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Evaluation of Telehealth Applications for Patients seeking Hospice Care

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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MS, Walden University, 2019

BS, Advent Health University, 2016

Project Submitted in Partial Fulfillment

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Abstract

Telehealth (TH) is one of the newest avenues for improving accessibility and healthcare accommodations for patients with chronic health issues and terminal illness. The purpose of a quality improvement (QI) initiative at the project site was to align current evidence-based practice to address the disparities in the admissions process experienced by patients seeking hospice care from remote locations. The health belief model and Roger's diffusion of innovation theory were used to inform this doctor of nursing QI evaluation project to determine whether using a standardized evidence-based intake assessment process delivered by TH would increase accessibility for patients seeking hospice services. Data provided by the hospice site on the number of admissions to hospice 3 months prior to and 3 months post TH initiative were analyzed. Findings revealed that the number of admissions to hospice increased approximately 30% after the implementation of the TH initiative. A finding of a 29% increase in patients living more than 20 miles away from the main hospice campus supports improvement in access for rural patients. It is recommended that the TH be used in all hospice admissions, especially given the current health care climate. TH has potential to make a difference in a patient's eligibility and accessibility to hospice services during the admission phase of receiving palliative care. Telehealth using a standardized overall admission assessment process, has the potential of promoting a positive social change in the admittance of patients seeking hospice services with improved and more timely access to care.

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Dedication

I dedicate this DNP QI project to my grandfather, whom I have first handedly witnessed die too fast, too soon, and without the proper care. For my eyes have witnessed too many people die in turmoil and distress, leaving behind loved ones faced with grief and disparity. I will be forever grateful that you were a part of my life, because without, I would not be where I am today. Thank you for being the inspiration and motivation that set me onto this path for greatness. It has not been easy, but the end is near and it is worth it. Until we meet again.

Acknowledgement

I am overwhelmed in gratefulness and humbleness to acknowledge my entire committee and project team. Each and every individual, has been exceptional throughout this entire process with their guidance, help, and support. I would like to express my special thank of gratitude to my chair, Dr. Carolyn Sipes, who has been there through and through every step of the way and helped me move closer to achieving my educational goals.

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To my loving parents, Mr. and Mrs. Harry Surujlall, thank you for encouraging me to reach for my goals, follow my passions. Your constant reminders of believing in me, even when I did not have faith in myself, have been worth my while. I will continue to do better and be a better person, one day at a time.

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Section 1: Nature of the Project

Introduction

In today's modern healthcare system, technology is constantly changing the way patients seek and receive medical services. Telehealth (TH) is a new form of technology that encompasses all facets of health care clinical services that support accessibility and operability. The World Health Organization (WHO, 2020) defines TH as the utility of information and communication technology that supports healthcare delivery and education from distant locations. It is a branch of electronic health (eHealth) that encompasses telemedicine services that introduce change, growth, and development to the healthcare industry through automated services, systems, and resources. Global crises have created a gap in the availability, utilization, and accessibility of human resources to meet the demands of the growing population of terminal patients and the burdens of the diseases that accompany them. This doctor of nursing practice quality improvement (DNP QI) evaluation project has evaluated the existing practice regarding the lack of TH use in general admission of patients seeking hospice services. The nature of this DNP QI evaluation project was to evaluate the evidence on the application of TH interventions, assess the accessibility of hospice services for patients, and evaluate the de-identified data provided to me from the organization. Sources that use TH in the management of hospice care have been discussed and recommendations have been made based on the analysis of findings to facilitate the expansion of TH with the best quality and consistency in palliative care delivery. This DNP QI evaluation project possessed the

potential to positively influence social change because it presented the current state of evidence on the effectiveness of TH in supporting hospice services.

The use of TH is becoming more prominent in palliative care management, as it is proposed that TH can positively influence timely healthcare accessibility, quality, costs, engagement, and satisfaction (Worster & Swartz, 2017). The proper use of the TH network services is necessary to enhance healthcare delivery to the population of patients seeking end-of-life care, to ultimately increase access to the medical specialty for hospice patients at home without increasing healthcare costs. According to Worster and Swartz (2017), new TH technologies have initiated a transformation of the entire healthcare system that have been heralded by many as a means to address the growing concern of disparity in palliative care. These advancements are described as having the potential to not only enhance the quality of care, but also improve healthcare accessibility, usability, and effectiveness. The rising demands on healthcare professionals have promoted increased efforts to help meet the demands of the expanding healthcare services market.

This project correlated with DNP Essentials I, IV, VI, and VIII for Advanced Nursing Practice, which are competencies associated with the scientific underpinnings for evidence-based practice (EBP), information systems/technology and patient care technology for the improvement and transformation of health care, interprofessional collaboration for improving patient and population health outcomes, and advanced nursing practice (American Association of Colleges of Nursing, 2006). Application of these frameworks or essentials of the DNP education worked independently and

dependently of one another to support the development of this DNP QI evaluation project.

Problem Statement

Nursing clinical practice lacked the use of TH for general admission assessments of patients seeking access to hospice service (Head Schapmire & Yongqiang, 2017). TH was implemented in remote admission assessments of patients seeking hospice services to increase accessibility and the number of admissions. The growing demands on the availability of human resources to meet the population and diseases has widened the gap between research and clinical practice adoption and utilization. Newer technologies such as TH have the potential to meet the needs of providing care to patients by using a whole-person care approach that overcomes accessibility barriers and bridges the gap between healthcare providers and clients (Head et al., 2017). This digital application has introduced and facilitated TH devices that provide virtual access to new and improved diagnostic tools, treatments, and protocols. This helps to address the needs of improving access to hospice services of those patients seeking general admission. TH enables healthcare professionals to care for more patients who remain in the comfort of their homes, especially those patients living in rural areas (WHO, 2020). Ultimately, TH could significantly improve patient accessibility, care, safety, and quality initiatives. The use of information technology is becoming more prominent in managing chronic diseases and illnesses, including palliative care (Schroeder & Lorenz, 2018). This DNP QI evaluation project was significant to nursing practice as it could improve patient experience and

satisfaction when increased and earlier access to TH is included in both remote and general admission assessments for hospice referrals.

Purpose Statement

The meaningful gap-in-practice that this DNP QI evaluation project addressed was how the existing application of TH is being used in remote admission practice. The guiding practice-focused question for this DNP project was:

PFQ: Will using a TH assessment process increase accessibility for patients seeking hospice services compared to the standard general admission process?

This practice-focused question provided insight into improved and earlier access to TH use in all hospice admissions. The organization provided de-identified data regarding remote admissions versus general admissions, pre- and post-TH implementation. To determine if the admission assessment process had improved access to hospice services, the number of admissions had been measured and compared.

In recent years, TH has emerged as a delivery method for providing care to patients diagnosed with a terminal illness. However, many times hospice services were only sought once a patient was actively dying (Tieman, Swetenham, Morgan, To, & Currow, 2016). According to Head et al. (2017), there was significant evidence that the integration of TH at the time of terminal diagnosis for the admittance onto hospice services and management of health concerns could improve the individual's quality of life and offer better symptom management. Accessing hospice services entails an admission process where eligibility is assessed to determine if a patient fits the Medicare and Medicaid guidelines (Zheng et al., 2018).

TH allows for two-way real-time clinician-patient communication anytime, practically anywhere. This alternative method to traditional health care clinical practice functions to lessen the gap between the lack of services, healthcare professionals, and accessibility (Taylor et al., 2015). Technology has and continues to change the way healthcare services are provided, managed, and delivered through coordination and collaboration. Yet, the issue of patients with a terminal disease not receiving optimal care during their end-of-life care remains prevalent.

Nature of the Doctoral Project

The nature of this DNP QI evaluation project was to evaluate the previous change in practice in a local setting, which was the introduction and use of TH in the admission process for remote admissions. The sources of evidence included literature that indicated TH improved the patient experience, healthcare accessibility, and usability for real-time intervention with immediate contact between patients and providers at the time of referral (WHO, 2020). In the healthcare research literature, the terms *telehealth* and *telemedicine* became interconnected (Chaet, Clearfield, Sabin, & Skimming, 2017); however, in this project, TH was utilized as a broad search term that encompassed both clinical and nonclinical services. I used the following search terms: *telehealth, hospice service, terminal illness, admission assessment, chronic healthcare issues,* and *barriers* for locating evidence-based sources. Some words were used interchangeably with one another, so I included them in the search methodology to expand and not further limit the search of locating and identifying relevant evidence-based sources. Interchangeable search terms include:

- *Telehealth:* telemedicine, telemonitoring, telecare, telementoring, or telenursing.
- *Hospice service:* palliative care, end-of-life care, terminal care, or home Hospice care.
- *Remote admission:* patients admitted onto hospice services using the TH.
- *General admission:* patients admitted to hospice services using the standard admission process of a face-to-face assessment.
- *All hospice admissions:* patients admitted onto hospice services including both remote and general admission.

The search was limited to sources written and published between 2015 and 2020, which provided the most current information on the topic of interest. Inclusion criteria involved original studies with participants who were diagnosed with a terminal illness, studies comparing standard care to TH interventions, and reported outcomes of patient experience and access to hospice services. I reviewed research articles for the quality of the data collected for analysis, synthesis, and interpretation for application. This literature search and review met the quality standards of conducting a DNP QI evaluation project.

The PFQ was answered through evaluation of the current clinical practice based on de-identified data provided by the organization. This helped to determine the effect of the use of TH in remote admissions compared to general admissions for earlier hospice access. Investigating the effect of TH on access to hospice services aided the determination of what was needed to improve the admission process. New and improved technologies are constantly being used to improve clinical practice. The de-identified data

provided by the organization were organized and critically appraised using data 3 months pre- and post-TH implementation.

