmissions.

Numerous studies (Clement, 2013; Khier, 2014; Mednick, 2014; Paxton, 2015; Pugely, 2013; and Saucedo, 2103) collaborated the finding of this study that BMI was associated with readmission. The association of BMI with readmission of previous studies varies from 30 to 90-day readmission rate as well as BMI of ≤18 kg/m2 or ≥30 kg/m2. On the contrary, studies of Mesko (2014) and Tayne (2015) refuted this finding. There were four (4) readmitted patient in this project identified with BMI risk factor. Although only 16% of patient had nutritional consult, the DNP student estimated that 95% of patients who were informed of their risk of readmission and encouraged to address the issue affected the low readmission rate.

There is disagreement on which particular comorbidities is associated with readmission in the literature reviewed for this project. Previous studies utilized numerous comorbidities data collection tool. These tools include Charlson Comorbidity Index (CCI), Elixhauser Comorbidity Data Collection Tool, and mostly study-tailored comorbidity data collection tool. The comorbidities in this project that was associated with readmission include CAD, diabetes, mental health issues, hypertension, pulmonary disease, and hypothyroidism. Coronary artery disease (CAD) association with readmission in this project concurred with the studies of Boraiah (2015) and Saucedo (2013). The association of diabetes with readmission was acknowledged in these studies (Boraiah, 2015; Mednick, 2014; and Schairer, 2015). This project associated hypertension with readmission and was also recognized in a study by Mednick (2014). The association of pulmonary disease and hypothyroidism with readmission in this project concurred with the study by Paxton (2015).

This project found that the presence of two or more comorbidities was associated with readmission is consistent with the findings of studies by Ayers (2015), Mesko (2014) and Paxton (2015). There is only one study by Tayne (2015) that countered this finding.

In summary, this project found the association of ASA score of ≥2, active smoker, BMI (≤18 kg/m2; ≥35 kg/m2), and the presence of two or more comorbidities with a risk of 90-day readmission. Additionally, the comorbidities associated with readmission include CAD, diabetes, mental health issues, hypertension, pulmonary disease, and hypothyroidism.

To conclude, the development of this TJA readmission risk assessment protocol was a challenging and laborious task. The complexity of the problem and differences in the outcomes in literature complicated the development. Despite all of these challenges, the clinical implication of this project is valuable. This protocol will not only positively affect acute care facilities financially but more importantly is its significance in patient care. Further study is recommended to test the TJA readmission risk assessment protocol's validity.

Evaluation

Limitations.

There were no means to ascertain whether patients with identified modifiable risk factors complied with recommended interventions. These interventions range from quitting smoking, attending smoking cessation program, and outpatient weight gain/loss referral program after discharge from the institution. Another notable limitation is the use of the electronic medical record in collecting comorbidity data. Additionally, the complete and accurate discharge medication reconciliation and the detailed discharge home instruction cannot be established. Another major limitation in the outcome measure, readmission rate, was the number of patients readmitted to other acute care facilities outside of the healthcare organization. There was no way to determine the number of readmissions to other facilities.

Recommendations and Implications

The TJA readmission risk assessment protocol development and implementation in a pilot project at an acute care tertiary facility is challenging. This additional task for already overworked nurses could result in ineffective application of the protocol. The TJA readmission risk assessment protocol pilot project resulted in a significant decrease in readmission rate. This result is valuable in achieving the institution's commitment to excellence. In order to incorporate the readmission risk assessment protocol into practice, result of the pilot project must be communicated to all staff in the unit and result published. Additionally, the use of the protocol is recommended to be part of new hire orientation program and be included as a unit policy. The inter-disciplinary team (i.e., physician, nutritionist, and smoking cessation program coordinator) must play an active role in ensuring that interventions are applied. Lastly, more research should be done to validate the protocol and evaluate its continued effectiveness.

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Integration of a End-of-Life Care Course in the Undergraduate Curriculum and its Impact on Nursing Students' Knowledge Towards End-of-Life Care.

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Abstract

Nurses play a crucial role in palliative and end-of-life (EOL) care. They assess and manage complicated diseases, monitor multiple technologies, and orchestrate respectfully culturally competent care with the interprofessional team when caring for seriously ill patients (IOM, 2015). Studies indicate that nurses spend more time with patients at EOL than any other health care discipline, so it is vital that nurses be educated so they can provide high-quality palliative and EOL care (Foley &Gelband, 2003). Traditionally, nurses have not received extensive education on how to care for dying patients and their families. This lack of education is reflected in the level and quality of EOL care provided to patients. Nursing school's undergraduate curricula have been lacking both in palliative and EOL didactic education and clinical experiences (Mallory, 2003). Thepurpose of this evidence-based study was to examine the impact of palliative care course on nursing students' knowledge towards providing end-of-life care. Evaluating the outcomes of a palliative care course can lead to curricular changes and provide a basis for decisions related to the best approaches for addressing end-of-life care in nursing curricula.

Introduction

Nurses play a key role in caring for patients with serious illness in today's complex health care system. This demands that nurses and members of the inter-professional team be educated in palliative and EOL care (IOM, 2015).Of all health professionals, nurses are in the most immediate position to provide care, comfort, and counsel near the end of life for patients and families, either in a hospital or in a hospice setting (Mitka, 2000). In nursing schools, more attention is given to death and dying, yet the amount of content that deals with the wide range of end of life issues continues to be minimal (Walsh & Hogan, 2003).Therefore, it is imperative that future nurses be prepared with the knowledge and skills to meet the needs of patients and families across the lifespan, the illness trajectory, and health care settings (Coyle, 2015).

The IOM Report, Dying in America, (2014) devoted one of its four key recommendations to the importance of preparing future health care professionals, especially nurses, in basic palliative care. Nurses are the largest sector of health care professionals and they are the ones who spend the most time at the bedside of patients and families. Because of the increasing acuity and complexity of patient care, new graduates are expected to be competent in caring for patients who are seriously ill and their families from the onset of their professional career. Thus, it is critical that undergraduate nursing students receive education and training in palliative and EOL care prior to graduation from their nursing programs (AACN, 2016)

Background and Significance

One of the earliest responsibilities of the professional nurse was care of the dying. Nurses have a long history of leading the efforts of developing policies and guidelines regarding palliative and EOL care. Dame Cicely Saunders began her career as a nurse and founded the first free standing hospice, St. Christopher's Hospice in 1967 in London, England. Florence Wald, former Dean at Yale School of Nursing, funded the first hospice in the United States in 1974.

Historically, there has been a lack of palliative and EOL care content in nursing textbooks, as well as very few nursing faculty with palliative and EOL education. Several studies have analyzed EOL content in nursing textbooks which revealed that only 2% overall content was related to EOL care. Nurse educators are challenged to select effective teaching strategies to prepare graduates to care for the dying since EOL care competes with other nursing content for a place in the curriculum. This was the initiation by Ferrell and colleagues to collaborate with the National Council of State Boards of Nursing (NCSBN) to improve the EOL content in the national nursing licensure examination for registered nurses (NCLEX-RN). Beginning with the April 2001 examination, EOL content was increased in the NCLEX by incorporating the 15 competencies set forth by the Peaceful Death document. This was a significant force in increasing EOL content in the nursing curriculum (Malloy, 2015).

Nursing faculty, continuing education providers, and staff development educators have to be educated so that they can teach the next generation and practicing nurses about this vital care. This also led to the development of the national project, the End-of-Life Nursing Education Consortium (ELNEC), originally funded by the Robert Wood Johnson Foundation (RWIF) in 2000. The ELNEC-Core Curriculum consists of nine

Table 1. A comparison between the PCQN total scores from the pre-test and post-test for three answer choices			
PCQN answer choice N=80	Pre-Test M(SD)	Post-Test M(SD)	P-value
True	8.73(2.33)	10.66(2.02)	0.001
False	7.33(2.08)	8.13(2.09)	0.05
I don't Know	3.90(2.40)	1.45(1.56)	0.19
Significance level was set at 0.05			

modules: nursing care at the end-of-life, pain management, symptom management, ethical/legal issues, cultural considerations, communication, grief/loss/bereavement, achieving quality care, and care at the time of death.

They identified 15 core competencies with the purpose of assisting nurse educators in incorporating end-of-life content into nursing curricula. The mission of the consortium is to prepare specially trained nurse educators to provide end-of-life education for nursing students and practicing nurses, as well as to provide resources to facilitate that instruction (AACN, 2010). The "train-the -trainer" model continues to be used today, as attendees learn about the up-to-date palliative care, constructed on evidence-based practice. This is in concert with the IOM report (2010), The Future of Nursing: Leading Change: Advancing Health "to respond to the need to assess and transform the nursing profession." According to this IOM report, schools of nursing must provide more opportunities for students to expand their clinical experiences in primary care, long-term care, and public health. Instead of having students memorize various tasks, fundamental concepts need to be taught and higher level of competencies introduced, which revolve around knowledge and decision-making that can be applied across all clinical settings and various diseases (Malloy, 2015).

