2019

Telehealth Integration Influencing Success and Sustainability

Melissa Jean Miller
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Melissa Miller

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Francisca Farrar, Committee Chairperson, Nursing Faculty
Dr. Courtney Nyange, Committee Member, Nursing Faculty
Dr. Tracy Andrews, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2019

Abstract

Telehealth Integration Influencing Success and Sustainability

by

Melissa Miller

MS, Lourdes University, 2015

BS, Lourdes University, 2012

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2019

Abstract

Telehealth initiated a transformation in the realm of innovative strategies to meet the demands of an ever-changing health care system. Adapting provisions to new delivery care models such as telehealth is one way to improve access to care. The purpose of this project was to explore evidence of best practices in telehealth through an extensive, systematic literature review. The practice-focused question focused on identifying advantages of and barriers to the use of telehealth for improving patient satisfaction and quality of care. The plan-do-study-act cycle served as a model for accelerating quality improvement through improved systems of practice, and the Critical Appraisal Skills Program tool was used to identify factors in the literature that indicated the clinical effectiveness of telehealth and the contributions of information technology to patient outcomes throughout the care continuum. Applying Melnyk and Fineout-Overholt's model, which consists of 7 levels for grading evidence, 11 articles were identified as meeting the inclusion criteria. With respect to comparing telehealth services, this review identified areas for future research, including how telehealth can be used to bridge the gap between hospital and home with the integration of telehealth being integrated into routine care as a means to deliver medical, health, and educational services that contribute to improving patient outcomes. The implications of this project related to social change include supporting evidence that positive change is possible when modalities of health care delivery include the patient as part of care, benefiting both patient and provider.

Telehealth Integration Influencing Success and Sustainability

by

Melissa Miller

MS, Lourdes University, 2015

BS, Lourdes University, 2012

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2019

Dedication

I would like to thank my husband, Matthew, for always being there to push me to set time aside for this project, as well as to cheer me on! Lastly, a big thank you to my two children for all the late nights Mom had to set aside that took away from our time together, and you never complained.

Acknowledgments

I would like to say thank you to Dr. Francisca C. Farrar for all your support throughout my progress on completing this project, as well as Dr. Courtney S. Nyange.

Table of Contents

Section 1: Nature of the Project

Introduction

Telehealth has played an integral role in the paradigm shift caused by advancements in health information technology (HIT; Roine, Ohinmaa, & Hailey, 2001). With such advancements, telehealth has initiated a transformation in the realm of generating new, innovative strategies to meet the demands of an ever-changing health care system. This, in turn, could assist with what social determinants are significant in facilitating access to health care regardless of geographic location (Centers for Medicare and Medicaid Services [CMS], 2017). Telehealth offers unique opportunities for the delivery of health care, taking into account both costs and benefits, using information and communication technologies to potentially change the modalities of patient care (Mason, Gardner, Outlaw, & O' Grady, 2016).

Problem Statement

Telehealth policies are impacted by a multitude of government programs in collaboration with policymakers and other influential affiliates such as non-for profit or private sector healthcare organizations (Public Health Institute, 2018). At present, the National Telehealth Policy Resource Center and the Center for Connected Health Policy (CCHP) collectively monitor both state and federal legislation in regard to telehealth policies across the nation (Public Health Institute, 2018). In the United States, healthcare organizations can determine whether or not to cover telehealth-delivered care, including coverage decisions involving which types of telehealth services are rendered, how telehealth care is provided, and to what extent practitioners and providers are

compensated (Public Health Institute, 2018). In fact, under Article X of the U.S. Constitution, states have the authority to regulate services that affect patient health, safety, and welfare (United States Department of Health & Human Services, n.d.). At the practicum site that is the focus of this project, such factors have triggered a community health needs assessment to understand and identify issues in the public and private sectors that the site serves.

Presently, the practicum site offers telemonitoring free of charge with home care services for patients who require additional monitoring after a recent discharge from hospital to home. This free telemonitoring service is only allocated to patients who (a) have been diagnosed with a chronic illness such as congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), diabetes mellitus (DM), hypertension, or pneumonia; (b) have a relationship with a provider in the same organization who has access to their electronic health record (EHR); (c) are home bound, and (d) reside within a 50-mile radius of the site (Bronson, n.d.). By focusing on key drivers of readmissions, telemonitoring was initiated for areas of intervention and for applying strategies for preventative services due to an increase in unnecessary emergency visits and 30-day readmission rates. To significantly impact readmission rates, the organization developed an action plan whereby opportunities to reduce readmissions were identified. Gaps in care that were identified included but were not limited to (a) poor care coordination, (b) lack of patient engagement, and (c) barriers to accessing care (Bronson, n.d.). Since implementation, the telemonitoring service has had a total of 89 telemonitors, with only 30 telemonitors currently used on a regular basis because of limited resources

outsourced by the vendor, availability with supportive staff, and minimal reimbursement strategies to assist with funding (Bronson, n.d.).

The focus of this doctoral project was the promotion of increased efforts toward establishing improved access to care aligning with the local nursing practice problem. The expansion of services incorporates best evidence and outcome measurements to improve the feasibility of telehealth options and the infrastructure of telehealth technologies. Other venues to consider are telehealth guidelines, training requirements or certifications, policy-making processes, and protocol development with existing telehealth services in similar healthcare organizations.

Purpose Statement

The meaningful gap in practice that this doctoral project addresses is care management interventions to provide patients with access to integrated care in real time that accommodates patients in their homes between medical visits, helping them to manage their conditions effectively. Telehealth has the potential to expand health care access and improve quality of care through the provision of additional services to those who are eligible beyond the diagnosis of a chronic illness. The focus of this literature review was the effort to bridge gaps involving care transitions using remote home monitoring in collaboration with self-management. Presenting best practices in the design of telehealth, as well as context for implementation and planning solutions, may have a positive impact on patient outcomes.

Nature of the Doctoral Project

The approach for this doctoral project was a systematic literature review on telehealth technologies that was guided by the Critical Appraisal Skills Program (CASP) tool for relevant systematic literature reviews. I sought to distinguish factors of clinical effectiveness for telehealth services and the contributions of information technology to patient outcomes. Sources of evidence were analyzed using Melynk and Fineout-Overholt's model. The literature obtained assisted with identifying and connecting telehealth services that drive the coordination of care throughout the patient care continuum. I narrowed my literature search to identify studies concerning process improvement and patient satisfaction involving telehealth program applications. I began with an electronic search for articles using two sources: the Cumulative Index of Nursing and Allied Health Literature (CINALH) via EBSCOhost and PubMed (Medline). As such, this DNP project involved a standard systematic literature review encompassing studies in the English language published within the last 5 years that evaluated the impact of telehealth within the healthcare system.

Significance

In line with the patient-centered care model, improvement strategies have focused on patients taking part in managing their conditions, thus promoting self-care management. To decrease unintended outcomes, telehealth services have placed new emphasis on accessibility and efficiency related to geographic barriers and consideration for optimizing the care delivery experience. Challenges include increasing numbers of patients with complex or chronic conditions, along with the need to avoid unnecessary

emergency visits and repeated hospitalizations. Taking a different approach, such as implementing telehealth, may require a shift in the standards of care to support community needs. Data capture and sharing, advanced clinical processes, along with improved outcomes are part of the meaningful-use stages with areas of focus in transitions of care, patient engagement, and meeting patient needs as outlined in the landmark Institute of Medicine (IOM) study *Crossing the Quality Chasm* (IOM, 2001). CMS established the Medicare and Medicaid Electronic Health Record Incentive Programs to encourage eligible professionals, hospitals, and critical access hospitals (CAHs) to adopt, implement, and upgrade healthcare services by demonstrating improved quality of care (CMS, 2018). In support of the overall objective outlined by CMS, the American Reinvestment and Recovery Act (ARRA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act have suggested that healthcare organizations look at community health resources, access to care, and demographics that may disproportionately impact health outcomes (CMS, 2018). These efforts require an understanding of how to respond to the community needs and how to catalyze positive change throughout transitions of care.