The purpose of this DNP QI evaluation project was to evaluate the current clinical practice of TH use based on de-identified data provided to me by a local organization offering hospice services to patients and families in the Southeastern United States and align it to current evidence-based literature findings to make recommendations to clinical practice to facilitate the use of TH with best quality and consistency in palliative care delivery. This local hospice organization had been using TH in only remote admissions, not general admissions, as a means for patients to get quick, easy access to hospice professionals and care in their homes, and improve the number of admissions of patient's oncoming for hospice services. TH was a form of healthcare delivery in hospice care to assist with converting patients with a referral for hospice care into a hospice admission. The objectives the facility had for introducing TH included increased patient engagement and satisfaction, improved patient convenience and efficiency, reduced cost of care delivery, enhanced remote and rural patient access to hospice care, decreased number of hospital readmissions of hospice patients, and 24/7 access to hospice care. These objectives were in alignment with my outcome measurements, as the de-identified data had provided insight and perspective on TH's role in the hospice admission process and recommendations had been made for quality improvement.

Significance

This DNP QI evaluation project focused on making recommendations to stakeholders to use TH in all admission assessments, remote and general, of patients with

a hospice referral. The primary stakeholders are registered nurses and nurse practitioners who use TH during the assessment process of patients seeking access to hospice services. Nursing leaders, educators, and managers collaborated to create a balance in the care environment to raise awareness, aid adoption, and lessen feelings of resistance to change for patients seeking hospice care. Meetings were held with stakeholders to determine their input on the lack of TH use in the general assessment process of patients seeking access to hospice services and to find solutions. The need for the DNP QI evaluation project was based on the analysis of admission data collected with the use and without the use of TH. Stakeholders agreed that TH was not being used with general admission assessments of patients with a hospice referral, only those being evaluated remotely. This project provided recommendations that can potentially contribute to the adoption of a safe intervention to transform and further improve healthcare delivery and patient outcomes during end-of-life care through the use of TH for earlier access for all hospice referrals. This data could ultimately be a model for similar practice areas and other hospice levels of care, such as crisis care and general inpatient through potential transferability. By providing a better understanding of TH, there was potential to minimize negative influences and promote a positive social change in the workplace.

Summary

Palliative care was growing among patients with terminal illnesses, which should start at diagnosis rather than at the end-of-life (Schroeder & Lorenz, 2018). This section established the topic of this DNP QI evaluation project of presenting the current state of evidence regarding the effectiveness of TH interventions for access to hospice services. It

provided an overview of the nature of the project, which was composed of the problem statement, purpose, practice-focused question, and significance of the project. In Section 2 I discuss the concepts, models, and theories that provide a framework for this project, as well as the relevance to nursing practice, local background and context, my role as the DNP student, and the role of the project team.

Section 2: Background and Context

Introduction

Use of TH was initiated in a local setting to address the growing concern of lack in service availability and accessibility for patients seeking hospice services. The purpose of this project was to evaluate this practice change and gain insight into how well the goals of the QI project were met. This section of the DNP QI evaluation project addresses the PFQ: Will using a TH assessment process increase accessibility for patients seeking hospice services compared to the standard general admission process? In this section I provide oversight of the concepts, models, and theories of the DNP QI evaluation project and determine the relevance of this project to nursing practice, the local setting and the role of the DNP student and project team.

Concepts, Models, and Theories

Healthcare practices are in a state of constant change; the challenge is to stay up to date with technological advances, increased patient expectations, and the demands of everyday living (Finley & Shea, 2019). Utilizing and applying the concepts that are pertinent to healthcare research and clinical practice helped improve the overall assessment process of admitting all patients with a hospice referral into hospice services. The health belief model (HBM) (see Appendix A) and Roger's diffusion of innovation theory (see Appendix B) were applied to this DNP QI evaluation project to evaluate the effects of TH use in remote admission assessments of patients accessing hospice services. The following terms were used in this DNP QI evaluation project, have multiple meanings and are interchangeable:

Telehealth: The delivery of health care services over a distance by using telecommunication technology (Finley & Shea, 2019).

Telemedicine: The practice of caring for patients remotely when the provider and patient are not physically present with one another. Modern technology has enhanced and enabled doctors to consult patients by using HIPAA compliant video-conferencing tools (Worster & Swartz, 2017).

Telemonitoring: The use of information technology to monitor patients at a distance (Phongtankuel, Adelman, & Reid, 2018)

Telecare: The remote care of the elderly and physically less able people, providing the care and reassurance needed to allow them to remain living in their own home (Phongtankuel et al., 2018).

Telementoring: Mentoring by a means by telecommunication or computer networks (Gleason et al., 2019).

Telenursing: The use of telecommunications and information technology in the provision of nursing services whenever a large physical distance exists between patient and nurse or between any number of nurses (Finley & Shea, 2019).

Hospice or hospice care: A model for quality, compassionate care at the end of life, involving a team-oriented approach of expert medical care, pain management, and emotional and spiritual support expressly tailored to the patient's wishes; it is a way to deal realistically with a fatal disease by focusing on the quality of life. It is a family-oriented program that helps families and friends care for their loved one in a home and is most helpful during the final 6 months of life expectancy, supporting the patient's right to

know accurately and honestly what is happening to them so they can choose how to spend their remaining time in the most meaningful way. Hospice offers dignity and comfort at the end of life (Casey, 2019).

Palliative care: Specialized medical care that extends the principles of hospice care to a broader population that could benefit from receiving this type of care earlier in their illness or disease process, even at the very beginning of diagnosis of terminal disease. Palliative care is an attempt to address physical pain and disease symptoms, along with emotional, social and spiritual pain, to achieve the best quality of life for patients and their families. When accessed earlier in the illness or disease process it can better serve individuals who have an advanced illness or are terminally ill and promote comfort and dignity while the patient still can pursue curative treatment. Palliative care is comprehensive care for patients of all ages, including children who are living with life-limiting illness (Casey, 2019).

End-of-life care: The physical, emotional, social, and spiritual support for patients and families to control pain and other symptoms so a patient can be as comfortable as possible (American Cancer Society, 2020). End-of-life care may include palliative care, supportive care, and hospice care.

Terminal care: Treatment provided to critically ill individuals where curative treatment has been discontinued (Finley & Shea, 2019).

Home hospice care or routine hospice care: The most common level of hospice care provided to patients with a limited life expectancy (Kinsella, 2005). According to

Kinsella (2005), routine care includes nursing and home health aide services, as well as counseling and social worker services.

Number of admissions: The number of patients converted from a referral to hospice admission, not including those not taken under care (NTUC).

Health Belief Model

The health belief model (HBM) is a psychological model that explains and predicts an individual's health-related behaviors, particularly regarding the adoption of, use of, and access to health care services (Glanz, Rimer, & Viswanath, 2008). It was developed by social psychologists in the 1950s who were working in the U.S. Public Health Service to understand why there was a lack of participation amongst people participating in programs to prevent and detect disease. According to Glanz et al. (2008), this model asserts and predicts whether individuals are more or less likely to engage in risk reduction and disease prevention measures by focusing on their attitudes and beliefs. The HBM model was the conceptual framework used for this DNP QI evaluation project because in a perfect world it is assumed that everyone has access to equal amounts of resources and information on illness and disease (Weld, Padden, Ramsey, & Bibb, 2008). In the healthcare field, QI projects address the constant change of everyday living to achieve better performance and quality to improve healthcare outcomes through increased accessibility and organizational processes resulting in workplace and patient satisfaction (Walden University, 2019). Specifically, the lack of access to hospice services for patients may cause significant decline and further demise, which acts as a barrier to individuals receiving timely care. Pain is one of the most feared consequences

or outcomes for patients seeking hospice services (American Cancer Society, 2020). The American Cancer Society (2020) determined that pain has a profound impact on every aspect of an individual's quality of life and is the dominant cause of suffering. The HBM theoretical model can be used to guide health promotion and disease prevention interventions when explaining and predicting individual changes in health-related behaviors. It is one of the most widely used models for understanding and promoting changes in health and lifestyle behaviors.

The six key constructs of the HBM (Glanz et al., 2008) are:

- Perceived susceptibility: belief about contracting or getting a disease, illness, or condition
- Perceived severity: belief about the seriousness of the condition versus leaving it untreated and its consequences
    - Threat
- Perceived benefit: belief about the potential positive aspects of health actions
- Perceived barriers: belief about the potential negative aspects of a particular health action
    - Net benefits
- Cues to action: factors that trigger action
- Self-efficacy: belief that a person can execute the behavior required to achieve the outcome

Roger's Diffusion of Innovation Theory

The word *diffusion* suggests a complex paradigm that refers to the wide-spread movement or distribution of something such as an idea or product (Berger, 2011). Created in 1962, Roger's diffusion theory was one of the oldest social science theories that help explain how and why new technologies gain momentum and spread through a specific population or system, such as palliative care (Berger, 2011). According to Berger (2011), Rogers believed that the adoption of an innovation does not happen simultaneously in a social system but rather as a process where some people are more accepting than others. Once a new method or device is shared, the diffusion of innovation theory provides a framework to apply, use, and track whether or not more and more people begin to adopt it over time. This can provide useful information regarding its influence on improving healthcare delivery, accessibility, and quality of care. This theory is driven strictly by an individual's perception of the innovation, which determines the rate of adoption and acceptance, as well as the characters of influence (Trahan, 2019). Understanding the characteristics that help or hinder the adoption and meaningful use of an innovation is vital to its overall acceptance and utilization. The application of this process relies on the innovation, communication, time, and the social system to accelerate the spread of EBP in the healthcare field for constant change, growth, and development. The four main elements of this theory include innovation, communication, time, and social change (Trahan, 2019).