Theoretical Framework

The Transformative learning theory by Mezirow will provide the framework for this study which states that adult learners incorporate new learning into their belief systems and alter or abandon former views. It was hypothesized that nursing students in this study would gain knowledge towards providing end-of-life care after taking the ELNEC undergraduate course.

Methods

Design and Sample

A quantitative, quasi-experimental study with a pre-test and post-test was used to analyze the differences in the scores.The sample consisted of junior students (n=80) enrolled in the Adult Health I course.

Instrument

The instrument used to collect data for this study is the Palliative Care Quiz for Nursing (PCQN). The PCQN measures students' knowledge of end-of-life care. The quiz contains 20 questions with possible responses of "True", "False", or "I don't know". Sample items include the following: "Adjuvant therapies are important in managing pain"; "Suffering and physical pain are synonymous"; and "The pain threshold is lowered by anxiety or fatigue." The PCQN has 3 subscales: (a) philosophy and principles of palliative care, (b) pain and symptom management, and (c) psychosocial and spiritual care (Ross, 1996).

End-of-Life Course

Students had to complete the ELNEC Undergraduate online curriculum designed specifically for nursing students.This coursemeets competencies and recommendations of the new AACN CARES Document (2016). The course consists of six one-hour modules. The topical outline for this course includes: Introduction to palliative care nursing, communication, pain management, symptom management, loss, grief and bereavement, and final hours of life (ELNEC, 2017). Students were also required to complete the PCQN before and after completing the ELNEC course. Completion of the quiz was completely voluntary, and students were informed that participation or nonparticipation would have no effect on their grades for Adult Health 1 course. There was no identifying information on any of the forms and return of the completed quiz was considered to imply individual consent.

Data Collection and Analysis

The PCQN was administered during class time during the thirdweek of the junior semester. Students then completed the ELNEC course and the PCQN was administered again during the final week of the semester. A paired t-test was used to determine the differences in the knowledge before and after the students took the ELNEC course, and the significance level was set at 0.05 using SPSS statistical software.

Results

From the pre-test results, most students answered questions in a negative form as "False" or "I don't know" to many philosophical and principles of palliative care. Consequently, pain and symptom management received more true answers because they were related to direct nursing care. Hence, psychosocial and spiritual care received most "I don't know" choices during the pre-test when compared to the post-test. There were significant differences between the true and false answer choices when the total scores from the pre-test andpost-tests were compared

Discussion

These results showed that students need additional support or a specific course to ascertain knowledge for end-of-life care, because most students may have never encountered an EOL event. Students chose "false" or "I don't know" answers to most of the palliative and spiritual questions or statements because of a lack of exposure and societal or spiritual norms dealing with difficult situations that encompasses death. However, after completing the ELNEC course, students chose more true answers to many questions that they were not sure about prior to the course. Although students or young adults may have witnessed a loved one during an EOL encounter, however the probability of actively participating in care was not likely. Thus, students need to be prepared to enter a profession where they will become an active participant in more than one EOLevent.This study will provide an example of a school of

nursing responding to the Institute of Medicine and the American Association of Colleges of Nursing's recommendations for end-of-life care to be incorporated into nursing curricula thus preparing nursing graduates for care of these patients.Nursing students who are more knowledgeable may be more sensitive to the needs of patients undergoing end-of-life care, which allows for better patient advocacy.

Limitations

This study used a convenience sample of undergraduate students from the same academic institution and was conducted on junior students, therefore, cannot be generalized to other populations of students or academic settings. Replication of this study using another cohort of students during the junior semester would provide a means of generalizing the study findings.

Conclusion

Study results should be of interest to nurse educators as they develop courses and curricula. Findings from this study may support the importance of an ELNEC-based course to increase students' knowledge about end-of-life and improve end-of-life care instruction in both clinical and academic education settings (Robinson, 2016).Nurses spend the most time of any health care professional caring for patients and families dealing with the challenges of serious illness. The demand for nursing expertise in palliative and end-of-life care is growing as more people are living with chronic illness. Nursing faculty must prepare future nurses to meet this demand. (AACN, 2016). In summary, significant preparation and changes in the behavior towards palliative and EOL care for nurses will be better achieved if it is included in the nursing curriculum.

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Interprofessional Collaboration: Towards Improvement of Health Care Outcomes

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Abstract

Interprofessional collaboration among health care workers is more than practicing together in the same setting. Interprofessional collaboration involves agreement, communication, shared understanding and synergy. This paper describes effective interprofessional collaboration and discusses improved health care outcomes achieved through effective interprofessional collaboration.

***Keywords*: interprofessional collaboration, health care outcomes**

Advances in medicine and technology such as gene therapy and editing, development of new vaccines and medications, and the digitalization of health care have made health care complex. Despite these advances, teamwork and collaboration among health care personnel remain important. Interprofessional collaboration contributes to fostering a culture of safety (Kohn, Corrigan, & Donaldson, 2000), preventing medical errors (The Joint Commission, 2015), and delivering high quality care to patients and populations (World Health Organization, 2010). It is a social responsibility of health professionals to collaborate in order to provide optimal services to communities (Institute of Medicine, 2013). The purposes of this paper are to describe effective interprofessional collaboration and to discuss improved health care outcomes achieved through interprofessional collaboration.

Interprofessional collaboration

Definition

Merriam-Webster's Collegiate Dictionary (2018) defines collaborate as "to work jointly with others or together especially in an intellectual endeavor." Interprofessional collaboration among health care workers is more than practicing together in the same setting. Interprofessional collaboration is the process where two or more health workers from different professional backgrounds with complementary skills work together with patients and communities to deliver the highest quality of care (Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017; World Health Organization, 2010).

Effective interprofessional collaboration

The World Health Organization's (WHO) Framework for Action on Interprofessional Education and Collaborative Practice describes components of effective interprofessional collaboration (WHO, 2010). The framework has mechanisms and a series of action items identified to achieve effective interprofessional collaboration in any health setting. The mechanisms include interprofessional education, collaborative practice, and health and education systems.

Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010, p.10). Action items under educator mechanisms include having champions, institutional support, managerial commitment, shared objectives, and staff training. Action items under curricular mechanisms include adult learning principles, assessment, compulsory attendance, contextual learning, learning outcomes, logistics and scheduling, and programme content. Effective training of health workers in interprofessional education produces a collaborative practice-ready workforce (WHO, 2010).

Mechanisms under collaborative practice include institutional supports, working culture, and environment. Action items under institutional supports include government models, personnel policies, shared operating procedures, structured protocols, and supportive management practices. Communication strategies, conflict resolution policies, and shared decision-making processes make up actions items under working culture. Action items under environment include having a built environment, facilities and space design. Interprofessional collaboration is more than putting health professionals to work in the same setting and expecting them to collaborate efficiently. It involves regular negotiation to reach agreement, maintaining effective communication, developing trust, having a common purpose and shared understanding, and having synergy (Eisler & Potter, 2014; WHO, 2013; WHO, 2010).

Mechanisms under health and education systems include health services delivery and patient safety. Action items under health and education systems include capital planning, commissioning, financing, funding streams, and remuneration models. Mechanisms under patient safety include accreditation, professional registration, regulation, and risk management.

The context of the location where health care is delivered, the health conditions being addressed, and the population being served are considerations on the choice of mechanisms and action items within the framework to be utilized. Successful interpersonal collaboration requires a commitment from leaders of health systems, the community and the government (WHO, 2010).

The WHO (2013) conducted six case studies in primary health care on interprofessional collaborative practice in nursing and midwifery using the framework to examine the mechanisms that shaped these primary health care settings. The case studies were conducted in countries representing settings that are resource-rich such as Alberta and Ontario in Canada, and Philadelphia in the US; and resource-challenged such as Porto Alegra in Brazil, Eastern Cape in South Africa, and Andra Pradesh in India. Despite the variation in settings, common mechanisms were identified that enabled interprofessional education and collaboration. These mechanisms were shared vision, shared governance, government infrastructure, supportive legislation for health and education sectors, dedicated funding and resources, and strong linkages between academia and clinical sites.

Health care outcomes

Effective interprofessional collaboration optimizes health care services, strengthens health systems, and improves health care outcomes (Breitbach, Reeves, & Fletcher, 2017). There are many benefits of interprofessional collaboration including reduced error, decreased length of stay, improved health, better pain management, improved quality of life, higher patient satisfaction, and reduced health care costs (Ash, Miller & Zaccagnini, 2017; Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017). These benefits are observed in various health settings and have been the subject of studies.