Summary

The demand for telehealth services provides a more unified methodology that encompasses HIT and health care services (Mason et al., 2016). Telehealth proponents seek to overcome geographic, financial, physical, and other obstacles to health care delivery. Additionally, leading telehealth organizations, including the American Nurses Association (ANA), United States Federal government agencies, the American

Telemedicine Association (ATA), and the International Council of Nurses (ICN) endorse telehealth adoption that uses technology to provide accessible healthcare services (United States Department of Health & Human Services, n.d.). By generating new incentives designed to encourage investment in technology in order to improve patient outcomes, the United States government has increased participation in telehealth services. Given these efforts, such modalities in patient care are shifting to a patient-centered approach, in which the patient is an active participant throughout the care continuum (Mason et al., 2016). This adds to the opportunity to integrate telehealth into the realm of healthcare delivery options, potentially expanding care through better utilization of services beyond the four walls of a healthcare system. In terms of public interest, there is a considerable amount of research indicating advantages and disadvantages of telehealth, and addressing whether or not telehealth has the potential to address healthcare disparities (McLean et al., 2013).

In Section 2, I discuss areas of improvement to determine if the implementation of telehealth services would enhance the coordination of care in all facets of the organization. More importantly, I describe methods of expanding access to care beyond the selected patients diagnosed with chronic illness that offer additional resources encompassing telehealth services for patients who are at moderate to high risk for readmissions or frequently returning to the emergency department.

Section 2: Background and Context

Introduction

By incentivizing the implementation of EHRs, reliance on HIT is critically important to achieving high-quality, accessible, and efficient health care (Higgins et al., 2015). Higgins et al. (2015) noted that HIT is currently underused for supporting infrastructure by healthcare organizations to facilitate quality improvement. In particular, the United States government introduced meaningful use as a part of the HITECH Act and the ARRA enacted in 2009 to encourage widespread adoption of EHRs (Higgins et al., 2015). Efforts to reform the healthcare delivery system to improve the quality and value of care as well as attributes of meaningful use have emphasized accountability incentives and requirements to reduce disparities in healthcare (Higgins et al., 2015).

Meaningful-use objectives specifically include requirements for using HIT to improve health care processes and outcomes through activities that encompass implementing quality measures to ensure patient-centered care. With these objectives, advancements in HIT often necessitate purposeful and thoughtful planning, effort, and allocation of resources, all of which entail additional costs and specialized training in terms of positive patient outcomes. At the same time, despite these barriers, some healthcare organizations have found ways to enable workflow processes that support the use of HIT as a meaningful way to address gaps in care (Higgins et al., 2015). The use of telehealth is one methodology that can enhance coordination of healthcare services appropriately. Telehealth has been defined by the Health Resources and Services Administration (HRSA) (2017) as the use of electronic information and

telecommunications technology to support and promote health care that can be provided remotely through videoconferencing and wireless communications.

Problem Statement

There are various levels of telehealth technologies, and refers to a broader scope of remote healthcare services such as provider training, continuing medical education, remote non-clinical services, in addition to clinical services. The expansion of telehealth has allowed decision makers and policymaking processes play an important role in establishing incentives that encourage adoption of HIT to support quality improvement. By conducting this systematic literature review, opportunities in the healthcare delivery system necessitates the feasibility of telehealth options. The innovative approaches and technology proposes a unique value proposition for treatment of care relating to clinical situations such as chronic disease management and patient vital monitoring in order to meet patient care needs. However, with the incorporation of EHRs into healthcare systems, organizations still lack optimized solutions for interconnecting technological advancements, resulting in fragmented and suboptimal care processes (Suter, Suter, & Johnson, 2011).

Purpose Statement

Efforts to reorganize healthcare delivery structures have focused on placing patients in more in active roles by facilitating self-management support, which is a key element of patient-centered care reform. There is some literature that indicates that patient outcomes are improving through enhanced patient–provider communication by means of advanced technologies (Joynt & Jha, 2012). As such, telehealth applications

have been emerging since the recent policy changes put forth by the Affordable Care Act-Hospital Readmission Reduction Program (HRRP; HealthCare.gov, 2011). The HRRP entails the cost controls needed to encourage innovative strategies to transform the entire spectrum of transitional care (HealthCare.gov, 2011). Nevertheless, healthcare organizations are leveraging telehealth to become another pillar in healthcare, serving as a solution throughout a patient's transition of care on multiple levels.

There has been a big push for telehealth initiatives to serve patient populations with chronic illnesses that include network infrastructure for increased care management with faster connectivity regardless of geographic location (Lawrence, 2010). In rural areas, many patients do not have the ability to receive timely health care interventions, and certain treatment regimens lack the supportive services required to minimize the need for hospitalization (Lawrence, 2010). There has been much hesitation about telehealth adoption due to various barriers and potential hardships that could pose challenges, including but not limited to (a) daily workflow, (b) cost, (c) minimal information technology (IT) utilization, and (d) additional staff availability (Lawrence, 2010). Telehealth adoption should be viewed as a means of reaching a larger patient population that benefits those who are geographically inaccessible to healthcare services and patients placed at a high risk for readmissions.

Concepts/Models/Theories

The plan-do-study-act model was most appropriate to use for this systematic literature review focusing on care coordination from hospital to home (Institute of Healthcare Improvement, n.d.). To assure a successful transition of care, the plan-do-

study-act model approach includes (a) planning the change after a needs assessment has been conducted, (b) carrying out the change, (c) observing and analyzing the results of the change, and (d) deciding on change modifications based on outcomes (Institute of Healthcare Improvement, n.d.). This cycle can be repeated until the objectives of the intended outcomes are met, offering a variety of quality improvement methods for the problem identified. At the practicum site, this model is used throughout the organization, supporting a focus on shifting toward evidence-based performance improvement processes that will deliver optimal care to every patient, every time. Two of the committees in the organization, Evidence-Driven Improvement (EDI) and multidisciplinary Performance Improvement (PI), implement this model to drive process improvements that include but are not limited to (a) safety behaviors, (b) performance indicators, (c) outcome metrics, and (d) quality initiatives (Bronson, n.d.). The importance of this model in this project cannot be underestimated, especially where technology is concerned, in that telehealth can be a way to monitor a chronic condition and decipher the differences between daily disease manifestations, offering information that is essential in ensuring that an individual has the ability to perform needed behaviors to achieve specific goals.

Relevance to Nursing Practice

Since the integration of technological advancements versus traditional health care delivery models, telehealth has made it possible to provide quality care for underserved patients (Suter et al., 2011). Examples of telehealth services are widespread and include communication over the Internet, audio-visual conferencing, email, data transmission

from self-monitoring or testing, and digital interactive video or audio applications (Suter et al., 2011). The Patient Protection Affordable Care Act (PPACA) healthcare reform legislation supports using telehealth as a means of transitioning from traditional healthcare services in maintaining an exceptional standard in the delivery of care (Suter et al., 2011).