1. Innovation: the social process of translating a new idea or thought in the form of a method or device for value, growth, and success.

2. Communication: a means or channel of developing, sharing, sending, or receiving information and data to achieve a common understanding amongst stakeholders and members of the team.
3. Time: the project timeline consisting of the process of innovation decision-making, adopter categories, and the rate of adoption.
4. Social system: the patterned network of relationships amongst individuals, groups, organizations, or subsystems who share the common project objectives or goals that link them together: leadership, management, change agents, and champions (Berger, 2011).

Relevance to Nursing Practice

Currently, the admission process begins once a Hospice referral is ordered for patients. When a referral for Hospice care is received, the collaboration amongst the patient, their family members, the healthcare team, and the Hospice team, is necessary. The process of accessing or oncoming Hospice services involves obtaining eligibility with data of a physical assessment from a healthcare professional and a medical-record review. Admission eligibility is based on criteria that are in alignment with the Centers for Medicare and Medicaid Services (CMS) regulations (Zheng et al., 2018). To be deemed eligible or ineligible for Hospice services, a one-on-one medical record review and a face-to-face assessment for general admission or TH assessment for remote admission must be completed (Zheng et al., 2018). The face-to-face assessment process can become complex and complicated since it involves meeting with the patient and family members in their homes (Zheng et al., 2018). According to Zheng et al. (2018),

the lack of time, resources, and coverage, as well as, individual and patient safety concerns affect the ability to properly admit and care for patients needing Hospice services.

The American Cancer Society (2020) determines that Hospice care often is not started soon enough, due to individual opinions and biases, which influence decision making and admission onto services. The Centers for Disease Control and Prevention (CDC, 2015) recommended that Hospice care begins during the initial stages of terminal illness or disease diagnosis, long before the final six months of life is near. Although patients may be eligible or appropriate for Hospice services, services are either sought later than they should be or eligibility is not fully or correctly assessed (Zheng et al., 2018). According to Schroeder and Lorenz (2018), Hospice referrals at the very beginning of a terminal illness diagnosis is changing the face of palliative care. People are living longer with chronic and terminal illnesses, thus dramatically affecting healthcare services and solutions. It is known that clinicians and advance practice providers spend more time with patients and family members than any other profession, in any specialty, or practice setting. Today, in the age of technology, information technology is becoming prevalent in the provision of services.

Currently, there is evidence of barriers that hinder the adoption or utilization of TH technologies to its full extent in general Hospice admissions (Taylor et al., 2015). According to Taylor et al. (2015), reluctance to change is expressed through negative feelings of adaptation and value. Such resistance is accounted for in the reduction in TH application during general admission assessments for eligibility of patients seeking access

to Hospice services. It is not uncommon that the culture of change is accompanied by feelings or manifestations of insecurities. TH can make a difference in a patient's eligibility and accessibility to Hospice services during the admission phase of receiving palliative care (Zheng et al., 2018). Therefore, understanding the ongoing evidence of the barriers that affect the adoption and acceptance of new technologies, to its full extent.

The increasing focus of having patients receive Hospice services sooner than later, at the beginning of diagnosis, has created the need to adopt new tools such as TH into clinical practice (American Cancer Society, 2020). Clinicians utilize TH to aid their patient's journey through the healthcare maze, where access is limited. Through effective and efficient access to TH in the healthcare realm, there has potential to make a difference in the face of healthcare practices. The population will most likely benefit from TH's ability to confirm eligibility of all hospice referrals to ensure clients have increased and improved access to Hospice services and care, sooner rather than later. Ensuring clinicians have the knowledge, skills, and attitude of TH aids adoption through promoting and encouraging application, addressed the gap in practice. As a means to enhance TH in Hospice, some strategies and standard practices that has been used to previously address the gap in practice include early education, reinforcement, and continued learning (Tieman et al., 2016). This helped to make TH fun and streamline the process to boost end-user engagement and adoption. However, the lack of resources, equipment, and willingness of facilities hindered TH usage (Worster & Swartz, 2017).

Local Background and Context

Hospice services intend to neither hasten nor defer death, but support life and regard death and dying as a normal process of aging. There are four distinct levels of care involved in Hospice services, which include, crisis care, routine care, general inpatient care, and respite care (Connor & Gwyther, 2018). Patients seeking Hospice care are focused on comfort rather than curative care (CDC 2015). Terminal illness or end-stage disease is a term used for a healthcare condition that cannot be cured or adequately treated despite interventional therapies and regimens Although it is estimated that a patient considered terminally ill has a life expectancy of six months or less, research showed that patients often live longer, upon accessing Hospice services, as he or she has better symptom management, improved quality of life, and enhanced patient satisfaction (Connor & Gwyther, 2018). The CDC (2015) estimates that 42% of the American population has a family or friend that suffers from a terminal illness. The physical and emotional burden of terminal illnesses on patients, their bodies, and families cannot be overlooked (Connor & Gwyther, 2018). The negative effects of terminal disease diagnosis are daunting and need to be addressed to ensure the highest quality of life during a patient's end-of-life care.

Access to Hospice services cannot be achieved without a physical examination and medical record review that revealed necessity and contingency to Medicare and Medicaid guidelines for coverage and reimbursement of medical services (Zheng et al., 2018). The admission assessment for eligibility purposes are achieved through two modes of assessment, general or remote. A general admission assessment involved a face-to-face

assessment of the patient, while a remote admission assessment utilized TH technologies that are available and accepted as standards of care. The earliest form of TH was first introduced and used in the medical realm in the 1950s (WHO, 2020). TH delivered healthcare services from a distance through information and telecommunication technologies to share and exchange data for diagnosis, treatment, education, and advancement. It provided technology savvy solutions for care delivery with the potential to increase involvement, awareness, and empowerment of patients, as well as, improved the clinician-patient relationship through increased trust, accessibility, and open-communication for patient-care enhancement. The growing demands on health professional's availability of human resources to meet the population and disease demands widened the gap between research and clinical practice adoption and application. Mainstreaming health services is achieved through the use of new technologies to transmit health information and provide care from a distance (Worster & Swartz, 2017). Schroeder and Lorenz (2018) emphasized the fact that newer technologies have the power to enhance care initiatives by utilizing a whole-person care approach to bridge the gap between healthcare providers and accessibility barriers. This digital application introduced and facilitated TH devices, that provided virtual access to new and improved diagnostic tools, treatments, and protocols. Tieman et al. (2016) determined that utilizing TH enabled healthcare professionals to care for more patients in the comfort of their home, especially those patients living in rural areas, which resulted in admission onto Hospice service, sooner. Yet, despite its potential to improve the admission process, less than five percent of clinicians were utilizing TH during all hospice assessments of

patients seeking Hospice services (CDC, 2015). The barriers to TH implementation involved the cost of equipment, scalability, broadband connectivity, complexity, variability, reimbursement, and licensing requirement.

Below is a list of words and definition of terms that have multiple meanings and are interchangeable, which were also noted on pages 11-13. Here are concise definitions of focally used terms or operational processes relevant to understanding the DNP QI evaluation project:

- The HBM is a psychological model developed by social psychologists, that explains and predicts an individual's health-related behaviors, particularly regarding the adoption, utilization, and access to health care services (Glanz et al., 2008). It is one of the most widely used models for understanding and promoting changes in health and lifestyle behaviors.
- Diffusion is the process of an innovation being communicated through channels over time among members of a social system; special type of communication concerned with spreading new ideas, thoughts, opinions, and facts (Berger, 2011)
- Innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Berger, 2011). The theory can provide useful information regarding its influence on improving healthcare delivery, accessibility, and quality of care.
- Everett Roger's Diffusion of Innovation Theory is one of the oldest social sciences theories; originated in communication to explain how, over time, an

> idea or product gains momentum and diffuses or spreads throughout a specific population or social system (Trahan, 2019).

Based on the Center for Connected Health Policy (2019) TH is not treated across the board in the same manner as in-person delivered services when it is concerning state and federal contexts applicability and application. In the United States, each state's laws, regulations, and Medicaid program policies differ, although certain trends are apparent, such as usability in homes, schools, programs, dentistry and healthcare specialties (Center for Connected Health Policy, 2019). States refined and expanded their TH reimbursement policies based on individual modality, services, and location of the patient. However, specific documentation and confidentiality, privacy, and security guidelines are in place to ensure TH was applied appropriately. In recent year's laws and regulations have been modified and adjusted to allow healthcare practitioners to prescribe medications through TH within federal limits (Center for Connected Health Policy, 2019).

Role of the Doctor of Nursing Practice Student

I was a master's prepared registered nurse with 5 years of emergency and Hospice experience in the nursing profession. Although I had the opportunity to use TH tools and interventions in providing care to patients with chronic and terminal diseases, I was not employed at the site where this DNP QI evaluation project took place. I observed healthcare providers not utilizing this service to its full potential for a variety of reasons and an opportunity to strive for improvement in all hospice admission assessments of patients seeking Hospice services using technology. I served as the leader, investigator, and student of this DNP QI evaluation project and completed a literature review which

presented the current state of evidence regarding TH and Hospice referrals and to answer the practice-focused question, which was not bounded by a setting. A potential bias I possessed is the pro-innovation belief that anything new is better than anything already in use. This bias can be blamed on the fact that technology surrounds everyday living, and I will attempt to stick to the facts. My personal opinions of technology will not influence how I analyzed and synthesized the de-identified data provided by the organization to this DNP QI evaluation project.