Patient and community outcomes

Reeves, Pelone, Harrison, Goldman, and Zwarenstein (2017) did a systematic review on interprofessional collaboration to improve professional practice and healthcare outcomes. The objective of this review was to assess the impact of practice-based interventions to improve interprofessional collaboration compared to usual care or to an alternative intervention on health outcomes. Health outcomes were classified as primary or secondary outcomes. Primary outcomes included patient health outcomes, and clinical process or efficiency outcomes. Secondary outcomes were related to collaborative behavior.

Patient health outcomes that were studied were mortality, morbidity, disease incidence, disease duration, cure rates, quality of life measures, functional status, complication rate, and patient assessed quality of care. Clinical process or efficiency outcomes included readmission rates and adherence to recommended practices by healthcare providers.

The authors found nine relevant studies out of 2493 abstracts. These studies were across primary, secondary, tertiary, and community care settings in Australia, Belgium, Sweden, UK, and USA. The review had several findings. It found that externally facilitated interprofessional activities may slightly improve patient functional status, health care professional adherence to recommended practices, and use of health care resources. It also found that use of interprofessional rounds and checklists may slightly improve the use of healthcare resources. Finally, interprofessional meetings may slightly improve adherence to recommended practices and use of health care resources (Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017).

Gougeon, Johnson, and Morse (2017) did a systematic review of interprofessional collaboration in health care teams for the maintenance of community-dwelling seniors receiving home care in Canada. The review suggested that interprofessional teams have greater positive effects on patient-reported measures of health such as increased satisfaction with care and quality of life than direct measures of health such as decreased visits to the emergency room and hospitalization.

Grant and Kanji (2017) explored the interprofessional relationships between dental hygienists and health professionals in rural Canadian communities. They concluded that interprofessional collaboration had the potential to improve access to comprehensive oral health and health care services in rural communities reducing the disparity between rural and urban health care access and knowledge deficit. Their research indicated that collaboration between dental hygienists and public health nurses increased overall health and disease prevention in underserved populations.

Health worker outcomes

Kaiser, Patras, and Martinussen (2018) did a meta-analysis of studies of health workers to examine the relationship between interprofessional work and employee outcomes of job stress, autonomy, burnout, engagement, job satisfaction, turnover intention, and perceived service quality. In this study, interprofessional work referred to teamwork, collaboration and cooperation. Interprofessional work was found to be negatively related to job stress, burnout, and turnover intention; and positively related to autonomy, engagement, job satisfaction, and perceived service quality.

Rural health services in Canada encountered problems with recruiting and retaining health professionals mainly due to a feeling of isolation (Grant &Kanji, 2017). Interprofessional collaboration had improved retention of health professionals by encouraging a sense of community and synergy within the interprofessional team.

Organizational benefits

Eisler and Potter (2014) reviewed the benefits of interprofessional partnerships at the organizational level. These benefits include: employees feeling valued and empowered to contribute and participate; conflict used creatively to explore solutions; creativity nurtured to allow risk taking; communications flow freely; a family friendly workplace, with a sense of community; and, synergistic belonging that extends outside the organization, fostering an environment that supports long range planning and sustainability.

Summary

Effective interprofessional collaboration remains an important factor in managing the complexity of today's health care. The World Health Organization (20101) put forth a framework for interprofessional collaboration. The benefits of interprofessional collaboration were many as described in multiple studies.

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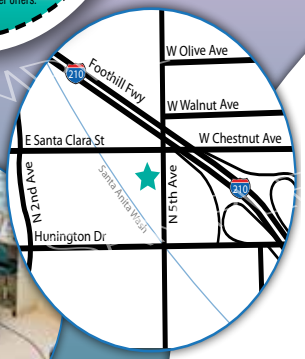

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Interprofessional Education and Patient Outcomes

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Introduction

The idea that teams and collaborative practice can improve health care outcomes has been around for over 50 years. During this time, many have tried to use a variety of approaches for educating healthcare professionals to work in teams with very limited success.

In the late 1990's andearly 2000s, the Institute of Medicine issued a series of reports that raised concerns about medical errors, patient safety and the quality of health care delivered in the United States. Based on these reports, the IOM recommended that all healthcare student education should focus on patient centered care and that their education and training should include experiences working with interdisciplinary teams, using evidence-based practice, applyingquality improvement and utilizing informatics (Olenick, et.al, 2010).

Interprofessional education (IPE) occurs when students of "two or more professions learn with, from, and about each other to improve collaboration and the quality of care" (Centre for the Advancement of Interprofessional Education (CAIPE), 2002, para 1; WHO, 2010). Interprofessional education includes learning in both academic and clinical settings, before and after qualification, certification or licensure.The complex and constantly changing healthcare system requires an effective interprofessional communication and collaboration in order to provide safe and quality care to patients.

In order for collaborative relationships to occur, role clarity among the team members as well as mutual and ongoing focus on patient-centered care are essential. According to the World Health Organization (2010), Interprofessional education (IPE) aims to develop these competencies of role clarity, team functioning and person-centered care for a collaborative workforce. Equipped with these competencies, the workforce will be better prepared to tackle the challenges of the current complex and ever-changing health care environment.

History of IPE

The initial idea of promoting team based education for the United States health professions was discussed at the first Institute of Medicine conference in 1972, where one hundred and twenty leaders from different health professions met to envision the possibility of interprofessional education. These leaders believed that interprofessional education would enable health professions students to learn interactively with students outside of their professions with the aim of building a safer and better patient-centered and community/population oriented health care systems for the United States. A committee at this 1972 IOM conference was formed to work on the idea of interprofessional education. A few proposals were made that included the following: use of existing workforce to optimally and cost-effectively meet patient, family and community healthcare needs; established that educational institutions have a responsibility to not only to educate a responsive healthcare workforce, but also to ensure that they practice to their full scope of expertise; and the healthcare workforce is a cooperative team sharing common goals that includes the patient, family and community in improving care. The committee found that the existing educational system was not preparing health professions for team work.

In 1978, the World Health Organization identified interprofessional education as an important component of primary healthcare. In 1988, the WHO identified collaborative medical education as an essential element in healthcare. IOM issued two reports concluding that all health care student education should focus on patient centered care and training in interdisciplinary teams, evidence based- practice, quality improvements and use informatics. (Olenick, et.al, 2010).

In 2009, six national associations of schools of health professionals representing dentistry, nursing, allopathic medicine, osteopathic medicine, pharmacy and public health formed a collaborative called the Interprofessional Education Collaborative (IPEC). The purpose of IPEC is to promote and encourage the advancement of interprofessional learning and prepare future healthcare professionals for team-based care of patients and improve population health outcomes. The current members of IPEC are: American Association of Colleges of Nursing (AACN), American Association of Colleges of Osteopathic Medicine (AACOM), American Association of Colleges of Pharmacy (AACP), American Dental Education Association (ADEA), Association of Medical Colleges (AMS), and Association of Schools of Public Health (ASPH). The IPEC believes that in order to deliver high quality, safe and efficient care, and meet the public's increasingly complex health care needs, the educational experience must shift from one in which health profession students are educated in silos toone that fosters collaboration, communication and a team approach to providing care. To energize leaders and continue the mission of interprofessional education, IPEC holds regular national conferences. In addition, interprofessional education has been required for accreditation of the various health professions.

Theoretical Foundation of IPE

Interprofessional education introduces a pedagogy with its own classification that aims to recontextualize traditional and distinct bodies of professional knowledge into the knowledge of collaborative practice. Most prelicensure education in uniprofessional, in which students learn together as a single group and do not learn with or alongside other professional groups. IPE tries to expose students to the roles of other healthcare professionals and teach the delivery of interprofessional care (Schmitt, 1994).

Contact theory, a social psychology theory has been used in interprofessional literature (Carpenter & Hewstone, 1996). Allport (1954) developed contact theory, which postulates that the most effective way to reduce tension between groups is to bring them together. Allport (1954) also proposed that the following conditions must be met in order for the theory to bring positive changes: 1) equality of status between groups; 2) groups must work on common goals; 3) cooperation of the groups during their contact.

Based on this theory, interprofessional teaching will expose the undergraduate students to effective relationships with the healthcare team and they will overcome the

traditional ways of knowing how be a professional practitioner, that of working in silos. Research has shown that positive patient outcomes and reduction of medication errors have been attributed to better communication among health team members (Salvatori & Solomon, 2005).

Framework for Interprofessional Education

In 2010, the Interprofessional Education Collaborative (IPEC) published four competencies to serve as framework to guide the implementation and evaluate the outcomes of interprofessional education and collaborative practice across academic institutions. The competencies are:

1. Values and Ethics for Interprofessional Practice: Act with honesty and integrity in relationships with patients, families and other team members. Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team-based care.

2. Roles and Responsibilities for Collaborative Practice: Communicate one's role and responsibilities clearly to patients, families and other professions. Explain the roles and responsibilities of other care providers and how the team works together to provide care.