Telehealth embraces all aspects of clinical and nonclinical healthcare services, empowering a new method of care delivery that involves the use of HIT with the ability to monitor, educate, promote self-management, collect data, and collaborate with other multidisciplinary team members using remote interventions (Suter et al., 2011). Using telehealth, nursing providers can make a difference in providing care to patients, particularly those who are underserved and require timely healthcare interventions, thus filling an identifiable gap in care. Telehealth is used to advance the process of nursing practice by enhancing attributes of quality care while adding convenience to the process.

Local Background and Context

There are key elements to acknowledge with new advancements in HIT involving patients being part of their care. In many situations, because of these advancements, telehealth services create new dynamics that maximize health care delivery options for patients (Pruitt, 2013). Clinically and operationally, the value of services should signify the need for revisions with delivery improvements for patients served throughout the community. Having a wide acceptance of expanding collaboration beyond the four walls of the organization, it is essential that various stakeholders work together in offering new technologies, such as telehealth services, as an integral pillar in service delivery to

patients. A stakeholder in a project can be described as an individual, group, or organization that may affect or be affected by a decision, activity, or outcome (Pandi-Perumal et al., 2015). The primary stakeholders for this project included the informatics team, primary care physicians, leadership, ambulatory care administration, home health administration, telemonitoring administration, and community partners (Bronson, n.d.).

Role of the DNP Student

At present, my professional context and relationship to the doctoral project involve supporting policy development by being a valuable contributor to solutions to patient care challenges by identifying the best available evidence and translating evidence into practice. Capitalizing on the potential for unique contributions, telehealth has the ability to optimize health care delivery and outcomes. Through translation of evidence, Doctor of Nursing Practice (DNP) graduates are prepared to share new knowledge that improves clinical outcomes, contributing to quality initiatives along with innovations in practice. Equipped with strong leadership skills, DNP-prepared nurses seek to improve patient outcomes. One of the evolving roles of DNP-prepared nurses is demonstrating the process of knowledge generation and utilization to improve clinical practice. Quality of service is a functional component of patients' expectations and perceptions of care. Furthermore, DNP-prepared nurses identify process improvements related to disease management, which is recognized as one of the top priorities for healthcare reform (American Association of Colleges of Nursing, 2006).

My role in the doctoral project, includes the expansion of telehealth as part of the practicum experience, in which becoming familiar with the operational management of

patients who require services beyond the inpatient setting, interprofessional collaboration, and understanding the intended shift to best articulate transitional care throughout the care continuum. With this purpose, the roles that I assumed included reviewing and restructuring key operational policies and procedures, evaluating and reporting to stakeholders, and providing oversight throughout transitional care modalities. In this way, I sought to address practice population needs encompassing the Patient Centered Medical Home Initiative (PCMH), which helped to drive the interest of this project, as recent requirements mandated that participating organizations track care management and expand coordination of services. This points to finding creative solutions for process improvements throughout a patient's pathway, identifying best practices for target populations that attribute to unmet needs, thus addressing health disparities. Given that patients with chronic conditions place a burden on the U.S. economy, especially regarding which aspect of complexity is the primary driver, patients require different approaches. From this perspective, it is likely to influence specific interventions for care along the spectrum of managing complex patients with chronic illnesses. The motivation for undertaking this DNP project was the desire to find a solution to the readmission problem and save money by implementing telehealth services in an effort to extend care among the underserved population. To some extent, bias may have resulted from the omission of patients who did not have chronic diseases that might have made that population more likely to be readmitted or the hindrance to utilization and accessibility to telehealth services that may be necessary. In order to eliminate bias, the goal was to identify strategies that respond proactively versus reactively that determine managing

factors considered to present risk for unnecessary readmissions. A number of healthcare organizations utilize risk scores that separate patient populations into low-, moderate-, and high-risk groups specifically for those that are considered to be “at risk” for readmission. The Agency for Healthcare Research and Quality (AHRQ) recommends an effective risk model should tailor methods and interventions so that the majority of patients at risk for readmission are provided with specific disease identification methods and treated with distinct interventions that are patient focused (AHRQ, 2016).

Summary

The expansion of HIT has created greater accessibility of care that encompasses quicker responses to treatment interventions than ever before. There is a growing body of literature reflecting the benefits and successes of, as well as barriers to, implementing new technologies such as telehealth. Influencing the use of telehealth is the rapidly changing environment of health care delivery, including reimbursement-related policies in regard to accessibility as well as addressing workforce shortages (HealthCare.gov, 2011). With increases in complex and chronic illnesses across all patient populations, there are significant disparities across the United States resulting in many underserved patients.

In Section 3 of this DNP project, I discuss ways of reducing avoidable readmissions, as healthcare organizations require multifaceted interventions that extend beyond inpatient settings for planning, monitoring, and support as a means to improve clinical outcomes. In this section, I review the practice question addressed in this project

along with the data collection methods, including sources of evidence and their relationship to the project's purpose.

Section 3: Collection and Analysis of Evidence

Introduction

Policy-making processes concerning methods that can be used to refine patient outcomes are crucial in changing how care is delivered. In the United States, the Agency for Healthcare Research and Quality (AHRQ) released a report on the effectiveness of telehealth utilization, particularly for chronic disease management and behavioral health, which focused on expanding access to care and reducing overall costs (AHRQ, 2016). With this in mind, I evaluated the relevance of telehealth technology as an effective method given the rapid growth of integrating EHRs coupled with interventions that could lead to improving the safety, quality, and efficiency of patient care (IOM, 2010).

On a national level, to draw attention to the readmission problem, benefits for patients with chronic conditions promote quality care under the Medicare program by means of telehealth or remote patient monitoring services (McIlvennan, Eapen, & Allen, 2015). At this organization, as mentioned previously, the use of home care services with physician-ordered remote telemonitoring for patients who are homebound provides a daily snapshot of such patients' condition, making it possible to avoid unnecessary adverse events and increase symptom recognition (Bronson, n.d.). The practice gap addressed by this project relates to the rate of readmissions as a common consequence for the population served by this organization (Bronson, n.d.). Although rehospitalization is not unexpected, it should not be recognized as inevitable because of the associated decline that can be accelerated as a result of the disease process. In the project organization's patient population, the percentage of patients with chronic disease varies;

however, benefits for patients with chronic conditions lack the clarity to create consistency with the wide application of telehealth.

Local Problem

The active participation of providers, patients, families, and caregivers is an essential element of a quality improvement effort in health care. As such, the organization participates in Affirmant, a clinical integrated network that promotes best practices and population health strategies with the aim of reducing health disparities and ultimately reducing the cost of healthcare goods and services for residents throughout the community (Affirmant Health Partners, n.d.). With collaboration among partners established through the organization's community health needs assessment (CHNA), the clinically integrated network encourages those within the organization to look at social inequities as well as institutional barriers in order to understand how economic, physical, and social conditions impact overall outcomes.

Purpose

Standardization at the practicum site requires coordination among all stakeholders to reach desired outcomes. Implementation of practice approaches that are linked to process improvement and patient outcomes with the goal of deploying standard processes has been part of the organizational infrastructure. As telehealth continues to grow in scope, standardizing frameworks remain elusive thereby creating inconsistencies with patient's care coordination, thereby being a predominant factor in my decision to conduct this project. The increased burden of chronic illness management, in areas such as

readmissions, a number of states have started to implement telehealth services to assist in decreasing healthcare costs and providing better access to care (AHRQ, 2016).