Role of the Project Team

The DNP QI evaluation project team consisted of a DNP investigator, informatics director, manager, and analyst. The manager and analyst provided de-identified data from the organization to the DNP investigator. The de-identified data were directly related to the DNP project topic of the use of TH in the admission assessment of patients seeking Hospice services. My role as the DNP investigator was to provide oversight and analysis of the de-identified data provided by the organization and provide recommendations for clinical practice improvement. This DNP QI evaluation project consisted of three phases: a literature review (phase one); analysis and synthesis of de-identified TH data (phase two); recommendation for practice change (phase three). The proposed timeline for this DNP project followed:

1. Skype meeting with nursing informatics director, manager, and analyst for the DNP QI evaluation project presentation. The project team indicated a willingness to assist me with this project.

2. Analyst and manager collected and reported de-identified admission data of pre-and-post TH intervention for Hospice admission to DNP investigator. Admission data included the number of admissions based on day and month, service locations, miles lived away, and level of care data for this DNP QI evaluation project.
3. Phase two: DNP investigator analyzed and synthesized the de-identified data and identified trends/patterns/relationships of admission data for patients accessing Hospice services that reflected the period before the implementation of TH (Three months pre-implementation of TH) and after implementation of TH (Three months post-implementation of TH).
4. Phase three: DNP investigator reported analyzed and synthesized data to manager and analyst, as well as conduct modifications, changes, and recommendations for practice change.
5. DNP investigator reported project results with recommendations for practice improvement to Informatics Director, with the project team manager and analyst present.

The members of the team worked together to provide insight into the analysis and synthesis of the de-identified data, as well as, provided guidance and support which cultivated and culminated a successful project outcome. The goal was to receive data within the first eight weeks of receiving IRB approval to work on phase two. The IRB approval number is 05-12-20-0745840. The recommendations and final project results in phase three were reported to the Director of Informatics. The collaboration of all these

members worked to complement the project and ensure its completion to meet the committee's approval and the standards of Walden University's Institutional Review Board.

Summary

This section of the DNP QI evaluation project served to discuss the framework of the model and theory used in research for the conduction of a literature review. I discussed the local background and context of TH and Hospice care and services, as well as, its relevance to nursing practice. I also reviewed the role of the DNP student and the role of the project team. Section three will examine the sources of evidence and collection, along with data analysis and synthesis.

Section 3: Collection and Analysis of Evidence

Introduction

In the healthcare realm, TH had the potential to improve all hospice admission assessments of patients for the improved accessibility to hospice services. Yet, despite this potential, several barriers affected the adoption and use of TH. This DNP QI evaluation project addressed the gap in practice of the lack of TH use in the general admission process of patients seeking hospice services. This section of the DNP QI evaluation project served as a literature review presenting the current state of evidence regarding the usability and functionality of TH in accessing hospice services. The HBM (Glanz et al, 2008) and Roger's diffusion of innovation theory (Trahan, 2009) were the framework of this DNP QI evaluation project. In this section, I present the sources of evidence, discuss the tools used for data collection, and report the systems that assisted with the analysis and synthesis of data and information gathered from the comprehensive literature review.

Practice-Focused Question

The gap in practice that this DNP QI evaluation project addressed was the lack of use of TH in the hospice admission assessment process. The PFQ that guided this evidence-based DNP project was:

PFQ: Will using a TH assessment process increase accessibility for patients seeking hospice services compared to the standard general admission process?

According to Schroeder and Lorenz (2018), prompt and courteous access to hospice services is a major concern in end-of-life comfort care. The urgency for improvement of

the admission process of patients into hospice services is mainly because too many people are not receiving hospice care in the appropriate timing (Schroeder & Lorenz, 2018). Timing affects an individual's level of suffering from unmanaged symptoms related to terminal diseases and lack of the appropriate care for a quality end-of-life experience (Schroeder & Lorenz, 2018). The purpose of this DNP QI evaluation project was to evaluate this practice change and gain insight into the effectiveness of TH by examining, analyzing, and synthesizing data from the results of the outcome measures. This is in alignment with the practice-focused question that helped to determine whether utilizing a TH assessment process to determine readiness for hospice care improved earlier access compared to the standard general admission process. Research evidence supported the use of TH in admitting, monitoring, and managing patients with terminal illness into hospice as a way of dealing with barriers. Despite the many potential benefits of TH, it is not being utilized by healthcare professionals to its full potential.

Sources of Evidence

The focus of the literature search was to identify sources with the highest-quality and strongest evidence. The sources of evidence were a product of an extensive search of the prominent electronic online nursing databases for peer-reviewed literature relevant to the practice-focused question and purpose. This review included literature from Medline, PubMed, Cochrane, ProQuest E-Book Central, Embase, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) using search terms related to the topic including randomized control trials and quantitative research studies. I evaluated the level

of evidence of the selected literature through the use of the level of evidence hierarchy (Ingham-Broomfield, 2016; see Appendix C).

The goal of this DNP QI evaluation project was to present the current state of evidence on the use of TH in improving access to hospice services for patients with a terminal illness diagnosis. As the number of patients living with terminal illness continues to rise, so is the request to be treated as normally as possible for comfort and peaceful measures in the privacy of home (Schroeder & Lorenz, 2018). Therefore, there is a need to adopt and disseminate newer approaches of patient care management that go beyond the traditional face-to-face provider eligibility admission assessment and follow up visits. I used strategic yet fundamental search terms to identify as many sources as possible that focused on the use of TH to access hospice services.

Literature that were written and published between 2015 and 2020 were collected to ensure the most current evidence was being reviewed for this project. I reviewed the titles, abstracts, and reference articles to determine if they were relevant to the topic of this DNP QI evaluation project and could assist with answering the practice-focused question in relationship to the de-identified data collection and analysis. The objective of this search was to collect and analyze as much data and information that could assist in determining the current state of evidence in the use of TH to access hospice services. I also collected de-identified data from the organization that provides pre- and post-TH intervention data in the admission process. The evidence was used to determine the effects of utilizing a TH assessment process in determining readiness for hospice care

compared to the standard admission process. The data had been analyzed to determine trends, patterns, or relationships amongst the number of admissions.

Published Outcomes and Research

Literature sources were collected through Walden University's Library portal of nursing databases such as the Medline, PubMed, Cochrane, ProQuest E-Book Central, Embase, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) using search terms related to the topic. The key words I focused on included: *telehealth, telemedicine, telemonitoring, telecare, telementoring, telenursing, hospice service, palliative care, end-of-life care, terminal care, home hospice care, admission,* and *assessment.* Common themes and key ideas were extracted through a thorough literature analysis and synthesis. I used the complex Boolean operators (and, or, and not) in search of relationships between the search terms to either narrow or broaden the search results, as well as applied inclusion and exclusion criteria in the selection of literature sources. I used a literature review matrix to organize and summarize the findings of each source (see Appendix D). To provide the most recent information on the topic of interest, the literature search was limited to sources written and published between 2015 and 2020.

Protections

This DNP QI evaluation project involved a comprehensive literature review in conjunction with the collection of de-identified data from the organization to compare TH use pre- and post-TH implementation. The data provided by the organization were de-identified to received approval of the Walden University's Institutional Review Board (approval number 05-12-20-0745840) for the continuation and completion of this DNP

project. The results and findings of this project were used to make clinical practice change recommendations. The data from this DNP QI evaluation project had been archived electronically for 5 years on a secure cloud.

Analysis and Synthesis

The EBP data that have been incorporated in this DNP QI evaluation project were obtained from sources that met the predetermined inclusion criteria. I used a literature review matrix that recorded my findings and organized the evidence of each source based on its data. I also used Excel to keep track of the admissions pre- and post-TH each day for 3 months along with the total of admissions for each month. A matrix allowed me to compile important details about each source that can be used to compare and contrast articles; revealing the similarities and differences of the articles helped to determine the scope of research and its relationship to the research and PFQ. Also, using the level of evidence hierarchy (see Appendix C) assisted in rating each literature source that met the inclusion criteria to evaluate its effectiveness, reliability, and validity. It provided a way of analyzing data through describing, illustrating, condensing, and recapping it for evaluation and recommendation. The data provided insight and further understanding of the future of nursing, as well as the TH modalities. For this DNP QI evaluation project, seven studies were included. Some of the challenges of conducting a literature review were concentrating on the details of the text. Managing a proper balance between relevant searches, formatting, and sorting the information was far from easy. However, utilizing Appendix C and Appendix D, I was able to determine the level of the evidence and sort the data onto a grid to determine its relevance.

Additionally, a statistical and validated paired *t* test analysis pre- and posttest design was used to analyze the de-identified data. The de-identified data was provided in bulk, with all the data of pre- and post-TH implementation on an excel spreadsheet. The data on the excel spreadsheet looked like simple numbers with labeling, including a timeline of admission data that was specific to general and remote admissions, as well as levels of care, distance from main campus, and day-to-day admission numbers. Using a paired *t* test determines if there are any statistically significant differences between the implementation of TH in the admission assessment process. Quality improvement initiatives allowed for findings to be grouped into categories of common themes and common themes into synthesized findings of key ideas. This helped me to identify patterns or relationships amongst variables or circumstances of collected data for implication and limitation. I conducted careful translation and analysis of the data assure the integrity of the evidence. I used the univariate method to detect outliers amongst the de-identified data.