3. Interprofessional Communication: Choose effective communication tools and techniques, including information systems and communication technologies, for facilitating discussions and interactions that enhance team function.

4. Interprofessional Teamwork and Team-Based Care. Engage other health professionals-appropriate to the specific care situation-in shared patient-centered problem solving. Reflect on both individual and team performance improvements.

Strategies for Teaching Interprofessional Education:

Interprofessional learning is the most direct consequence and goal of interprofessional education (Billings and Halstead, 2016). Components of interprofessional learning include experiential learning where knowledge is acquired through experiences and social learning where knowledge is acquired through social activity. Both components maybe learned through actual clinical experiences with the healthcare team and or though interactive teaching methodologies such as:

1. Use of simulation in a Communication Skills Laboratory

Identify the who, what, why and how of the scenario. Make sure the scenario has something to offer for each profession participating in the simulation experience.

2. Gross Anatomy Dissection Course or any interprofessional course

Interprofessional education can take place at any place or any time within a health or social professional curriculum. Gross Anatomy is an appropriate course for IPE because almost all health professions curriculum requires Anatomy and Physiology. Anatomy is typically a content intensive course. A qualitative study in Sweden exploring the experiences of medical students with their anatomy courses revealed that learners acquire knowledge of anatomy in 3 ways: through memorizing, by contextualizing and by experiencing. It was recommended that both contextualization and experiential learning were most effective in helping students retain knowledge of anatomy and physiology (Wilhelmsson, et.al, 2010).

3. Role Play:

Role Play is a dramatic technique that encourages participants to improvise behaviors depicting expected actions of persons involved in the defined scenario. The situation or scenario maybe scripted and rehearsed, but may be spontaneous and unscripted. In role playing, the participants explore why they behave as they do. They can test communication skills, behaviors and decisions made in a safe environment that allow experimentation without risk. This is an excellent teaching strategy for IPE students to practice interacting with others in certain roles and to have the opportunity to experience other people's reaction to actions they have taken. Role play develops communication competence, team work and problem solving skills.

4. Problem-based learning:

Problem-based learning (PBL) is an educational process in which learning is centered on problems as opposed to discrete, subject-related courses. In small groups, students are presented with patient scenarios or problems, generate learning issues related to what they need to learn to understand and solve the problem, engage in independent self-study, and return to their groups to apply their new knowledge to the patient problem. The role of faculty in this strategy is that of a facilitator and students are active rather than passive learners.

5. Small group learning:

Small group learning provides the opportunity for students to develop responsibility for their own learning and allows them to develop a sense of responsibility to accurately represent the knowledge and skills base of their own profession. In this type of learning, the students also develop interpersonal skills, awareness of their own emotional reactions and moral standing. Learning how to listen, provide, and receive evaluative feedback are components of small group learning that are essential for teamwork.

These interactive teaching methodologies are based on andragogy (Adult Learning theory) where students learn in a non-hierarchical, de-centered environment (Olenick, et.al, 2010). Interprofessional education content may include diverse topics from simple communication among professionals and knowledge about specific health care professions to complex discussions of ethical or culturally sensitive issues. Interprofessional learning content maybe presented either intracurricularly (embedded into the curriculum) or extracurricularly (outside of regular class hours).

Evaluating interprofessional Education

It is imperative that healthcare professionals be educated interprofessionally in order to deliver quality team-based approach to patient care. Studies have been done to assess what students have learned about interprofessional collaboration and teamwork in courses. In a mixed method study done by Fernandes et.al. (2015), the quantitate results showed that both the "perception of actual cooperation" and "competency and autonomy" subscales within the Interdisciplinary Education Perception Scales by McFadyen, Maclaren, and Websterdemonstrated statistically significant positive change ($p<0.05$). Similar results were seen using the Readiness for Interprofessional Learning Scale by McFadyen, et al, where "teamwork and collaboration," "positive professional identity," and "roles and responsibilities" subscales showed statistically positive change ($p< 0.05$). Qualitative findings are similar with the following themes: 1) learning about self and others, 2) learning about anatomy, 3) experiencing the benefits of a long-duration IPE initiative (developing pride and faith), and 4) going forward (commitment to future interprofessional practice) (Fenandes, et.al, 2015).

To advance Interprofessional Education and Clinical Practice, the Interprofessional Education Collaborative (IPEC) continue to hold regular national conferences. In addition, accreditation bodies for each professional academic institution require the incorporation and evaluation of interprofessional education in its curriculum.

There are still barriers to the realization of interprofesional education and collaborative practice in this country. In order for IPE to occur constantly, there must be willingness on the part of all health care professionals to change the way they educate and practice. This requires changes in tradition, education and practice which may result in changing the current healthcare model. But change is difficult and slow. Despite the many benefits associated with this type of learning, IPE is complex and time consuming. It is very challenging to implement in prelicensure curriculum because of incompatible clinical shifts, timetables and rigid curriculum. In addition, faculty interest, proficiency in applying adult learning principles and expertise in finding opportunities for IPE have been factors in preventing interprofessional education. Funding for faculty development in this area is also lacking. In addition, IPE must be endorsed and mandated by programs with full support from senior administration and faculty champions who are committed in implementing IPE in their institutions.

Since nurses are an integral part in the delivery of team-based, patient, family and community centered care, nurse educators must collaborate with other health professions to develop meaningful interprofessional education and practice opportunities for students (Governors,2015.) In addition, these opportunities must acknowledge the changing environment of healthcare and the constant need to improve patient outcomes.

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Collaborative Nursing and Healthcare Research — We've come a long way!

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Objectives:

1. Identify the highlights of the development of Nursing and Healthcare Research from Florence Nightingale to the 21st century.

2. Discuss the essential factors for successful collaborative research using exemplars

Abstract

The development of nursing research started with Florence Nightingale in 1850's. After the publication of "Notes on Nursing" in 1859, not much research was published in the nursing literature. It was only when majority of nurses started to be educated in the universities rather than hospitals, that research became an integral part of nursing. Nursing research course is now part of the undergraduate curriculum and students are introduced early to the importance of healthcare research in nursing practice. Research collaboration with other healthcare professionals results in more meaningful, productive and more robust research.

The purpose of this presentation is to discuss essential factors necessary for successful collaboration: Talent and role clarity, mutual trust and respect, tact or attention to communication mechanism, and time and space. Examples from my own research experiences will also be presented.

Outline

I. Introduction
II. Historical Perspective
III. Definitions
IV. Essential Factors for Successful Collaboration
V. Exemplars

Introduction

I took my undergraduate nursing research course under Dean Julita Sotejo. As those who took their research course under Dean Sotejo know, it was a very scary proposition.

The course was very difficult but I learned to love research. One of the requirements was to formulate an original research clinical problem based on your literature review and clinical experience. This course was the basis for my love of research. As I embarked on my research journey I realized that collaboration is the key to more meaningful and productive research endeavors. As the other speakers have mentioned collaboration is necessary to expand our personal productivity. It was only in the past decade that collaboration has become more prevalent (Bennett & Gadlin 2012) especially in nursing compared to other healthcare specialties.

Historical Perspective

As any nursing student knows Florence Nightingale was the first researcher in nursing and for that matter of healthcare. During the Crimean war, she collected, analyzed and presented data about patient care conditions in the battlefield hospitals. Then she showed the effect of interventions like cleanliness and nutrition markedly decreased morbidity and mortality (Nightingale 1859, 1969). Her "Notes on Nursing" published in 1859 was successful in effecting change in nursing and public health. This has been called the first example of outcomes research and evidence based practice (Norwood, 2010). Not much clinical research was published in the literature for several years. This was due to the educational preparation of nurses in hospitals instead of the universities. The significant events of nursing research were:

Notes on Nursing – 1859 by Florence Nightingale

The Goldman Report – 1923 – identified many inadequacies in the educational backgrounds of nurse teachers, administrators, and public health nurses. Clinical experiences of nursing students and advance preparation were deemed essential for nursing education.

In the 1950's, studies were about education of nurses. Nursing Research first issue published – 1952

International Journal of Nursing Studies – 1963

Research in the 60's and 70's saw increasing numbers of research in education and the development of nursing theory. Several scientific research of nurses had major impact on other healthcare professions such as medicine, sociology, psychology as well as nursing. Quints (1963, 1967) research on the personal experiences of women with breast cancer changed communication and information control in the care of women with breast cancer. It was also at this period that schools begun offering courses in nursing research.

I graduated from UP in 1967 and we already had undergrad research course. We, in the University of the Philippines College of Nursing were certainly in the cutting edge.