Background and Context

AHRQ emphasizes the importance of HIT as a means to enhance the quality of care while providing tools that support standardization across patient care pathways (U.S. Department of Health and Human Services, n.d.). To start, key operational policies and procedures should focus on a balance between benchmarks and quality care based on patient needs (U.S. Department of Health and Human Services, n.d.). One of the first steps that the organization took to address health disparities was to identify basic unmet needs by using an appropriate screening toolkit. The toolkit was used to assess (a) food security, (b) housing instability, (c) utility needs, (d) financial strain, (e) transportation, (f) exposure to violence, and (g) sociodemographic attainment (Bronson, n.d.). Much of the screening toolkit consisted of a condensed version of the social determinants of health (SDOH) questionnaire (IOM, 2016). With a total of five questions selected, the organization's ideal screening process was integrated into the clinical workflow in an effort to identify and address disparities.

Since the PPACA, the healthcare environment has shifted from fee-for-service to value-based care, and the focus has led to a more patient-centered health platform (IOM, 2016). Community health issues have taken precedence, leading to screening tools to ensure that key behavioral, environmental, medical, and social needs are addressed. As such, recommendations were developed based on the input of community affiliates from housing, transportation, food, social services, faith communities, local government,

business employers, and schools (Bronson, n.d.). By responding to changing healthcare needs within the community, adding another layer of care such as telehealth may influence the basis for allocating resources for more accessible care and services.

Practice-Focused Question

The practice-focused question was the following: What are the advantages and barriers to the use of telehealth in improving patient satisfaction and quality of care?

(P) = telehealth

(I) = advantages and barriers

(C) = factors identifying adoption or delivery

(I) = patient satisfaction and quality of care

The plan for collecting and analyzing evidence for this DNP project began with the use of search terms, including varying combinations of the following: *quality measures, patient experiences, remote patient monitoring, telehealth adoption, providers and telehealth, technology in health care, health information technology, barriers and knowledge regarding fundamental concepts of telehealth*, as well as *information technology*. I conducted searches using the Cumulative Index of Nursing and Allied Health Literature (CINAHL) via EBSCOhost and PubMed (Medline) for articles in the English language published within the last 10 years, including both quantitative and qualitative studies as well as systematic reviews. A systematic literature review was conducted to evaluate the success and sustainability of telehealth in the healthcare system.

Sources of Evidence

To develop this project, I gathered evidence from peer-reviewed literature, publications of professional organizations, and best practice guidelines and protocols. The professional organizations whose materials I reviewed included the IOM, CMS, the U.S. Department of Health and Human Services, AHRQ, Affirmant, and the Institute for Healthcare Improvement. The organizations ARRA, ATA, ANA, and ICN were considered because of their work in research and development concerning health-promoting actions needed for chronic disease management. Each of the journal articles that I selected aligned with the practice-focused question and focused on telehealth-related studies and care management.

Published Outcomes and Research

I sought information on telehealth success and sustainability using two principal databases, CINAHL via EBSCOhost and PubMed (Medline). To ensure that I collected the most recent literature, the date range for the literature search was limited to the last 10 years. I searched for sources addressing the practice questions with various areas of focus that needed to be supported by relevance and validity to address the gap in practice identified.

In keeping with the stated purpose of the systematic literature review, I used the following key search terms:

- *Telehealth*: A means of communicating medical information from different sites electronically to improve a patient's health status (Suter et al., 2011).

- *Quality measures*: Tools that help in measuring or quantifying health care processes, outcomes, patient perceptions, and organizational structures and/or systems that are associated with the ability to provide high-quality health care and/or relate to one or more quality goals for health care (CMS, 2017).
- *Patient experience*: Encompasses the range of interactions that patients have with the health care system and in receiving care through their health plans, including interactions with doctors, nurses, and staff in hospitals, physician practices, and other health care facilities (AHRQ, 2017).

Analysis and Synthesis

A literature review matrix was used to evaluate search results in order to interpret and determine the applicability of specific sources and identify gaps that exist in the current literature. The matrix included fields for the following information on each source: (a) author/date, (b) theoretical/conceptual framework, (c) research question(s)/hypotheses, (d) methodology, (e) conclusions, (f) implications for future research, and (g) implications for practice (Walden University Writing Center, 2010). Once the information had been placed in the aforementioned categories, a systematic literature review was conducted to assure the integrity of the evidence gathered, including approaches to managing outliers and missing information.

Summary

Health care is a crucial sector in the U.S. economy, with $2.9 trillion in aggregate health care spending reported for 2013 (Teitelbaum & Wilensky, 2017). Increased utilization of HIT has slowed down spending growth in this sector by making health care

more effective and efficient while reducing costs (Teitelbaum & Wilensky, 2017). Smartphone applications reminding patients to take their medications, pharmaceutical sensor-enhanced pills designed to track medication administration, and remote patient monitoring devices to help avoid unnecessary emergency care visits are just some of services offered using HIT to meet patients' needs (Mansukhani, Bridgeman, Candelario, & Eckert, 2015). Given the prevalence of chronic diseases in the United States, telehealth offers a promising means of addressing preventative health services in addition to interventions that influence chronic disease management in order to decrease growth in healthcare expenditures. Equally compelling is the idea that as the population ages, the number of patients at risk for readmissions equates to one-fifth of personal healthcare spending, forcing initiatives aimed at improving the coordination of care (Mansukhani et al., 2015). Thereby, building the capacity of the community to help achieve positive health outcomes provides an opportunity to work across organizational boundaries.

In Section 4 of this DNP project, I discuss overcoming several financial constraints and organizational barriers such as "buy-in" and interprofessional collaboration that addresses managed care of patients with complex needs as well as urgent medical problems. In addition, this section presents optimal strategies to provide accessible, accountable, and comprehensive coordinated care that can adapt to change in response to various circumstances.

Section 4: Findings and Recommendations

Introduction

Throughout transitions of care, the presence of various silos in the delivery of health care services continue to constitute a barrier, coupled with inadequate communication, highlighting inefficiencies and gaps that prevent critical information and resources from reaching patients in a timely manner. A major weakness that impedes care coordination involves processes that lead to failures in transitional care modalities. Effective transitional care can prevent medical errors, avert unnecessary hospitalizations or readmissions, and identify issues for early interventions. When such transitional care is absent or ineffective, health care costs may escalate, and quality outcomes for patients may be suboptimal. Although telehealth is a reliable system for sharing and integrating communication across organizational boundaries, there are significant barriers hindering the effective management of patients with complex and/or chronic medical conditions, as well as patients with clinical episodes that require acute interventions.

This gap in practice raises concerns for patients undergoing transitional care, who are particularly vulnerable to poor quality outcomes—especially those with complex needs, due to fragmentation in care. As telehealth continues to be a subject of interest, various provisions of the ACA encourage chronic disease management by offering reimbursement opportunities as well as incentivizing self-management; however, substantial barriers to optimal patient outcomes remain.

The practice-focused question for this project was the following: What are the advantages of and barriers to the use of telehealth in improving patient satisfaction and

quality of care? The project was supported by the plan-do-study-act model, which provides direction for both clinical care and the patient experience.

An extensive literature search was conducted using the following key words: *telehealth*, *quality measures*, and *patient satisfaction*. Multiple databases were consulted in the search, including CINAHL, PubMed, and Medline. The reports that I retrieved had been published within the last 10 years in English and were relevant to telehealth program applications and process improvement. I found 11 articles that met the inclusion criteria. These articles included four systematic reviews, one meta-analysis, two case analyses, one principle-based analysis, two qualitative studies, and one randomized controlled trial (RCT).