Summary

For this DNP QI I explored the potential of TH increasing accessibility to hospice services for terminally ill patients. Hospice care at the beginning of diagnosis is due to the advancement of palliative care services and early diagnosis leading to access to palliative care sooner rather than later. Despite this knowledge, too many patients continue to suffer from poor quality of end-of-life care that had negative physical, emotional, and spiritual consequences on patient's well-being. The advancement in health information technologies, such as TH interventions presents a possible opportunity for

improving accessibility to hospice services (Kinsella, 2005). I have discussed the practice-focused question that is guiding this DNP project, including the sources of evidence and collection and analysis of data and synthesis. This project has the potential of becoming a cost-effective and efficient process for clinicians to use in admittance into hospice services. In Section 4 I discuss the findings, implications, and recommendations of the comprehensive review of the literature and de-identified data, as well as the contribution of the doctoral project team and the strength and limitations of the project.

Section 4: Findings and Recommendations

Introduction

In the healthcare realm, TH is defined as having the potential of improving accessibility, utilization, provision, safety, and quality of services (Finley & Shea, 2019). Ensuring patients with a terminal diagnosis receive the appropriate level of care during end-of-life is crucial for their safety and comfort. Identifying interventions that have been developed to improve admission accessibility to hospice services that provide comfort and palliation is imperative. The question I explored in his DNP QI study was the role of TH in the admission assessment process of patients seeking access to hospice services. This DNP QI evaluation project addressed the gap in practice of the lack of TH use in the general admission process of patients seeking hospice services. The conceptual models used for this DNP QI evaluation project include the HBM (Glanz et al, 2008) and Roger's diffusion of innovation theory (Trahan, 2009), which were discussed in detail in Chapter 2. The purpose of this DNP QI evaluation project was to review, evaluate, and analyze the current clinical practice of TH utilization based on de-identified data provided by a local hospice organization and align it to current evidence-based literature findings to make recommendations for clinical practice change. This DNP capstone project was guided by the practice-focused question:

> PFQ: Will using a TH assessment process increase accessibility for patients seeking hospice services compared to the standard general admission process?

To answer this practice-focused question, a validated pre- and post-*t* test in Excel, in conjunction with a comprehensive literature review matrix (Appendix D) were used to

determine the effects of TH on the total number of admissions. The sources of evidence were de-identified data regarding general and remote admissions over a time of 6 months, 3 months pre-TH implementation, and 3 months post-TH implementation.

Findings and Implications

Utilizing a TH assessment process in the admission of patients seeking hospice services resulted in an overall increase in the number of hospice admissions. Once the de-identified data were received by the organization, they were organized based on the type of admission and service location. An in-depth look at day-by-day number of admissions was also studied to determine if there were any relationships or connections amongst the data. Common themes and key ideas were extracted from the de-identified data and compared to those found and identified using a comprehensive literature review matrix for best clinical practice recommendation. An unanticipated limitation of this study was the current event of the worldwide coronavirus (COVID-19) pandemic, which has increased the use of TH and telemedicine across all aspects of healthcare. The priority to provide safe, effective, and efficient care to individuals has loosened CMS regulations to use the CDC guidelines for clinical practice solutions and resources. Preventative measures and technology expansion have been implemented to slow the spread of COVID-19 with TH and related modalities. COVID-19 helped to expand accessibility to TH and telemedicine, making it mainstream. It not only changed the way healthcare is delivered, it promotes the widespread adoption and usability of TH modalities to allow health care professionals and patients to connect using technologies for real-time telephone, live audio-video interaction, or remote patient monitoring. TH allowed

patients and practitioners to stay connected to one another from a distance, ensuring that individual safety remained a priority. In using this technology, precautions such as quarantine and social distancing measures were adhered to.

Telehealth Modalities

The literature review revealed significant data of the different modalities of TH (see Appendix D). Seven articles were identified, sorted, and analyzed based on the inclusion criteria of the search and analyzed to identify common themes and key ideas (Appendix D). The key ideas amongst the findings revealed that the majority of TH applications were implemented through a mobile TH platform. Also, Appendix D revealed that all articles had significant data that supported the use of TH with patients, families, and caregivers despite the type of TH modality. The themes of distance, accessibility, and satisfaction factors were assessed to determine the effects of TH. It was found that TH, whether used on a mobile or computer device, was shown to have a significant impact on patient care initiatives and was supported for the hospice realm.

General Versus Remote Admissions

The de-identified data revealed that the number of total admissions included both new admissions and readmissions. New admissions were defined as a new patient encounter for individuals with a hospice referral or consult who had never been admitted into hospice services prior. On the other hand, readmissions were defined as those patients being reevaluated to continue hospice services after three consecutive benefit periods, not including patients transferring from other hospice services. The number of total admissions only reflected routine, crisis, and general inpatient level of care, which

excluded respite level of care. Respectfully, the number of patients receiving respite care were not included in this report or apart of the de-identified data as this level of care can never be initiated or offered to patients during a new admission or the readmission process. If at the time of admission or readmission, a patient required respite care, they must be transferred to an inpatient unit under general inpatient level of care or receive crisis care in the home.

As shown in Table 1, the 3 months before TH implementation, the number of remote admissions to hospice was 0. Three months post-TH implementation, the number of general admissions decreased as the number of remote admissions increased. Although the number of general admissions still reflected a majority of the number of admissions post-TH implementation, it had an inverse relationship to remote admissions. The number of all hospice admissions increased approximately 30% after the implementation of a TH intervention. However, the growth of all hospice admissions every month post-TH intervention showed no real relationship to the previous month, as the numbers fluctuated with no direct correlation or causation of one another. Also, the first, second, and third month utilizing remote admission post-TH implementation accounted for 33%, 36%, and 45% of total admissions, as seen in Figure 1. Of those remote admissions during the 3 months post-TH, there was an overall increase in patients oncoming services under the routine level of care, depicted in Figure 2.

Based on the findings in Table 2, this study showed a decrease in the number of admissions for the population without TH ($M = 183.5$, $SD = 31.8$) and a significant increase in the number of admissions for the population who received TH ($M = 48$, $SD =$

53). There was a significant effect for TH accessibility, $t(5) = 3.87$, $p = .005$, despite the number of admissions accounting for a majority of the number of admissions post-TH implementation shown in Table 2.

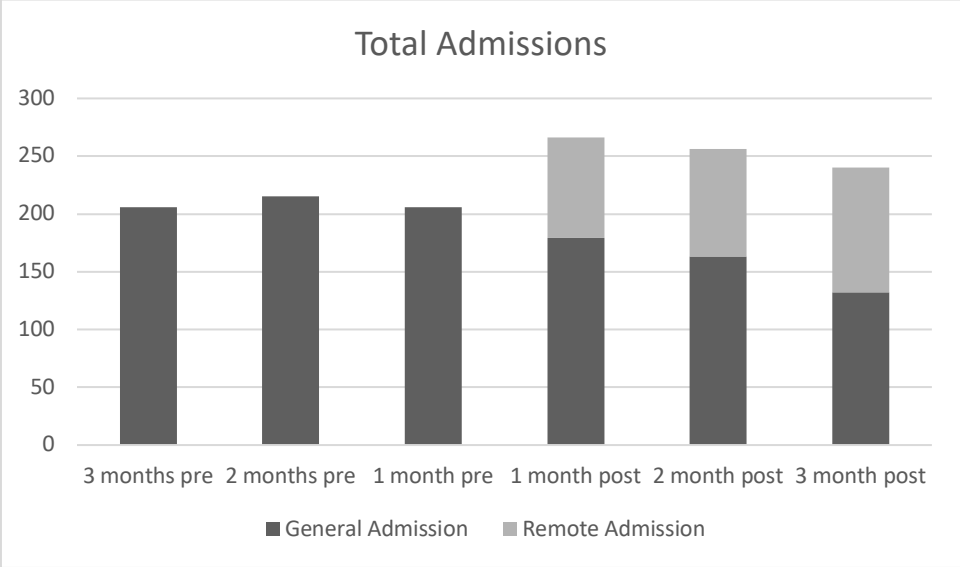

Figure 1. Total number of hospice admissions.

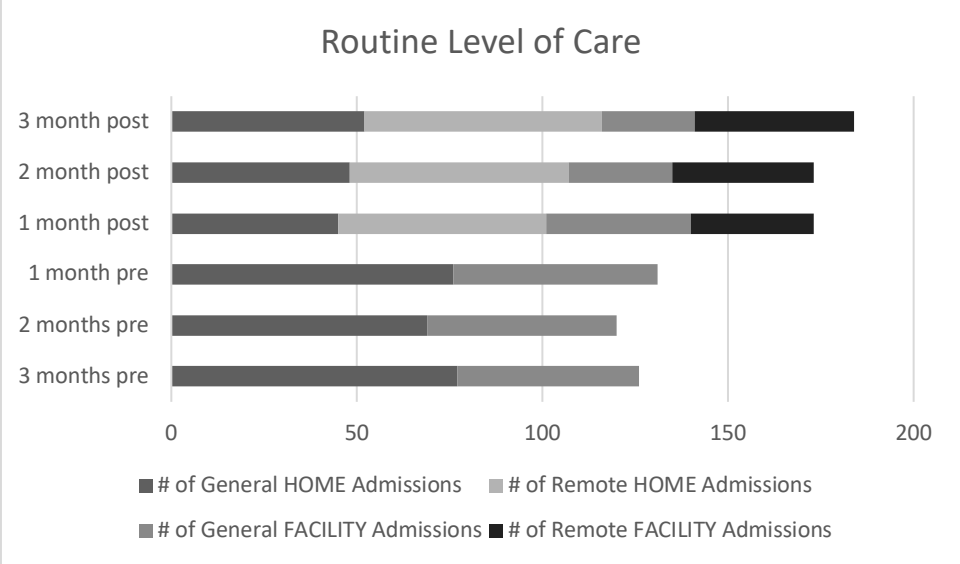

Figure 2. Routine level of care admissions.