In the 80's and 90's there was an increase in nurse researchers with advance degrees in nursing and healthcare. The events that impacted the growth in clinical research were availability of computers and the emphasis of research as an integral part of nursing profession due to increased doctoral programs in nursing. Federal funding from the National Institutes of Health, Center for Nursing Research established in 1986 and elevated to National institute for Nursing Research (NINR) in1993 had a starting budget of $16 million in 1986 (Norwood, 2010; Polit & Beck, 2012) to over $150 million in 2017 (http://ninr.nih.gov/sites/files/docs/NINR-CJ-508c.pdf).

Definitions

Collaboration – is to work jointly with others toward a common goal. It involves cooperation in which parties are not necessarily bound contractually. Collaboration exists when several people pool their common interests, assets and professional skills to promote scientific inquiry to benefit the greater good (Merriam-Webster Dictionary, 2018). No written contract is involved. The term collaboration is interchangeable with networks and communities in the healthcare literature (Aveling et al 2012 ; Cunningham et al, 2012).

Partnership - A contractual relationship between two or more people for joint scientific inquiry (Advance English Dictionary).

Cochrane Collaboration- international network of institutions and individuals who promote evidence-informed health decision-making by producing high-quality, relevant, accessible systematic reviews and other synthesized research evidence.

Evidence-based practice- use of cur-

rent best evidence in making decisions about patient care (Melnyk and Fineout-Overholt, 2005).

Translational Research- research on how findings from studies can best be used in healthcare practice.

Current and Future Research

Today nursing research continues to develop and flourish at a rapid pace.

Focus on Evidence-based practice is using the best evidence in making decisions about patient care. Nurses and healthcare professionals should be able to locate, read and critically evaluate research findings. They can then decide the relevance and credibility of the published research.

Systematic Integrative Reviews now readily available through the highly regarded Cochrane Collaboration which produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other studies of interventions.

Interprofessional or Interdisciplinary Collaboration of nurses and related health care disciplines in order to adapt to the new healthcare environment. Researchers are addressing fundamental problems in fields of biobehavioral and psychobiology.

My research on the Psychological Impact of Implanted Cardioverter Defibrillator is an example of this kind of research. We examined the depression and anxiety levels of patients (Wheeler, Pretzer-Aboff, DiSabatino, et al., 2009). My collaborators were the manager of the cardiac research unit (non nurses), two staff nurses, the nurse practitioner of the physicians' office and a graduate student.

There are now numerous opportunities for nurses and healthcare professionals to work together not only in research but also in healthcare policies.

Dissemination of Research Findings

Electronic communication and the Internet can disseminate information and research findings faster than ever before.

Essential Factors for Successful Collaboration

From my review of the literature as well as from my experience, I put together the essential factors necessary for successful collaboration:

1.Talent and Role Clarity – must be present and recognized by each team member. Each team member must complement each other and each member recognizes each other's strengths. Experts in specific areas such as methodology, statistics, clinical, and analytical must agree on well-defined expectations and goals (Plowfield, Wheeler, Raymond, 2005; McCorkle, 2011). Scientific goals must be central to the collaborative effort.

Role clarity is essential in understanding their own role as well as others' and of being aware of skills and expertise of other team members (Sims, Hewitt, Harris, 2015). My experience in making sure we have actually chosen team members that can contribute meaningfully to the project was not successful at the beginning. If the group was too big and some expertise are duplicated then jealousy might arise and disagreements occur. Another problem I have encountered was when members of the team do not meet their obligations.

My research on the "Psychological Impact of Implantable Cardioverter Defibrillator" (Wheeler , et al, 2009) was almost derailed when one of our team member failed to follow-up on the patients. Our research was a 12- month longitudinal prospective study to tract depression and anxiety levels of implanted ICD recipients. It took us over 2 years to get the number of patients that we needed. One of our collaborators failed to follow-up subjects assigned to her and so we had lost the subjects and had to get new ones.

2. Mutual Trust and Respect – Trust is critical in team building. Trust develops over time as the team works together to achieve common goals (Bagayobo, et al, 2016; Bennett, et al, 2012; Plowfield, et al, 2005). Open dialogue and tact contribute to developing trust. Interaction and communication is imperative in developing a cohesive team. In forming the collaborative team one losses complete control over the process and outcome of the project. Each individual member impacts the overall performance. There is mutual dependence and therefore trust is essential for each member in the team (Bennett, et al, 2012). Prior collaborative relationships shorten the development of trust. The willingness to share ideas, ability to critique and accept criticisms is fundamental ingredient in trust and respect. When we are talking about interprofessional collaboration in research every one is an essential member and their contribution is of equal importance to achieve set goals. Professional hierarchy can be a deterrent in team building. An example is when a physician is in the research team the expectation is that they will only be consulted when most of the data collection is done or that they will lead the team. Example: I was invited by a former student to help with the hospital's research as part of their application for Magnet status. Our research team included a physician, a statistician, a nurse practitioner and a computer manager from the emergency department of the hospital and three faculty from the university. Our research was focused on patients who were frequent users of Emergency Departments and published in Emergency Medicine Journal (Hardie, Polek, Wheeler, et al, 2013). I was used to working with the two faculty members of the team but the staffs of the Emergency Department were new to us. It took several meetings before we were able to work with mutual trust and respect.

Looking back at the number of research and publications I have, there are certain collaborators I worked with that assured me that I can depend on them to do what is expected. Because I have worked with them in similar projects, I know their ability and integrity. Shared goals and collaborative abilities enhance the feelings of cohesion and achievement of goals.

3. Tact or Attention to communication mechanisms – Tact is defined as "a keen sense of what to do or say in order to maintain good relations with others or to avoid offense" (Merriam-Webster Dictionary, 2018). When collaborating with persons of strong convictions tact is an essential art. Each person in a team brings strengths and weaknesses. With differing professional background each member may have difficulty adjusting to each other. The collaborative relationship must involve give and take with nonjudgmental open communication. Communications both verbal and written must be goal oriented and demonstrate respect for other members of the team. Example: The Effect of Race and Gender in Hospitalized Chronic Heart Failure Elderly patients published in Journal of Transcultural Nursing (Wheeler, et al, 2004). As you can see there were 7 authors but only 3 of us worked on the manuscript with minor contributions from the other 4 listed authors. From the beginning of the collaboration there should be clear understanding of sharing credit and authorship (Bennett, et al, 2012).

4. Time and Space – Team agreement to allocate sufficient time and space is essential for attainment of goals (Plowfield et al, 2005; Rycroft-Malone et al, 2017). In the academic environment everyone is more than busy and setting aside to meet for research is difficult. Unless time and space is set aside before the semester starts, it can be impossible. Members of the research team, collaborators may see the research of differing priorities. Time spent will be proportional to how much importance an individual places in

the collaborative research endeavor (competing priorities). Of all the factors that influence the success of collaborative efforts, time can be the cause of failure of the research collaborative team. There is usually a person or a group of persons who are committed to the success of the research and can propel it to completion. I am speaking from experience. Several research collaboration I was involved in were faltering because some team members were not able to accomplish their part and we end up dividing the part among the remaining group members.

Exemplars

My research experience throughout my academic career has given me insights as to the importance of collaboration with my colleagues in nursing as well as with other healthcare professions. As with other nurses in academia we were taught to "go it alone". Collaboration with other researchers was not encouraged. Changes have happened during my over 40 years of doing research and now interprofessional or interdisciplinary collaboration is the key to greater opportunity for funding as well as success in accomplishing research goals.

My dissertation as expected was done with no collaborative help except for my dissertation committee. This was trial by fire. I was able to publish two articles based on my dissertation (Wheeler, 1999, 2000). Research and publications are the life-blood of academic survival. Before I started my academic career, I was the nurse manager of Medical ICU. I studied the noise level of our ICU and had several interventions to decrease the noise levels. A Physics professor helped me develop the noise level machine that kept tract of the decibels every 15 minutes. After gathering the data of noise levels every 15 minutes for several days, I developed a teaching video to show how much noise levels were generated with several activities. This was the beginning of my collaboration. As I progressed with my research endeavors I became more and more involved in collaboration first with other nurses and eventually with other healthcare professionals. Organizing and sustaining interprofessional collaboration is a challenge in healthcare (Cunningham et al, 2012; McCorcle, 2011). This is due to the fact that each professional group work in silos and have boundaries that insulate each other and inhibit interaction and collaboration (Bagayogo et al, 2016; Currie et al, 2012).

In order to effectively have relevant and meaningful research, we need collaboration across professional boundaries. Majority of my collaborations have been with nurses but an example of one with interprofessional collaboration was our research on Patient Adherence to Follow-up care after Bariatric Surgery, with a physician, a business manager and a statistician.