To yield a strong level of evidence on which telehealth program applications and process improvements might be based, I applied Melnyk and Fineout-Overholt's model, which consists of seven levels for grading evidence. These seven levels of evidence-based practice processes are as follows:

- *Level I*: Evidence from a systematic review of all relevant RCTs, or evidence-based clinical practice guidelines based on systematic reviews
- *Level II*: Evidence obtained from at least one well-designed RCT
- *Level III*: Evidence obtained from well-designed controlled trials without randomization; quasi-experimental
- *Level IV*: Evidence from well-designed case-control and cohort studies
- *Level V*: Evidence from systematic reviews of descriptive and qualitative studies

- *Level VI*: Evidence from a single descriptive or qualitative study
- *Level VII*: Evidence from the opinions of authorities and/or reports of expert committees

The seven levels of evidence represent a hierarchy of evidence, illustrating the strength of study types; the higher the study type is, the more likely it is that the research identified is valid (Melnyk, 2011). In addition, the CASP tool was used to identify factors in the literature that are linked with the clinical effectiveness of telehealth and the contributions of IT to patient outcomes throughout the care continuum. (See Appendix A for the literature review matrix).

Findings and Implications

In 2009, a national telehealth survey was provided to home health agencies concerning the emergence of telehealth services and overall quality of care (Fazzi Associates, 2009). The report concluded that 90% of home health agencies using telehealth reduced their operating costs, thereby minimizing the use of health care resources within their organizations (Fazzi Associates, 2009). Within the organizations included in this study, leaders viewed telehealth as one way to treat patients remotely and effectively, suggesting that the integration of telehealth is necessary for enhancing the continuity of care. In other words, telehealth is becoming an alternative to face-to-face care that makes it possible to perform remote patient monitoring in order to meet budgetary constraints (Fazzi Associates, 2009).

Scullion (2014) indicated that telehealth has become an important factor with improved service offerings. Thus, in some states, patients have access to their primary

care physicians using telehealth services in areas where there are various geographic and economic barriers to care (Scullion, 2014). By increasing access to health care services combined with patient-centered interaction, telehealth generates a greater need for collaboration that may have not occurred with conventional care modalities (Scullion, 2014). Telehealth has the potential to bridge the gap between hospital and home by using all facets of HIT to support clinical and nonclinical services.

Many HIT initiatives are available to promote patient-provider communication outside the context of face-to-face encounters. Current communication modalities in the digital realm include smartphones, interactive voice response programs, microblogging, e-mails, interactive videos, home-based web cameras, personal monitoring devices, personal health records, patient portals, social networking sites, and online virtual community forums (Fortney, Burgess, Bosworth, Booth, & Kaboli, 2011). As the paradigm of healthcare delivery evolves, services using telehealth methodologies present a need to restructure clinical measures, utilization, quality, and performance outcomes to correlate with expansion of both alternative and traditional care in rural and urban settings. Nonetheless, telehealth is seen as a way to meet budgetary constraints by minimizing the costs of treatment while ensuring that the healthcare services offered meet the needs and demands of all patient populations (Krupinski & Benard, 2014). There has been increased emphasis on supporting these services to reduce the number of patients who seek emergency care in hospitals.

Inglis, Clark, McAlister, Stewart, and Cleland (2011) researched over 25 RCTs that used telemonitoring for over 8,000 patients who were suffering from congestive

heart failure (CHF). This study included a meta-analysis of outcomes for patients relying on telehealth services in an ambulatory care setting as preventative interventions to decrease unintended hospital visits. In conclusion, this study identified a relationship between having an additional supportive service such as telemonitoring and a decrease in the number of patients who were hospitalized because of their chronic disease (Inglis et al., 2011).

Gellis et al. (2012) examined telehealth interventions on health, mental health, and service utilization among chronically ill older adults diagnosed with either heart failure (HF) or COPD. Gellis et al. hypothesized that older adults who received telehealth intervention (n = 51) would receive better care compared to those (n = 51) who did not receive such services. At the participants' 3-month follow up, the telehealth intervention group reported significant improvement in quality of life, mental health, and patient satisfaction (Gellis et al., 2012). Following a 12-month office visit, participants who had been excluded from the telehealth interventions had more visits to the emergency department compared to the telehealth group (Gellis et al., 2012). Thus, it was concluded that the use of telehealth may benefit older patient populations with chronic illnesses, specifically HF and COPD, who require additional health care services such as telehealth interventions that provide home monitoring while enhancing patients' self-management of their medical conditions (Gellis et al., 2012).

Henderson et al. (2013) performed an economic evaluation in a pragmatic, cluster RCT in a community setting. They recruited 965 participants, among whom 534 received a package of telehealth equipment and monitoring services while 431 were offered

standard support and treatment without telehealth interventions (Henderson et al., 2013). Participants had been diagnosed with at least one chronic illness by their provider (Henderson et al., 2013). Over the 12-month duration of the study, questions for further research emerged, indicating that research on telehealth should have additional focal areas that include demographics and a needs-level assessment relevant to outcomes and costs (Henderson et al., 2013).

de Oliveira (2014) performed a descriptive exploratory study using a cross-sectional quantitative approach, in which they used a self-administered questionnaire composed of open and closed questions to address physicians' perceptions and whether HIT interferes with doctor-patient relationships. Among the participating physicians, respondents thought that patients considered technology such as the Internet as a means to find information on their medical conditions or symptoms outside of their office visits with their provider (de Oliveira, 2014). In addition, respondents expressed the belief that adding technology beyond what was already given to their patients had a negative impact on their doctor-patient relationships (de Oliveira, 2014).

Gabriel, Jones, Samy, and King (2014) distributed a 15-question survey of critical-access hospitals focusing on EHRs to 1,343 hospitals identified by the Health Information Management Systems Society (HIMSS) from 2012 to 2013. This survey targeted health system management regarding HIT capabilities from inpatient to ambulatory care associated with implementation and challenges (Gaberiel et al., 2014). The survey was divided into four domains: (a) cost/budgetary constraints, (b) workflow/staffing, (c) usability, and (d) technical support.

When a multivariate logistic regression was applied, a majority of the hospitals' responses indicated that they did not rely on technical support in the adoption of information technology such as telehealth, teleradiology, e-prescribing, health information exchange, and patients' access to information after discharge (Gaberiel et al., 2014). The findings indicated that in some aspects of information technology, telehealth functionalities were high, with 70% of the hospitals identifying substantial progress related to workforce shortages and geographic concerns (Gaberiel et al., 2014).

A cross-sectional patient satisfaction survey was administered to patients over 18 years of age who presented clinical symptoms at a MinuteClinic between January and September 2014 (Polinksi et al., 2015). Polinski et al. (2015) piloted a telehealth program in 11 MinuteClinics in California and Texas, using a video monitor that had two-way audio and visual capability. In this pilot, the patient, an assisting nurse, and an offsite nurse practitioner or physician assistant used the two-way telehealth program to mirror a traditional face-to-face visit. During the visit, the patient described signs and symptoms, and the assisting nurse used special diagnostic tools designed for telehealth to assist the remote practitioner in seeing and hearing. Following each telehealth visit, patients were invited to complete a 12-item survey about their experience, including their perceptions of a telehealth visit, resulting in a total of a high percentage of patients completing the survey. About one-third of the respondents preferred telehealth over traditional face-to-face care, and 95% expressed that they were very satisfied with all attributes provided in their visit (Polinski et al., 2015).