Table 1

Total Number of Admissions

Time	General	Remote
3-months pre	206	0
2-months pre	215	0
1-month pre	206	0
1-month post	179	87
2-months post	163	93
3-months post	132	108

Note: These numbers reflect both new admissions and readmissions

Table 2

t Test: Paired Two Sample for Means

	General	*Remote*
Mean	183.5	48.0
Variance	1019.5	2811.6
Observations	6	6
Pearson correlation	-0.928500537	
Hypothesized mean difference	0	
df	5	
t stat	3.974108329	
P(T < = *f*) one-tail	0.005296354	
t Critical one-tail	2.015048373	
P(T< = t) two-tail	0.010592708	
t critical two-tail	2.570581836	

Distance from Main Campus

Distance is calculated according to the patient's service location to determine the effects of TH on the total number of admissions. A patient's service location is defined as the location of an admitted patient's location of care, which can be their own home or a nursing facility including one of two organization owned inpatient units. The distance is calculated using the main hospice organization address (main campus) rather than the patient's home address in relation to the patient's service location. There was a total of 17 service locations that are identified according to zip code which was grouped based on two subcategories of less than twenty miles away and more than twenty miles away from the main campus. The pre-TH implementation reflected 301 individuals living less than 20 miles and 288 living more than 20 miles away, post-TH implementation revealed 344 individuals living less than 20 miles away and 371 individuals living more than 20 miles away. These findings implicated that post-TH there was an increase in admissions of patients living more than 20 miles away from the main campus as depicted in Figure 3. There was a 14% increase in admittance of patients living less than 20 miles away, while there was a 29% increase in individuals receiving access to care who were living more than 20 miles away. This is approximately a two-fold increase in the population of patients living further away from the main campus receiving access to Hospice services. The results from the pre-test (M = 294.5, SD = 9.2) and post-test (M = 357.5, SD = 19.1) indicate the increase in number of patients distantly receiving Hospice services via TH, $t(1) = -3.15$, $p = 0.09$. Therefore, increased accessibility to hospice services surged as more patients were receiving hospice services.

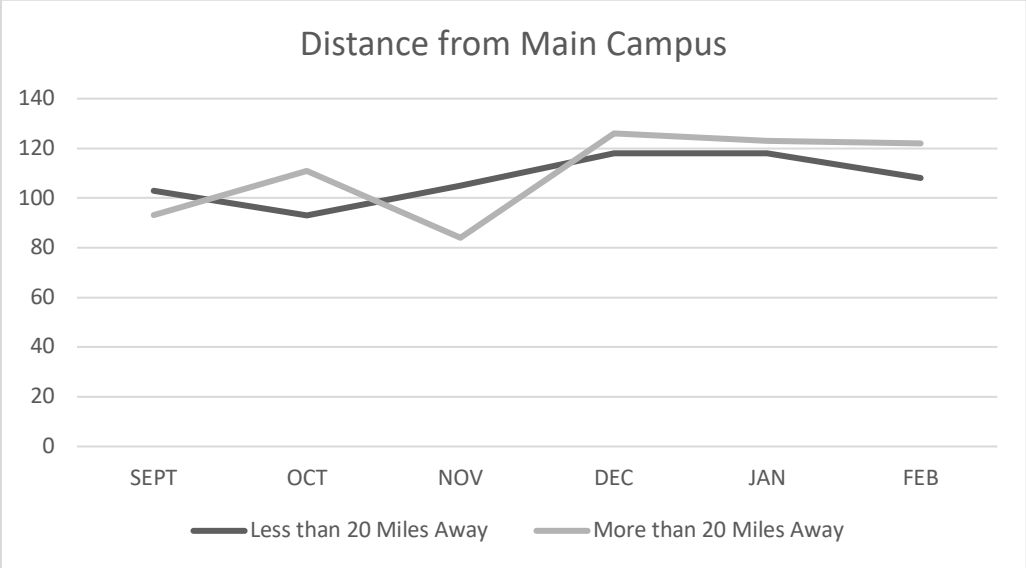

Figure 3. The distance of patient service location from the main campus

Table 3

t Test: Paired Two Sample for Means

	Less than 20 miles	*More than 20 miles*
Mean	294.5	357.5
Variance	84.5	364.5
Observations	2	2
Pearson correlation	-1	
Hypothesized mean difference	0	
df	1	
t stat	-3.15	
P(T < = *t*) one-tail	0.097847655	
*t c*ritical one-tail	6.313751515	
P(T<=t) two-tail	0.195695309	
*t c*ritical two-tail	12.70620474	

Day-by-Day Admissions

In addition to a monthly overview, a day-by-day analysis of admissions was conducted to determine if there were any relationships between the number of admissions. However, the number of admissions was independent of one another and showed no correlation except for A common theme of holidays. An influencing factor on the number of admissions was the date of a holiday. On holidays the number of admissions ranged from zero to two in comparison to other days of the month as seen below in Table 4. These holidays reflected during this time were Labor Day, Halloween, Veterans Day, Thanksgiving, Christmas Eve, Christmas Day, New Year's Eve, New Year's Day, and Valentine's Day.

Table 4

Number of Admissions Per Day

	Pre			Post		
Day	Sept	Oct	Nov	Dec	Jan	Feb
1	5	3	5	9	2	2
2	1	2	9	11	14	4
3	4	5	8	10	3	5
4	7	11	5	9	4	2
5	2	10	6	12	11	8
6	6	9	11	13	9	6
7	2	8	7	9	13	9
8	4	9	9	12	8	10
9	8	8	5	9	8	10
10	7	7	8	12	5	8
11	7	9	1	8	2	10
12	8	11	6	9	13	6
13	9	7	10	11	11	14
14	7	9	7	8	8	1
15	6	11	9	9	1	14
16	8	9	6	8	13	11
17	7	7	6	11	7	13
18	6	6	7	9	13	11
19	6	7	3	8	9	5
20	7	12	2	7	11	8
21	10	6	6	11	12	13
22	9	8	8	14	5	9
23	8	6	11	3	7	8
24	9	3	9	2	7	8
25	11	8	8	1	9	7
26	6	8	7	5	11	8
27	8	3	14	7	13	6
28	9	5	0	8	7	13
29	8	4	6	9	6	11
30	8	3	2	11	9	NA
31	3	1	NA	1	5	NA

Recommendations

TH is a fast-growing and effective means of providing safe, effective, and efficient patient care (WHO, 2020). The proposed recommended solution that potentially addresses the gap-in-practice is to involve the use of TH in all admissions. I am recommending the use of TH be a policy to standardize the practice of admitting all patients based on the same admission assessment process can continue to reap the benefits of implementing TH that are seen over three-months post-implementation. Additionally, utilizing TH may help to continue to widen the area of service for those individuals who live more than twenty miles away from the main campus. Improving accessibility to individuals at all levels of care and distances can ultimately enhance access and to Hospice services and care to those during end-of-life. The findings of this DNP QI evaluation project indicate that the integration of TH in all hospice admissions is promising to meet the needs of these patients. Significantly reducing the number of in-person assessment visits means a significant saving of time, resources, and money. This study took place over a short time therefore a future study is needed to determine if TH would lead to a bigger, more widescale increase in accessibility and improved admission assessment of patients seeking hospice services. Conducting further research may help provide a conclusive determines of the impact of TH in Hospice services provision.

Contribution of the Doctoral Project Team

The DNP QI evaluation project team consisted mainly of the DNP investigator, informatics director, manager, and analyst. The manager and analyst provided de-identified data from the organization to the DNP investigator. The de-identified data was

confirmed to be directly related to the DNP project topic of the use of TH in the admission assessment of patients seeking Hospice services with a team meeting. As the DNP investigator, I conducted the study and provided oversight and analysis of the de-identified data given by the organization. The recommendations for clinical practice improvement and final project results were reported first to the DNP project team and revisions were made, accordingly before then presenting to the Director of Informatics. Currently, there are no plans to extend the project beyond the DNP doctoral project as additional data is required to determine its overall impact on the entire Hospice realm.

Strength and Limitations of the Project

Investigating the effects of TH in the hospice admission assessment process is a substantial step forward in clinical practice and quality improvement initiatives. This project had its strengths, but there were also several limitations that the DNP investigator noted throughout the project. The investigator had difficulty extracting data, however, with the help of the DNP project team, it was obtainable. Recent system update in response to an organizational system platform shift limited information regarding TH use in Hospice admissions. However, the gap in time of the system change provided time without TH to be compared to the time with TH. This made obtaining admission assessment data that depicted the use of TH restricted and scarce. Each admission was reviewed to determine whether TH was implemented during the admission assessment process. This in turn strengthened the validity and accuracy of the number of admissions to determine which admissions utilized TH and those that did not. Another limitation was that the distance from the patient's service location was calculated in respect of the main

Hospice campus and sorted by less than or more than 20 miles away. No data on the exact number of miles were provided, so outliers amongst the data could not be identified. A recommendation for future projects addressing similar topics and using similar methods would be to lengthen the time of the study. Reviewing and analyzing a wide scale of data allowed for comparing long-term usefulness and meaningfulness of TH.