Although this was the first time I had worked with other healthcare professionals it was very rewarding endeavor. We used the patient records (database) from the bariatric surgery program of the medical center in Delaware. The business manager helped us get the records needed as well as helped orient our research assistants to gather the correct data. The physician who was the director of the department gave permission to use the data and was actively involved in writing the manuscript. He was very experienced in writing manuscript with numerous publications. The result was a meaningful collaboration. It was published in Surgery for obesity and Related Diseases and I also presented it in the surgeon's conference in San Diego (Wheeler, et al, 2008).

I became more productive working in collaboration with other healthcare scientist and it was actually more fun than going it alone. McCorkle (2011) states that she has no doubt as to the importance of collaboration for successful research.

Research collaboration is more prevalent today than decades ago. The trend is to increase collaborative effort to work together with research scientists from different backgrounds and perspectives such as international collaborations (O'Keefe, Frith, Barnby, 2017). Universities and organizations are encouraging their faculty and staff to work with collaborative teams. The National Institute of Nursing Research (NINR) Centers of Excellence are encouraging interprofessional collaborations to accelerate achievement of goals. (Dorsey, Schiffman, Redeker, et al, 2014) . Interdisciplinary teams can have faster and more comprehensive results than what can be achieved by an individual working independently (Bennett & Gadlin , 2012).

From the in-depth interviews of NIH researchers Bennett and Gadlin developed strategies to strengthen team dynamics:

-foster an environment that is collegial and non threatening,

-recognize strength of all the members

-encourage open and honest discussion by establishing trust

-bring issues and disagreements for early resolutions,

-before decisions are made each person should have an opportunity for input and understands the process for providing comments,

-schedule periodic assessments and feedback with opportunities for collaborators to discuss current status of the research project.

The ultimate collaboration I would like to share with you to illustrate interprofessional collaboration was funded by a grant from the National Center for Research Resources at the National Institute of Health with the University of Delaware's Idea Network of Biomedical Research Excellence (INBRE). The School of Nursing was able to secure part of the NIH grant awarded to the university (Wheeler et al, 2008). The goal of the grant was to increase faculty productivity in research grant acquisitions and publications, and to provide undergraduate students hands-on experience with the research process. I planned the course that provided students with first hand experience in research process and provide faculty with assistance in moving their research agenda forward (Wheeler, et al, 2008). College of Health Sciences faculty and staff were solicited to work with nursing students in their research project. Students worked with faculty from the School of Nursing as well as the varied departments in the College of Health Sciences: Behavioral Health and Nutrition, Kinesiology and Applied Physiology, Medical Laboratory Science, and Physical Therapy. Research staff at the Christiana Medical Health Care System were also involved with the project (Berger & Polivka, 2015). As a result students were very much involved in the research process not only in nursing but also in the other health science departments. Examples of students' projects were:

-Does the level of pain affect waiting time in the emergency department?

-Comparison of brachial and ankle automatic blood pressure in supine position

-How benefits and barriers, body mass index, and gender affect exercise behavior in college students

-The effect of average hours worked and nurse job enjoyment

-Male and female alcohol consumption related to body index

-Siblings' Perceptions of diabetes and its management

Students did not only learn the research process but were able to present their posters in local, national and international research conferences. Some outstanding students even had authorship in articles published by faculty that they worked with (Hardie et al, 2011; Wheeler et al, 2008; Wheeler et al, 2010).

There are several factors that contribute

to the success or failure of collaborations: Talent and role clarity, mutual trust and respect, tact or attention to communication mechanism, and time and space. Interprofessional research collaboration is considered "successful or effective" if there is a level of cohesiveness and they manage to achieve their scientific goals.

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Integrating Education and Practice: A Grounded Theory on the Competency Acquisition of Advanced Practice Nurses in the United States

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Abstract

Advanced practice nurses' competency acquisition is a theory about how competency of advanced practice nurses in the United States is attained. This study presents an understanding of how APRNs acquire competency through semi-structured videotaped interviews of APRNs with at least three years of experience as APRN in diverse practice settings. A mixed Classic Glaserian and Straussian grounded theory approaches guided data collection and analysis. Open coding, constant comparative analysis, theoretical sampling, and data saturation generated a middle range grounded theory: advanced practice nurses competency acquisition. The overarching category that emerged from data was integrating education and practice, which were two lifelong processes integral to all APRNs professional journey. Additionally, three subcategories evolved, a) enabling self-advancement which described the circumstances that nurtured and advanced self-worth among APRNs, b) expanding area of influence, were circumstances that described the rippling effect of networking and collaborative practices cradled by supportive environment, c) paying forward were circumstances supporting legacy building for the advancement of nursing science. There were implications for nursing leadership and education in the U.S, where the advanced practice role was born and took roots.

Keywords: Competency, Advanced Practice Nursing, Grounded Theory

Background

Advanced practice registered nurses (APRNs) are nurses who function at an advanced level of practice that requires licensure, accreditation, certification, education at the master's level at a minimum, advanced clinical skills that focus on direct care of individuals (Bryant-Lukosius, D., DiCenso, A., Browne, G., Pinelli, J., 2004, Thomas, 2014). Further, in the United Sates (US) APRNs are nurses whose practice build on the competencies of registered nurses (RNs) and have obtained a license to practice as an APRN in one of the four Advanced Practice Nursing (APN) roles: certified nurse anesthetist (CRNA), certified nurse midwife (CNM), clinical nurse specialist (CNS), and certified nurse practitioners (CNP). The APRN role was first established in the US and eventually rippled in North America, Europe, Australia and Asia.

Competencies are behaviors that APRNs, must demonstrate regardless of specialty or practice setting. They are about skills, knowledge and characteristics that draw the line between excellence and mediocrity. Competency is important because nurses deal with human lives and incompetence could spell the difference between life and death. In skills acquisition, Stuart Dreyfus, a mathematician, and his brother Hubert, a philosopher (Dreyfus & Dreyfus, 1980) posited that any skill training procedure must be based on some model of skill acquisition through instruction and experience. In their skill acquisition model, the student normally passes through five developmental stages designated as: novice, competence, proficiency, expertise and mastery. According to their theory, as the student became skilled, dependence on abstract principles decreased while dependence on concrete experience increased (Dreyfus & Dreyfus, 1980).

Benner (1984) applied the Dreyfus Model of Skill Acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice, research, and education from an analysis of practice exemplars in the workplace. Benner advanced the view that goals and processes of nursing changed depending on the level of nurses' experience. In Benner's Model, From Novice to Expert, the novice and advanced beginner's perspectives were strictly characterized by adherence to rules; whereas the competent and proficient nurses had the capability of modifying plans when situations changed, Benner's competent nurse had the ability to perform a task with desired outcomes under varied circumstances of everyday life. The nurse who had confidence performing in the same or similar situations for two or three year's demonstrated competence. Further, the nurse was able to demonstrate efficiency and coordination, and had confidence in his/her actions. Benner's expert nurse had extensive clinical knowledge and experience that underpinned intuitive judgment. Benner advanced the primacy of experience and emphasized that experience-based skill acquisition was still safer and more efficient only when it rested on a strong theoretical foundation. By systematically recording what nurses learned from their own experience, Benner (1984) concluded that nurses' phenomenological experience and the expert nurses' technical and theoretical knowledge could expand and advance nursing.

Despite the numerous literature documenting the successful role enactment and proliferation of titles related to the APRN role, there was still paucity on the investigations of circumstances that were perceived useful by APRNs in the United States that related to their competency acquisition as healthcare providers. This study aimed to explore the different circumstances or experiences that APRNs in the US considered helpful in making them feel qualified or confident to do their job as healthcare providers through the

different stages of competency acquisition.