Singh, Mathiassen, Stachura, and Astapova (2010) examined the adoption of telehealth in a rural public health district to explain how the innovation became sustainable. This study included a longitudinal qualitative case study within the South East Health District (SEHD), a public health district within the state of Georgia. Qualitative methods were used to explore emerging issues, thereby enhancing an understanding of telehealth technology, adoption, and integration. The study conducted 25 semistructured in-person and telephone interviews with 19 policy decision makers and health care professionals. A combination of integrated telehealth technologies and services, as part of the SEHD operation within the rural health institutions as well as local community and external partners, led to tailored innovations supporting telehealth sustainability (Singh et al., 2010). This emerging option facilitated services to provide additional medical care, education, and collaboration addressing organizational and socioeconomic changes (Singh et al., 2010).

Paul and McDaniel (2015) analyzed attributes that influence healthcare providers' continued participation in the use of electronic information and communication technologies that align with access to care in rural counties that are underserved. This study extended prior research on critical drivers that motivate provider participation (Paul & McDaniel, 2015). Fourteen remote sites were used, with 11 sites located in what the U.S. Department of Health and Human Services refers to as nonmetropolitan or rural areas and the other three located in metropolitan or urban areas. In the United States, 60 million people reside in rural communities, while the remaining population is considered to reside in urban or metropolitan areas (Ckay, 2014). Each remote site was

geographically isolated, with a minimum distance of 60 to 200 miles to the nearest healthcare facility (Paul & McDaniel, 2015).

Paul and McDaniel (2015) evaluated the sustainability of teleconsultation, a form of telehealth, for the participating healthcare providers. The researchers suggested that limited reimbursement was not perceived to be a major barrier in their study. In addition, this study highlighted the need for advanced technology requirements that would enhance teleconsultation to replicate the face-to-face experience. A lack of available providers and services increases the possibility that using telehealth as an option could improve accessibility for the consumer. Thus, further research was recommended to determine whether teleconsultation projects with integrated EHRs could further improve the quality of care by enabling patients to receive care regardless of geographic location (Paul & McDaniel, 2015).

Sanders et al. (2012) explored barriers to participation and adoption of telehealth using qualitative semistructured interviews. Participants were recruited from four groups: (a) patients diagnosed with diabetes, (b) patients diagnosed with COPD, (c) patients diagnosed with HF, and (d) high-risk patients with social care needs. Direct observations of home visits were performed in this study, with health and social staff visiting 23 participants in their homes. Findings regarding potential disruptions of telehealth interventions were of concern due to the dislike of technology indicated by the participants and staff. The results identified four reasons that patients withdraw from telehealth programs: (a) minimal technical competence and operation of equipment, (b) threats to identity, (c) issues of patient independence and self-management, and (d)

patient expectations and experiences of disruption of services (Sanders et al., 2012). From the perspective of the participant, the success of telehealth implementation requires the expanded role for various care modalities to directly impact the patient in a positive manner through improved satisfaction and efficacy rates.

Several studies have reported that participation in telehealth programs has a positive impact on health outcomes while decreasing both readmission and mortality rates (Radhakrishnan & Jacelon, 2012). In a recent report, Partners Healthcare, a home health agency, indicated that during a controlled trial study for HF patients enrolled in their Connected Cardiac Care Program, the use of telemonitoring reduced readmission rates significantly compared to those who were receiving standard care, with cost savings of over $6 million in a 6-year period (Radhakrishnan & Jacelon, 2012). The strategy used involved improving accessibility and providing effective, efficient care in a timely manner. This is a way to provide the right care, at the right place, at the right time, for the right patient. To be sustainable, telehealth services for underserved populations should be supported by a well-rounded resource infrastructure, taking into account both costs and benefits from various perspectives with consideration of long-term patient outcomes.

The project findings revealed that organizations' use of telehealth and disease-specific protocols associated with chronic conditions to address urgent symptoms could further decrease emergency room visits in addition to preventing readmissions. The data also support the idea of improving effective communication techniques throughout the care continuum between the patient and care team. As a result, telehealth has the potential

to influence process improvements that take into consideration additional methodologies of care applicable to the population that the organization serves.

Existing gaps for addressing telehealth expansion include but are not limited to policy and procedural considerations, clinical or technical support, and perceptual issues that have impeded health care service provision to underserved populations with telehealth connectivity and access to care. The project has shown the need to evaluate the feasibility of telehealth options. In other words, there must be a collaborative effort involving the way that an organization or other groups responding to the change evaluate alternatives and determine the most desirable approach regarding delivery and treatment methods. Technological improvement and innovations have led to the rise of telehealth. Telehealth programs come with benefits and barriers for both patients and health care providers; however, additional services could counter the barriers that patients face in accessing health care. In promoting the proactive management of patients' illnesses and the adoption of new modalities, including preventative health maintenance, providing another layer of services using telehealth could produce optimal patient outcomes for those receiving transitional services. Conversely, important implications of the systematic literature review indicate that outcomes are most favorable when patients play an active role in managing their care and adhering to their treatment plan, thereby demonstrating the adoption of telehealth to be a plausible strategy.

Recommendations

Taking into consideration the variance between patient needs and adaptability to implementing information technology initiatives, I recommend the use of additional

telehealth modalities as a method for improved quality of care. Because of the ability to access services, telehealth displays the capacity to continuously evolve and be considered a valuable opportunity to increase the effectiveness and efficiency of provider-patient interaction.

Strengths and Limitations of the Project

The data demonstrated the impact of telehealth within health care systems, suggesting a need to begin a conversation about changes to improve transitional care processes that will assist patients throughout the care continuum. A strength of this project is that key stakeholders at the practicum site are in agreement with looking at ways of improving care quality and enhancing patient satisfaction (Bronson, n.d.). With readmission rates negatively impacting health care costs, instituting change by integrating appropriate health care services for vulnerable patients that are technologically sophisticated is one step closer to closing gaps in care. Clearly, there have been some strides in adopting, implementing, and using HIT; a paradigm shift has emerged in the American health care system toward more complex and comprehensive care delivery. The aforementioned telehealth resources can provide value to patients and communities by improving continuity in all facets of the care continuum.

Another strength of the project is that it broadens the scope of practice to encompass provider-patient engagement for a locally defined population. Rapidly expanding options for health care organizations beyond inpatient settings offer the ability to use telehealth to connect patients in rural and remote communities with their providers. Throughout the project, it was evident that population distribution and transportation

infrastructure can limit access to a range of services. In particular, this project offers another layer of telehealth that can be implemented to promote patient engagement by permitting patients to be more informed partners throughout their care. Telehealth holds significant promise in relation to understanding how best to use information technology to promote optimal health outcomes in order to be successful and sustainable.

The limitations of the project were lack of progressive development in telehealth technology, coupled with varied deployment of information technologies in the transformation of care delivery. Just as importantly, telehealth policy considerations, such as the infrastructure of the health care team, are vague, thereby limiting the feasibility of initiating telehealth services to ensure that patients are receiving the care they need in a timely manner. Additional limitations include the policies driving reimbursement for telehealth services, which affect organizations' ability to make necessary investments to support new approaches in care delivery.

Recommendations for future projects addressing similar topics/methods focus on the need for nurses to become informed and develop initiatives in the era of telehealth, in addition to the establishment of care pathways and models that will optimize efficiencies via telehealth technology services. Since the American Recovery and Reinvestment Act (ARRA) with funding for HIT, collaborative practice has been key for advocates of policy, clinicians, educators, researchers, and leadership to support all aspects of the telehealth realm for the greatest impact on patient care.