Section 5: Dissemination Plan

A capstone project is not complete without the dissemination of the study's findings. Dissemination of a study's findings are accomplished through the means of a professional poster, presentation, or paper, which allows the sharing and circulation of the results. The aim for dissemination is to bring attention to further research or clinical practice change. For this DNP QI evaluation project, plans for dissemination include submitting the capstone paper to ProQuest as part of the requirement for completion of the Doctor of Nursing Practice program at Walden University and collaboration with the Informatics team. As the DNP investigator, I teamed up to work with the Informatics director to further disseminate the project's findings to nursing leaders and educators of the organization. My hope is that bringing attention of the impact of TH will potentially allow for adoption and utilization of TH in all hospice admissions, therefore improving efficiency and productivity of the number of admissions and benefitting the entire hospice organization. This DNP QI evaluation project sheds light on the importance and impact of TH utilization in the admission assessment of patients seeking hospice services. While additional investigation and research is needed, the Informatics team can use the findings of this work as the foundation for future research for quality improvement and positive social change. TH is becoming a new normal of everyday clinical practice, especially since the world had been plagued with the coronavirus pandemic. Therefore, TH would be appropriate for dissemination to audiences such as patients, families, caregivers, and staff members in all venues such as primary and secondary healthcare practices for nonurgent inquiries or treatment recommendations.

Analysis of Self

This DNP QI evaluation project provided me the opportunity to put into practice the principles, methods, and knowledge I have retained throughout my educational journey at Walden University. It has prepared me for the future in my career as a doctoral-prepared nurse for a lifetime of learning by allowing me to exhibit and apply the skills and teachings I have gained. Performing this capstone project was intensive and challenging; however, I have been enlightened about and familiarized with the use of TH in the healthcare field and come to understand and appreciate the rigor that surrounds promoting quality improvement and change development. Although I faced some challenges with my capstone project, I persevered and overcame them, which led to critical growth and development. I was able to innovatively find new ways and solutions for problems that arose to ensure my successful completion of this DNP QI evaluation project with the help of the DNP project team. This experience has taught me valuable skills, insights, and lessons that will assist me in my role as a nurse leader. This project aligns with my long-term professional goals of continuing to influence and promote positive change in the nursing profession to further enhance EBPs for the future of healthcare as a project manager. I will be able to utilize these findings to continue to promote an alternative to social distancing that will not impede or place patients at risk for not receiving the appropriate care they need.

Summary

This DNP QI evaluation project has allowed me to analyze, synthesize, and present the current evidence regarding the impact of TH in the admission assessment

process of patients seeking hospice care. This study contributes to EBP by providing significant data to improve nursing care to patients at the end-of-life. Although further research is needed for a complete practice change, this capstone project brings to light the many TH interventions that are available to healthcare professionals, as well as its effect on the admittance of patients into hospice services.

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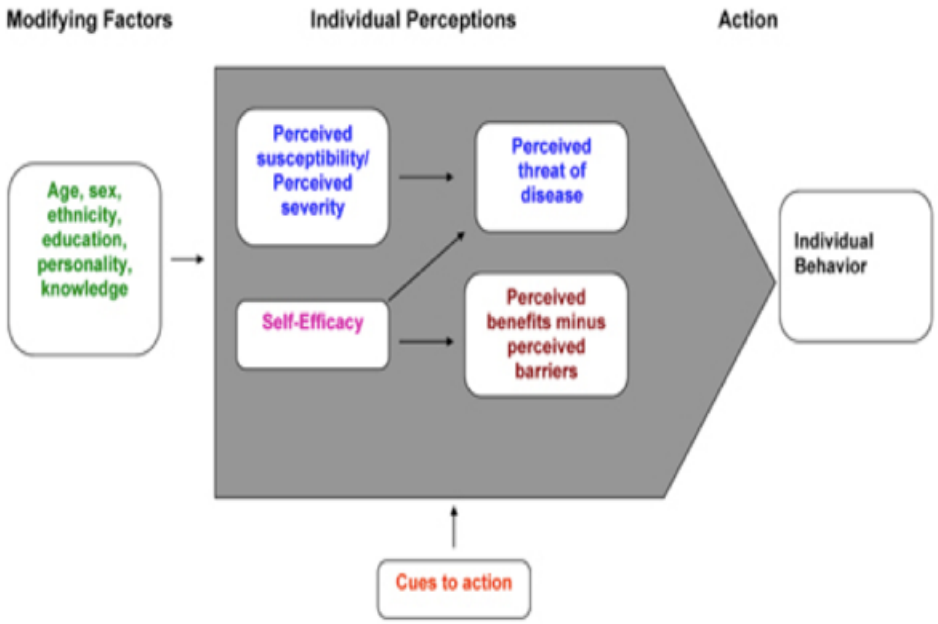
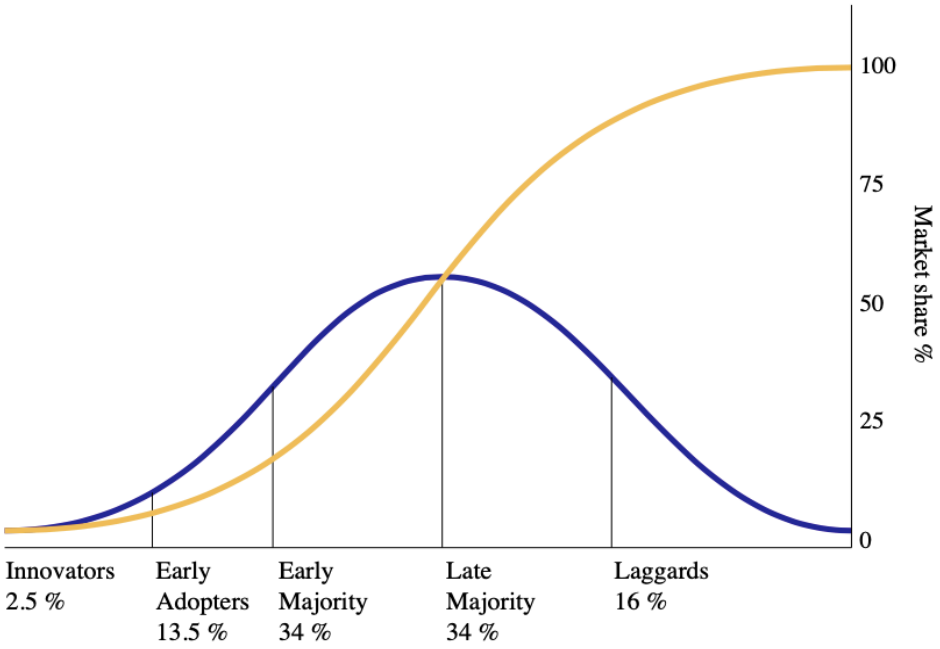
Appendix A: Health Belief Model



The health belief model (HBM) is a psychological model that explains and predicts an individual's health-related behaviors in relation to modifying factors and individual perceptions. Visual description. Adapted from "Health behavior and health education: Theory, research, and practice (4th ed.)" by Glanz et al, 2008. Used with permission.

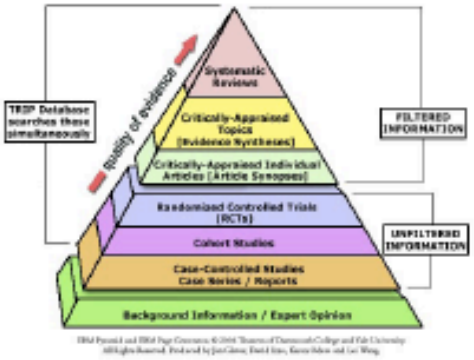
Appendix B: Diffusion of Innovation Curve



The Diffusion of Innovation Curve seeks to explain how, why, and at what rate new ideas and technology spread. Visual description. Adapted from "Diffusion of innovations" by Trahan, 2019, *Salem Press Encyclopedia.* Used with permission.

Appendix C: Hierarchy of Research Designs and Evidence

Figure 1



(Glover et al 2006)

Figure 2

(Bone and Spine, 2015; http://boneandspine.com/what-is-hierarchy-of-evidence/, 2015)

Comparative Grid of the Seven Levels of Evidence

Level 7 Base	Ideas, Opinions, Editorials, Anecdotes.	Least reliable. Basically anecdotal. Unscientific reports and observations (Usher and Fitzgerald 2008)
Level 6	Case Series and Case Reports	Slightly more reliable but there is a potential for bias in recalling information and the quality may be affected if the information is collected retrospectively (Jirojwong and Pepper 2013).
Level 5	Cohort Studies	Becoming more reliable. Observational studies are good at answering questions about prognosis, diagnosis, frequency and aetiology but not questions regarding the effect of an intervention (Del Mar et al 2013 p.24).
Level 4 Middle	Random Control Trials	Very Reliable/ Gold Standard. Random Controlled Trials are able to quantify the effects of intervention hence they are higher up the pyramid than Cohort studies (Koch et al 2008)
Level 3	Critically-Appraised Individual Articles (Article Synopses)	Increasing reliability of findings. A synopses is the evidence of an individual article with an expert telling you its strengths (Wilczynski and McKibbon 2013 p.43). This is less reliable than Critically Appraised Topics as there is less evidence on single articles than in a synthesis of a topic using several papers.
Level 2	Critically Appraised Topics (Evidence Syntheses)	Very high reliability. Synthesising research publications entails the categorising of a series of related studies, analysing and interpreting their findings and then summarising those findings in to unified statements. The potential lack of standardisation can undermine the validity.
Level 1a/1b Apex	Systematic Reviews and Meta-analysis	The most reliable of all. Systematic reviews, and Meta-analyses, of primary research into human health care and health policy are recognised internationally as the highest standard in evidence-based care (Cochrane Community 2015; Jirojwong and Welch 2013 p.284).