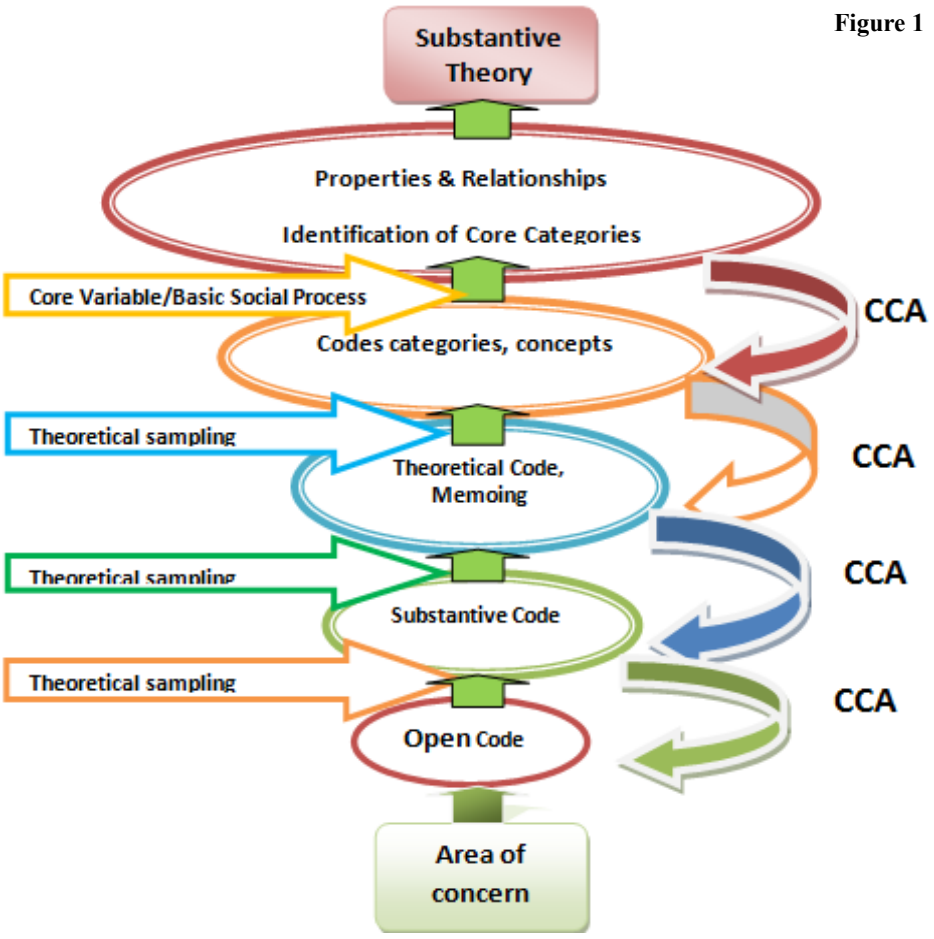
Methodology

A grounded theory methodology was used in this inquiry since it had the capability of identifying how participants experienced a phenomenon, what they found challenging about that experience, and to generate an initial theory about it (Glaser, 1978). Participants were chosen by purposive sampling because knowledgeable APRN experts from the United States, who experienced the phenomenon, were needed to provide a rich description about competency acquisition. The inclusion criteria were: (a) currently practicing in one of the four APRN roles for a minimum of two years, (b) a minimum of Master's degree in Nursing, (c) working in various specialty groups, (d) willing to sign an informed consent form (ICF), (e) willing to be interviewed in English and to be video- or audio-recorded during the interview.

A recruitment packet that included an invitation letter, ICF, and a demographics form were emailed to the prospective participants. The researcher followed up each email with phone calls to further explain study objective, confidentiality measures and to answer any questions from the prospective participants. After receiving the signed ICFs and the completed demographic form, a web-based interview was scheduled. To protect privacy and maintain confidentiality of the participants, the researcher was alone in a closed room while conducting the interview. Actual sample size was determined only after data saturation—a phenomenon that occurred when no more new information, and there was a redundancy of previously collected data— had been reached (Burns and Grove, 2011).

Using a semi-structured open-ended interview guide (Corbin and Strauss, 2008), all interview sessions were videotaped, lasted an average of 45 minutes, and were conducted at a mutually convenient time considering the time zone variations between the US cities and Manila, Philippines. Each participant's response the four general questions determined the direction of the following dialogue: a) what circumstances or experiences would you consider helpful in making you feel qualified or unqualified to do your job? Describe the feeling of being qualified and being unqualified, b) in your practice as APRN, at what stage of the Novice to Expert do you recall feeling accomplished?

Figure 1



c) What instances would you like to share wherein you were facing an unfamiliar situation and how did you handle them? d) What circumstances helped you feel capable, or in control?

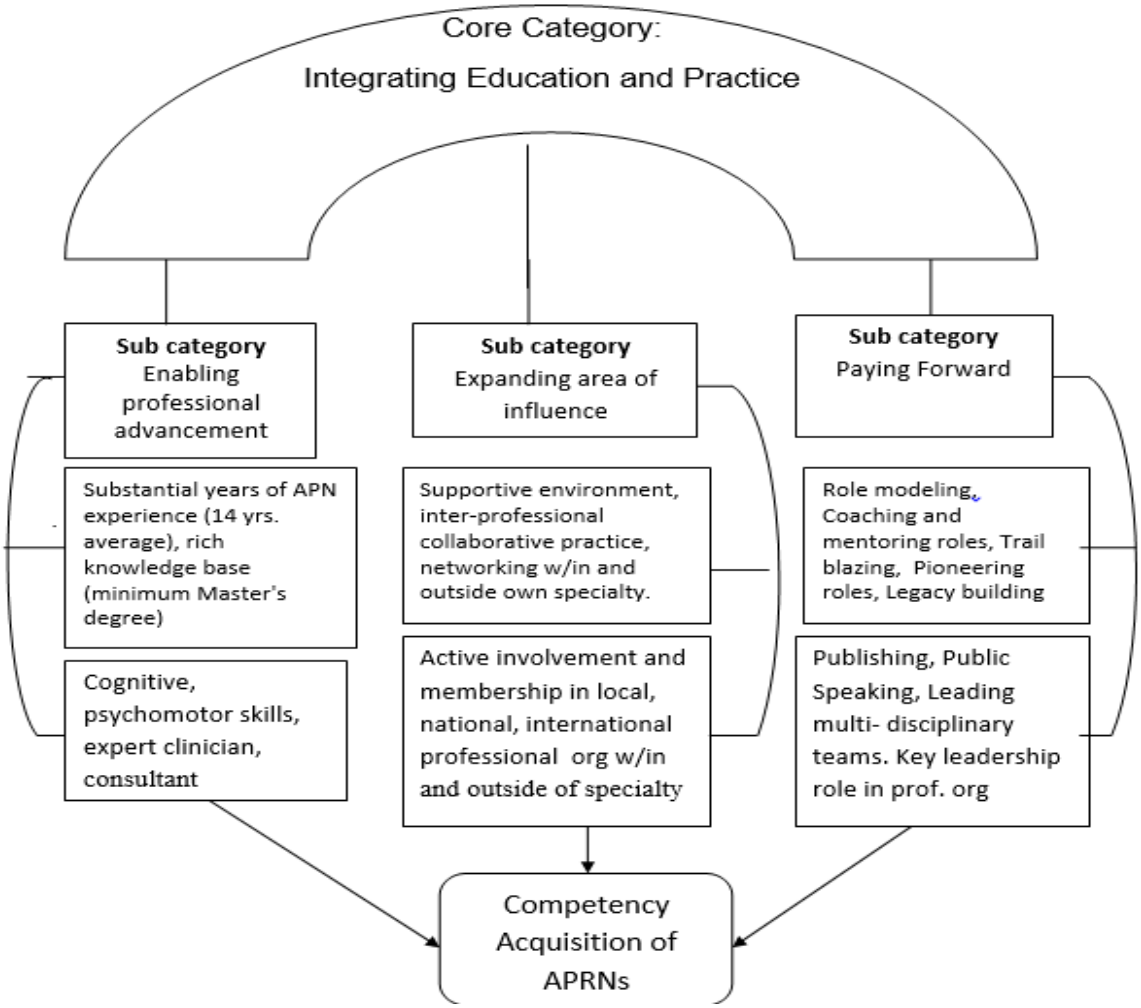
At the end of each interview session, the researcher transcribed the recorded interview verbatim while information was still relatively fresh. Faithful to theoretical sampling of the Classic GT as a process of data generation, the researcher collected coded and analyzed data simultaneously (Glaser & Straus, 1967). To guide the analysis of qualitative data, the author adapted a model of a substantive theory generation from Glaser and Strauss (1967) and Andersen (2008), as depicted in Figure 1.

Figure 1. A Model of Substantive Theory Generation. Adapted from Glaser and Strauss (1967) and Andersen (2008).
* CCA – constant comparative analysis

In the analysis of data, the process commenced with an area of interest/ concern rather than a preconceived hypothesis (Glaser, 1998). During the first level coding, referred to as open or in vivo coding, the researcher read the transcribed interview texts several times in order to gain an overall impression of the material. With the study objective in mind, the researcher underlined and/or encircled relevant words, phrases, and themes in the transcript and made annotations within the transcript. Open codes have the smallest conceptual portion in the study as depicted by the smallest circles in the model (Glaser, 1978).

The next levels are series of theoretical sampling and iterative process of constant comparative analysis where data pool and the level of conceptualization and abstraction increased. During substantive and theoretical coding (Beck, 1999), the researcher used words or phrases from the verbatim transcripts, comparing these words with other codes and data, and clustering those with similar meanings into initial codes categories (Beck, 1999).

Constant comparisons among concepts, categories, and data helped identify relevant connections, contextual conditions, sorted categories by similarities and differences, examined relationships among substantive codes to elevate them to a conceptual level, identifying core categories and eventually a substantive theory is reached (Glaser, 1978). This process of theoretical sampling



and CCA continues until data saturation is reached.