Section 5: Dissemination Plan

Dissemination

Based on the nature of this project, the preceding discussions have already begun with certain elements that are essential to an effective solution to coordinate care transitions, manage high-risk patients, and reduce hospital readmissions, including decreasing preventable emergency room visits. Thereby, broadening the scope to cover complex disease management and patient-centered population management solutions across the care continuum, the audience and venues that this would be appropriate for include but are not limited to primary care teams and other home care or community-based services, including information technology integrated with comprehensive care coordination. To effectively close unaddressed gaps and disseminate this project to the broader nursing profession, there must be an ongoing transformation in how care is delivered directly to patients, encompassing both planned and unplanned care. In the current health care arena, telehealth has the potential to support the achievement of the quality aims outlined by the IOM and Committee on Quality of Health Care in America, promoting a framework to address barriers to care (Fathi, Modin, & Scott, 2017).

A project or study such as this one should indicate that the results will ensure the continuing acceptance of change, supporting further social change by reducing disparities in care, thus expanding technology to improve innovative methods. Telehealth has the potential to enhance the quality of patient care by increasing patient engagement in order to build self-efficacy by making patients more active in their disease management. While the benefits of this systematic literature review were considered to encourage self-care,

connecting telehealth resources within the organization was another component serving as a purpose to encourage the use of technology to improve patient outcomes. The plan for dissemination of this project includes a presentation at the practicum site, which will expose the project to those interested in expanding upon the knowledge provided.

Analysis of Self

Reflecting the knowledge that I have gained from my extensive learning experience at Walden University, the completion of this project demonstrates my commitment to the profession, aligning with the significance of expanding telehealth with the potential to improve quality of care and access for various patient populations. I am more prepared to apply evidence-based research toward process improvements and identifying areas where patient outcomes benefit in all areas of the care continuum. I believe that my preparation for this project will make me a leader who may be approached by others for participation in future projects in my professional practice and community.

Summary

As literature demonstrated, telehealth interventions provide an invaluable opportunity to integrate practice improvements contributing to the need for expanding services throughout the care continuum. The literature also revealed that the advantages of telehealth might contribute to telehealth as a means of providing services through information and communication technology in areas of health treatment, diagnosis, education, and self-management (McBain, Shipley, & Newman, 2015). This project focused on how satisfaction management can be sustained in various patient population

areas where telehealth-based initiatives are integrated into treatment options. It established that telehealth is an emerging field that is expanding access to care, reducing barriers such as transportation and geographic location that may prevent patients from seeking appropriate treatment, as well as identifying the applicability of telehealth to convey patient-centered care.

References

Affirmant Health Partners. (n.d). Homepage. Retrieved January 1, 2019, from https://www.affirmant.com

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Washington, DC: Author. Retrieved from http://www.aacn.nche.edu/publications/position/DNPEssentials.pdf

Bronson. (n.d.). Title of page. Retrieved November 18, 2018, from https://www.bronsonhealth.com

Centers for Medicare and Medicaid Services. (2017). Homepage. Retrieved December 12, 2018, from https://www.cms.gov

de Oliveria. (2014). The effect on the internet on the patient-doctor relationship in a hospital. *Journal of Information Systems and Technology Management*, *11*(2). doi: 10.4301/S1807-17775201400020000006

Fathi, J. T., Modin, H. E., & Scott, J. D. (2017). Nursing advancing telehealth services in the era of healthcare reform. *Nursing Advancing Telehealth Services, 22*(2). doi:10.3912/OJIN.Vol22No02Man02

HealthCare.gov. (2011). Affordable Care Act. Retrieved November 18, 2018, from https://www.healthcare.gov/glossary/affordable-care-act/

Higgins, T. C., Crosson, J., Peikes, D., McNellis, R., Genevro, J., & Meyers, D. (2015). *Using health information technology to support quality improvement in primary care*. Retrieved from https://pcmh.ahrq.gov/page/using-health-information-technology-support-quality-improvement-primary-care

Inglis, S. C., Clark, R. A., McAlister, F. A., Stewart, S., & Cleland, J. G. F. (2011). Which components of heart failure programmes are effective? A systematic review and metanalysis of the outcomes of structured telephone support or telemonitoring as the primary component of chronic heart failure management in 8323 patients: Abridged Cochrane review. *European Journal of Heart Failure, 13*(1), 1028-1040. doi:10.1093/eurjhf/hfr039

Institute of Medicine. (2001). Homepage. Retrieved November 18, 2018, from http://institute of medicine.org

Institute of Medicine. (2016). Homepage. Retrieved November 18, 2018, from http://institute of medicine.org

Joynt, K. E.., & Jha, A. K. (2012). Thirty-day readmission-truth and consequences. *New England Journal of Medicine, 366*(15), 1366-1369. doi: 10.1056/NEJMp1201598

Mansukhani, R. P., Bridgeman, M. B., Candelario, D., & Eckert, L. J. (2015). Exploring transitional care: Evidence-based strategies for improving provider communication and reducing readmissions. *P & T: A Peer-Reviewed Journal for Formulary Management, 40*(10), 690-694.

Mason, D. J., Gardner, D. B., Outlaw, F. H., & O'Grady, E. T. (Eds.). (2016). *Policy & politics in nursing and health care* (7th ed.). St. Louis, MO: Elsevier Saunders.

McIlvennan, C. K., Eapen, Z. J., & Allen, L. A. (2015). Hospital readmissions reduction program. *Circulation, 131*(20), 1796–1803. doi:10.1161/CIRCULATIONAHA.114.010270

McLean, S., Sheikh, A., Cresswell, K., Nurmatov, U., Mukherjee, M., Hemmi, A., & Pagliari, C. (2013). The impact of telehealthcare on the quality and safety of care: A systematic overview. *PLoS ONE, 8*(8), e71238-e71252. doi:10.1371/journal.pone.0071238

Pandi-Perumal, S. R., Akhter, S., Zizi, F., Jean-Louis, G., Ramasubramanian, C., Edward Freeman, R., & Narasimhan, M. (2015). Project stakeholder management in the clinical research environment: How to do it right. *Frontiers in Psychiatry, 6*(71). doi:10.3389/fpsyt.2015.00071

Public Health Institute. (2018). Homepage. Retrieved November 18, 2018, from http://www.phi.org

Roine, R., Ohinmaa, A., & Hailey, D. (2001). Assessing telemedicine: a systematic review of literature. *Information Technology and Telemedicine.* Retrieved from January 1, 2019, https://www.ncbi.nlm.nih.gov/pubmed/11584564

Suter, P., Suter, W. N., & Johnson, D. (2011). Theory-based telehealth and patient empowerment. *Population Health Management, 14*(2), 87-92. doi:10.1089/pop.2010.0013

U.S. Department of Health & Human Services. (n.d.). Homepage. Retrieved November 18, 2018, from https://www.hhs.gov