The Hierarchy of Research Designs and Evidence. Visual description. Adapted from "A nurses' guide to the hierarchy of research designs and evidence," by Ingham-Broomfield, 2016, Australian Journal of Advanced Nursing. Used with permission.

Appendix D: Comprehensive Literature Review Matrix

Authors/Year	Aim/Study Objectives	Methodology	Telehealth Interventions /Modalities	Analysis & Results	Level of Evidence
Doolittle, G. C., Nelson, E.-L., Spaulding, A. O., Lomenick, A. F., Krebill, H. M., Adams, N. J., Kuhlman, S. J., & Barnes, J. L. (2019). TeleHospice: A community-engaged model for utilizing mobile tablets to enhance rural hospice care. American Journal of Hospice & Palliative Medicine, 36(9), 795–800. https://doi-org.ezp.waldenulibrary.org/10.1177/1049909119829458	Increasing accessibility to hospice care to patients in rural communities	Partnering with the University of Kansas Medical Center for Hospice Services, Inc (HSI) and TH modality	Mobile tablets with a secure cloud-based video-conferencing solution	Traveling great distances to reach patients affect access, quality, cost, and safety. 218 TH videoconferencing encounters with a total of 917 attendees. Calls were made for direct patient care, family support, and administrative purposes. TH calls have been shown to save HSI money, and initial reports suggest it strengthens communication and relationships between staff, patients, and family members. Continued research is needed to understand the best fit within frontier hospices to inform future urban applications and address reimbursement for Tele Hospice and its potential supplement in improving hospice services.	V
Bonsignore, L., Bloom, N., Steinhauser, K., Nichols, R., Allen, T., Twaddle, M., & Bull, J. (2018). Evaluating the feasibility and acceptability of a telehealth program in a rural palliative care population: Tap Cloud for palliative care. Journal of Pain and Symptom Management, 56(1), 7–14. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2018.03.013	1) describe a TH palliative care program using the Tap Cloud remote patient monitoring application and video-conferencing 2) evaluate the feasibility, usability, and acceptability of a TH system in palliative care 3) use a quality data assessment collection tool in addition to Tap Cloud ratings of symptom burden and hospice transitions	Mixed-method approach was used to assess feasibility, usability, and acceptability. Quantitative assessments and qualitative semi structured interviews on a subpopulation of TH patients, caregivers, and providers were analyzed to learn of their experiences using Tap Cloud	Tap Cloud	100 palliative care patients in rural Western North Carolina were enrolled: • The mean age of patient enrolled was 72 years • 60% women • 23% pulmonary diagnosis Remote patient monitoring using Tap Cloud resulted in improved symptom management and patients in the model had a hospice transition rate of 25%. Overwhelmingly positive experiences with TH with 3 main advantages: • Access to clinicians • Quick responses • Improved efficiency and quality of care	V

Rocque, G. B., Halilova, K. I., Varley, A. L., Williams, C. P., Taylor, R. A., Masom, D. G., Wright, W. J., Partridge, E. E., & Kvale, E. A. (2017). Feasibility of a telehealth educational program on self-management of pain and fatigue in adult cancer patients. Journal of Pain and Symptom Management, 53(6), 1071–1078. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2016.12.345	Assess the feasibility of a TH pain and fatigue self-management program among adult cancer patients. Assessment of differences in patient characteristics, recruitment, and retention of patients based on two screening strategies: 1) navigator-collected, patient-reported pain or fatigue and 2) in-clinic, physician-identified pain or fatigue.	Prospective, nonrandomized, pre-post evaluation assessed feasibility, which only 50% of eligible patients choose to participate and complete the intervention	TH self-management program for pain and fatigue	The program did not meet feasibility requirements because of only 34% of eligible patients choosing to participate. However, 50% of patients starting the program graduated. Differences in baseline characteristics and retention rates were noted by recruitment strategy. At baseline, 27.3% of navigated patients were at the highest activation level compared with 7.1% in the physician-referred, non-navigated patients (P = 0.17); more than 15% of non-completers were at the lowest activation level compared with 9% of completers (P = 0.85). The TH self-management program for pain and fatigue may be better accepted among selected segments of cancer patients. Larger scale studies are needed to assess the efficacy of this program in a more selective activated population.	IV
Davis, M. S., Harrison, K. L., Rice, J. F., Logan, A., Hess, B., Fine, P. G., & Muir, J. C. (2015). A model for effective and efficient hospice care: Proactive telephone-based enhancement of life through excellent caring, "telecaring" in advanced illness. Journal of Pain and Symptom Management, 50(3), 414–418. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2015.03.012	Assessed the rate of acceptance of the intervention, intensity of the intervention, escalations of calls from Specialists to Nurses, and the effect of the intervention on utilization of clinical services, clinical miles traveled, and family satisfaction with care.	Randomized control trial	Tele-Caring-proactive phone calls to patients and caregivers by Specialists and Nurses	Tele-Caring is a viable method to proactively identify home hospice patient or caregiver needs and adjust clinical services accordingly. Findings: • 88% percent of new home hospice patients accepted Tele-Caring when offered. • A total of 5.3% of calls by Specialists were escalated to Nurses. • Tele-Caring participants had lower utilization of clinical services compared with non-participants. • Family satisfaction increased and clinical miles decreased across the organization after the implementation of Tele-Caring.	II

Massone, J., McHale, M., Portz, J., Elsbernd, K., & Moore, S. (2020). The reliability of telemedicine for hospice face-to-face recertification visits: A quality improvement project (FR408D). Journal of Pain & Symptom Management, 59(2), 452. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2019.12.121	To assess the accuracy and efficiency of telemedicine in diagnosing and managing eye problems presenting to accident and emergency departments.	A controlled trial with a face-to-face and telemedicine phases, each involving 40 patients undergoing two consecutive consultations. In the face-to-face phase, both consultations were in person; in the telemedicine phase, observer 1 used videoconferencing technology and observer 2 saw the patient face to face.	TH video-conferencing technology	Face-to-face phase: total agreement (30/40=75%), trivial disagreement (8/40=20%), clinically important disagreement (2/40=5%). Telemedicine phase (torchlight): complete agreement (16/40=40%), trivial disagreement (20/40=50%), clinically important disagreement (4/40=10%). Telemedicine phase (slit lamp): total agreement (23/40=58%), trivial disagreement (15/40=37%), clinically important disagreement (2/40=5%). Agreement levels in the telemedicine phase with torchlight examination were significantly lower (chi(2)=10.07, P=0.007) for any disagreement. Telemedicine consultations erred on the side of clinical caution and were no slower than face-to-face consultations (mean 6 min for observer 1 in both phases). Recalls were more likely (chi(2)=5.16, P=0.02) after telemedicine consultations with torchlight only (9/40) compared with face-to-face consultations (2/40). Telemedicine was found to be an accurate, safe, and efficient method of diagnosing and managing these patients, especially if slit lamp images were used.	II
Cass, C., Thomson, R., & Weide, L. G. (2016). Utilizing telemedicine in hospice: A strategy for reducing hospital heart failure readmissions and improving hospice access for complex cardiac patients (SA511). Journal of Pain & Symptom Management, 51(2), 389. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2015.12.268	Describe the current level of utilization of informatics systems in hospice and palliative care and to discuss two projects that highlight the role of informatics applications for hospice informal caregivers.	Evidence from opinions of authorities and reports from articles, web resources, clinical practice and ongoing research initiatives of expert committees	Mobile devices, video platform/ video-conferencing, web applications	Health care is an information-intensive industry, yet stakeholders may resist information technology as it may change roles and responsibilities. If IT is to play a role in hospice and palliative care, more research is needed to explore appropriate ways of designing and implementing information systems in this domain and to determine the technology's impact on patient clinical outcomes and effects on caregiving.	VII

Wilz, G., & Soellner, R. (2016). Evaluation of a short-term telephone-based cognitive behavioral intervention for dementia family caregivers. Clinical Gerontologist: The Journal of Aging and Mental Health, 39(1), 25–47. https://doi-org.ezp.waldenulibrary.org/10.1080/07317115.2015.1101631	Analysis of whether caregivers of the intervention group reported better well-being and health at post treatment than participants of an untreated control group and an attention control group and whether these benefits maintained at 6-month follow-up.	A randomized controlled study	Short-term telephone-based Cognitive Behavioral Therapy (CBT) for family caregivers	A total of 343 caregivers were screened for eligibility, of whom 259 (75.5%) met the inclusion criteria. Thirty people withdrew from the study prior to baseline assessment, leaving a final enrolment total of 229 participants. Of these, 153 were randomly assigned to one of the three conditions. Seventy-six participants were not randomized as they attended the additional telephone-only condition; 191 persons completed both baseline and post-intervention assessments; 38 (16.6%) participants dropped out between baseline and post measurement and delivered no post assessment data; and18 participants (7.8%) failed to start or to complete the intervention or PMR program, but delivered post assessment data. These 18 participants were included in the analyses as intent-to-treat cases. A total of 182 participants fully completed baseline and 6-month follow-up assessments, whereas 47 (20.5%) caregivers dropped out. Of these, 166 (72.5%) participants fully completed the questionnaires (n = 91 IG, n = 36 PMR, n = 39 CG), and another 16 (7%) continued as intent-to-treat cases (n = 7 IG, n = 9 PMR) at 6-month follow-up. A prolongation of the intervention might enhance the effects.	II