To address credibility and validity, findings in this study were derived from verbatim narratives on the experiences of APRNs who lived the phenomenon and were corroborated by member checking. This was accomplished by returning for second interviews with some participants who confirmed the findings as their personal narratives Additionally, credibility was strengthened by the researcher's more than a decade of NP practice and documented prolonged engagement with APN competency, Furthermore, a faculty mentor experienced in grounded theory was consulted "to review and explore various aspects of the inquiry" (Polit & Hungler, 1999, p. 429).

The conduct of this study has been reviewed and approved by the UP Manila Research Ethics Board.

Results

The study participants (n=5) were APRNs who had prior RN experience ranging from five (5) to twenty (20) years and an average of twelve and a half (12.5) years. Additionally, the participants' APRN experience ranged from eight (8) to twenty (20) twenty years with an average of fourteen (14) years. They were all working full-time in specialty services of various institutions such as: Cardiac surgery (in-patient); Neuro-vascular (in/outpatient); Geriatrics (in/out patient); Oncology (outpatient), Dermatology (in/out patient). Most of them were females (80%), had a Master of Science in Nursing (40%). Sixty percent (60%) had doctoral degrees (DNP or PhD). The age of participants ranged from 36 to 58 years old with an average of forty-seven (47) years old. Forty percent (40%) worked in the Eastern US (New Jersey, Massachusetts) and sixty percent (60%) worked in Southern California area (Los Angeles and San Diego).

The core category that emerged from the data was integrating education and practice, which described how APRNs experienced competency acquisition. The coding scheme and relationships drawn from the narratives are shown in Figure 2.

Core Category: Integrating Education and Practice. The overarching category or the basic social process related to the APRN's competency acquisition as perceived by the participants were circumstances integrating education and practice. This amplified Benner's expert nurse who had extensive clinical knowledge and experience that underpinned intuitive judgment. Benner advanced the primacy of experience and argued that experience-based skill acquisition was still safer and more efficient only when it rested on a strong theoretical foundation. Participants described these two concepts as life-long processes integral to every APRN's professional journey.

Figure 2. Core and sub-categories generated by the coding scheme on the Competency Acquisition of APRNs.

Sub-Category: Enabling Professional Advancement. For this category, the participants articulated those circumstances that nurtured self-worth as fundamental constructs. This was backed by substantial years of APN experience, at an average of fourteen (14) years. Further, rich knowledge base, cognitive and psychomotor skills were supported by the participants' educational background where the majority (60%) had doctoral preparation (PhD and DNP).

Data from interview showed that all participants talked about enabling factors like advanced degree, length of APRN experience in varied settings, being experts, and breadth and depth of cognitive skills. As one participant expressed:

"I consider now myself in the work that I do as an expert, especially now that I finished my Doctorate in Nursing Practice. I mean, my ... you know ... the knowledge base and the principles of research and evidence-based. The transformational research is more ... I think, it's much stronger having completed the doctoral program." –Emily, CNS

Another participant believed that her work in varied settings strengthened her clinical and leadership skills:

"I worked in oncology and in critical care, as a staff nurse, nurse manager and later as an administrator and the different types of situations made me an astute clinician and consultant." –Bertha, NP

Sub-Category: Expanding Area of Influence. The APRN participants defined this sub-category as circumstances that described the rippling effects of best practices to inform clinical decisions or reaching out to and impacting other disciplines. Expanding area of influence is powered by a nurturing environment, collaborative practice, networking within and outside own specialty and complemented by active involvement and membership in local, national, international professional organizations. This subcategory is exemplified by this narrative:

"I started as a novice APRN and with the support of the people that I have been working since 1993 when I became an APRN, and the opportunities available in my work environment, I developed my skill from a novice to become very proficient and became an expert as an APRN... having been asked to lead the multidisciplinary teams, being consulted by fellows and residents, leading the multi-center Nursing Research group, etc." Emily, CNS

Another APRN recalled his experiences with his mentors:

"And then when we faced her staff, she would always introduce me as, "This is Mario. He's from UCLA. And he's really a smart kid. You have to listen to what he's got to say about breast cancer." – Mario, CNS

Mario also talked about his mentor with both an MD and a PhD:

"(He) is a very supportive physician, a one of a kind. He's very supportive of me as a nurse, and, in fact, this MD said, "I'm very busy with the clinic, very busy with the Lab, as a nurse I need you to handle all the symptoms and quality of life issues". – Mario, CNSa neuro-cardiovascular APRN discussed a patient care scenario she experienced:

"Since I was in CAT scan, there were two techs that are licensed in imaging – one of them is the supervisor, the nurse from ED, patient care assistant from ER. The supervisor tech said, we do not need a neurologist, all we need is you Bertha, you manage the patient by yourself". – Bertha, NP

Sub-Category: Paying Forward. In this sub-category, the APRN participants shared circumstances describing activities that support legacy building through publishing, trail blazing, coaching/ mentoring, public speaking and leading multi-disciplinary teams, among others. Mario reflected on how he first published, and the impact rippled and influenced more nurses when he became an Associate Editor of the Clinical Journal of Oncology Nursing, and currently, as an editor of what would be one of oncology books on Core Curriculum published in 2015. Bertha reflected from a clinical perspective:

"the training, experience, seminars, conferences outside your specialty that you attend, networking with other professional organizations strengthens you professionally and hence enables you to share your expertise with confidence. To me, it is when you are able to share that expertise to be considered competent as a professional" – Bertha, NP

On the other hand, an APRN saw this in the lens of the academe, through lectures and team conferences, where she brought up something "that no one thought about":

"Last week, for example, a psychologist from another Veterans Hospital in New York State called me to consult about a patient care issue that was related to my lecture on capacity of older adult, that the slides were posted at a VA website. So we discussed about an hour. It was really good. Or when people called me and asked questions I felt that I was paying forward" – Jessica, NP

Discussion

The different circumstances that APRNs in the US considered helpful in making them feel qualified and confident to do their job as healthcare providers in their specific area of specialization and practice settings presented insights on the primacy of clinical experiences. These findings within the social context of practice could be an impetus for the development of a beginner to expert APRN, which is similar to previous studies (Alber, Augustus, Hahn, Penkert, Sauer, & DeSocio, 2009; Benner, 1984). This study advanced what Dreyfus and Dreyfus (1980) posited that skill acquisition was strengthened through instruction and experience and amplified that Benner's expert nurse. Benner, (1984) also explicated that experience-based skill acquisition was still safer and more efficient only when it rested on a strong theoretical foundation.

This middle range substantive theory supported by data from interviews has several contributions to the nursing knowledge. First, it documented the circumstances or experiences that APRNs perceived as helpful in their competency acquisition as healthcare providers. The core and subcategories that emerged explicated how data were integrated during the different stages of APRNs competency acquisition in the US. Second, the study amplified that substantial years of APRN experience, in this case, an average of 14 years, rich knowledge base (participants were all educated at the Master's level, at a minimum and cognitive, psychomotor skills, being an expert clinician and consultant, are requisites in advancing the profession. Lastly, this study confirmed the fact that to acquire competence, an APRN must thrive in a supportive environment consisting of inter-professional collaborative practice, and networking within and outside of own specialty. Additionally, the APRN should be actively involved and maintained membership in local, national, international professional organization.

Furthermore, this research revealed circumstances pointing to legacy building involving a wider reach. These are

publishing, role modeling, coaching and mentoring, trail blazing, activities that "pay forward" and perpetuate competency acquisition among APRNs. There are several implications to nursing education in the US based on the findings of this study, specifically on customizing the role- or setting-specific continuing education offerings for APRNs with different levels of competency. For nursing leadership, this study supports the provision of APRNs with opportunities to perpetuate the core category and the subcategories that emerged.

The study with all its novel findings has limitations that needed to be addressed. For example, the findings lack generalizability because the study was limited to APRN experts who experienced the phenomenon to provide rich description about competency acquisition. Another limitation is the homogenous nature of the sample because all participants are of Filipino descent. Lastly, the study could use additional questions related to competency acquisition at different stages of APRNs' professional journey.

Conclusion and Recommendations

This study produced a middle range theory on Advanced Practice Nurses Competency Acquisition as independent healthcare providers in the United States. The research magnifies the role of nursing education departments in US hospitals by customizing continuing education offerings for APRNs with different levels of competency. Further, nursing leadership and collaborating healthcare professionals can provide APRNs with an environment that is conducive to produce the best practices, and learning opportunities that will empower professional advancement, support activities that will expand area of influence, and ultimately to perpetuate nursing knowledge through legacy building.

Further studies of APRN competency acquisition should be encouraged taking into consideration the limitations noted in this study. Specifically, participants from different ethnic groups should be considered for their contribution to cultural diversity. Further, there is a need for additional questions addressing issues specific to the different stages of competency acquisition as advanced by Dreyfus and Dreyfus (1980) and Benner (1964).

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