Appendix: Literature Review Matrix

Author/ date	Theoretical/ conceptual framework	Research question(s)/ hypotheses	Methodology	Level of evidence	Analysis & results	Conclusions	Implications for future research	Implications for practice
Inglis, Clark, McAlister, Stewart, & Cleland 2011	Abridged Cochrane Review	Which components of heart failure programmes are effective?	Systematic review meta-analysis	Level I	Primary outcomes were analyzed (mortality and hospitaliz ations) and secondary outcomes (cost, length of stay, and quality of life) were tabulated.	Telemonitor -ing appeared to be effective intervention to improve outcomes in patients with congestive heart failure.	Both interventions improved quality of life, reduced costs, and were acceptable to patients. Improve-ments in prescribing, patient knowledge, and self-care, and functional classes were offered.	Improvement in quality care, effective self-care, and educational courses.
Gellis, Kenaley, McGinty, Bardelli, Davitt, & Have 2012		Study aimed to identify factors that determine telehealth technology adoption.	Qualitative study	Level VI	Twenty directors from the National Associa-tion for Homecare and Hospice agencies completed a 45-minute telephone interview.	Questions were asked regarding their perceptions of telehealth, key determi-nants of telehealth adoption and use, and recommen-dations they would give on telehealth adoption	Major perceptions perceived telehealth as effective for managing symptoms and reducing costs.	Findings imply that there is a need for financial support both at the state and federal levels to encourage telehealth adoption among the agencies listed.
Hender-son, Knapp, Beecham, Hirani, Cart-wright, & Doll 2013	Economic evaluation	To examine the costs and cost effectiveness of telehealth in addition to standard support and treatment, compared with standard support and treatment	Randomized controlled trial in a community-based telehealth intervention	Level III	Net benefit analyses of costs and outcomes for 965 patients, with a primary outcome for the cost-effective-ness analysis was increment -al cost per	Telehealth did not seem to be a cost-effective addition to standard support and treatment	Further research was recommend-ed, in which to what extent will telehealth be used for specific patient populations and subpopula-tions, and what is the association between area level factors and patient characteris-	Whether telehealth is considered to be cost-effective will depend on the willingness to pay for the outcomes generated.

					quality-adjusted life year gained		tics	
de Oliveira 2014		To evaluate contributions of information and communication technology	Systematic literature review	Level I	To determine the role of information that can exert either a positive or negative influence on the doctor-patient relationship	Supported practical learning emerged from Internet content that is related to health with limitations such as reliability and whether patients are able to interpret the information obtained to be factual or fraudulent.	Further research was suggested to tie together the theory and empirical analysis/ evaluations with how the Internet affects doctor-patient relationships to the extent that it reflects positive or negative on technological resources	It is estimated that half of the patients coming to the doctor's office now bring information from the Internet and that there is an increase in information availability and access in the field of health care via the Internet.
Gabriel, Jones, Samy, & King 2014	Multivariate logistic regression	Assessing whether current adoption of health information technology has challenges to its implementation and use of maintaining and improving access to care in rural areas; telehealth, teleradiology, as well as EHR adoption	Qualitative and quantitative study	Level VI	A 15-question survey of critical access hospitals focusing on implemen-tation (1342) in the Health Information Management System Society (HIMSS) as being critical access hospital. Information was collected via telephone and Internet, following with at least two e-mail messages, a letter, and a telephone call (with a response	Significant challenges were reported as the work flow and staffing constraints, technical domain, and implement-ation of health IT capabilities such as telehealth. Additional findings included that hospitals that were receiving technical assistance from outside parties were less likely to report work flow or staffing challenges compared to those that did not have third parties.	Challenges were identified with implementa-tion, particularly financial concerns and barriers related to workflow and staffing.	Maintaining and improving access to high quality health care in rural areas by building and strengthening the Health Information Technology infrastructure everywhere.

					of 59%)			
Polinksi, Baker, Gagliano, Sussman, Brennan, & Shrank 2015	Minute Clinic Telehealth Pilot Program	Assessing patient demographics with telehealth satisfaction survey regarding patient's preference for telehealth visits compared to traditional office visits	Cross-sectional patient satisfaction survey	Level VII	Ranking patient satisfact-ion with telehealth visits compared to traditional visits.	11 clinics in California and Texas. With 1734 of 3303 patients completed the survey, with 94-99% being "very satisfied" with all telehealth attributes. One third preferred a telehealth visit to a traditional in person visit.	Patients reported high satisfaction with their telehealth experience, suggesting that telehealth may facilitate better access to care.	Patient perceptions were in line with evidence from studies that found care quality and clinical outcomes following telehealth visits to be comparable or superior to those of traditional in person visits.
Singh, Mathia-ssen, Stachura, & Astapova 2010	Case study design and the punctuated equilibrium theory	To examine adoption of telehealth in a rural public health district and to explain how the innovation became sustainable	Longitudinal qualitative study	Level IV	25 semi-structured interviews with 19 decision makers and profession-als, direct observa-tions, published papers, grant proposals, technical specifica-tions, and other written materials	Found strong collabora-tion within the district, with local community, and with external partners energizing the process, which generated capability and overcame barriers through opportunis-tic exploitation of technologi-cal and financial options. The combina-tion of technology enabled the sustainable telehealth innovation	Identified that with the American Recovery and Reinvest-ment Act of 2009, funding is there to help with IT infrastructure in order to serve patients in rural and remote areas, thus translating opportunities for emerging needs and available options in technology	Supported by the communica-tion of innovation, permitted the success with direct integration with telehealth as a sustainable part of the operation.

Sanders, Rogers, Bowen, Bower, Hirani, Cart-wright, Fitzpa-trick, Knapp, Barlow, Hendy, Chrysan-thaki, Bardsley, & Newman 2012	Qualitative semi-structured interviews with direct observations in home visits along with interview transcripts to elicit key themes	Exploring the barriers and adoption of telehealth from the perspective of valuing the support of self-care in ageing populations.	Qualitative semi-structured interviews were conducted with 22 people, recruited from four trial groups with diabetes, chronic obstructive pulmonary disease, heart failure, and social care needs. IN addition, a large randomized control trial	Level III	Part of the interview process consisted of observa-tions with home visits as part of the trial conducted by 8 members of health and social care staff, exploring adoption of telehealth services as an additional layer of care to enhance self-care and improve transitions of care.	Barriers identified were the require-ments for technical competence and operation of equipment, threats to identity, indepen-dence and self-care, and experiences of disruptions to services	The insights provided in this study go beyond more common expectations that concerns about privacy and dislike of technology due to ageing and self-reliance or those that undermined appropriate coping mechanisms	It seems important to have the opportunity to discuss the value of supporting self-care in ageing populations, and identify skills needed to operate equipment to minimize barriers.
Radhakris hnan & Jacelon, 2012	Literature review content analysis	To explore the impact of telehealth interventions on individuals' self-care of heart failure	Systematic literature search (14 studies were reviewed)	Level V	14 studies were included in the review, resulting with identify-ing the effect of telehealth services for indivi-duals with heart failure	The available evidence supported the use of telehealth as an additional layer of care for patients diagnosed with heart failure, suggesting that telehealth can be effective in promoting self-care and improving health outcomes associated with a better quality of life	Further exploration is needed to determine the effect of telehealth on heart failure self-care outcomes using studies with high quality design and improved data collection procedures	Telehealth can potentially help those with heart failure follow the plan of care resulting in improved health outcomes and a better quality of life

Paul & McDaniel 2015	Case study	This research furthers the understand-ing of telemedicine service sustainability by examining teleconsultat-ion projects from the perspective of healthcare providers	Case studies on 14 teleconsultati on projects that were part of two health sciences center based telemedicine networks, using a semi-structured interview of 60 informants involved in teleconsultati on projects as the primary data collection method	Level IV	Focusing on a particular type of telemedi-cine, which associates the patient and provider collabora-tion to provide value-added health care delivery due to geogra-phic barriers.	In order to increase sustainabili-ty the fundamen-tal purpose of teleconsulta -tion projects needs to be reconcept-tualized, in order to impact positively, particularly with information and communica -tion technolo-gies to improve the patient's health status		By implement-ting teleconsulta-tion enabling patients to follow up from home in order to improve health care access in underserved populations, especially when addressing patient health issues and prevent unnecessary emergency visits