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Improving Outcomes for Congestive Heart Failure Patients

Diana Lee Collins
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Diana Collins

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Dr. Mary Terese Verklan, Committee Member, Nursing Faculty
Dr. Sue Bell, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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MS, Walden University, 2014

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Project Submitted in Fulfillment

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Abstract

Managing patients diagnosed with congestive heart failure (CHF) requires coordination with subspecialties and frequent outpatient monitoring. The lack of communication among health care providers and patients can result in a gap in practice when managing patients with CHF in the outpatient setting. Guided by the chronic care model, this quality improvement project was an initiative to develop and implement a 6-week self-care management program provided by nurse practitioners in an outpatient primary care practice. The goal of the project was to improve the day-to-day self-care management of patients with CHF and addressed the practice-focused question of whether a 6-week CHF program offered in the outpatient setting would result in better symptom management due to patients' enhanced adherence to treatment plans. A total of 10 patients participated in the 6-week program, and all participants demonstrated improvement in their CHF symptoms, which allowed them to be reclassified into a lower class on the New York Heart Association's CHF staging system. Of the 10 participants, 7 were completely compliant with attending weekly visits, performing daily journaling, and adhering to dietary recommendations and medication management; 3 participants demonstrated less compliance with the self-care recommendations during the program, but also showed sufficient improvement in symptoms to be reclassified. The project demonstrated the potential for reducing the symptom burden of CHF through proactive outpatient management, contributing to positive social change by improving the quality of life for these patients. Nurse practitioners may find the program description helpful for developing similar initiatives in their clinical settings.

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Dedication

I dedicate this dissertation to all healthcare providers who provide endless and selfless dedication and devotion to their work, an oftentimes thankless position, in an effort to promote healing, create positive social change, and improve the quality of lives for their patients and families.

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Introduction

Among the leading causes of death in the United States, heart disease ranks Number 1 and stroke ranks Number 5 (Office of Disease Prevention & Health Promotion, 2017). Heart disease and stroke, combined with other causes of cardiovascular disease, are the most widespread and costly health problems in the United States, accounting for approximately $320 billion in health care expenditures and related expenses annually (Office of Disease Prevention & Health Promotion, 2017). The nature of this Doctor of Nursing Practice (DNP) project was based primarily on a quality improvement initiative that included the development of a 6-week care management program provided in an outpatient primary care practice with a moderate volume of patients diagnosed with congestive heart failure (CHF). Additionally, the goals of the project were to improve the day-to-day management of these patients with CHF, reduce the rates of hospital readmissions, prevent unnecessary exacerbations, and improve the overall quality of life for these patients.

Problem Statement

Primary care providers (PCPs) experience a major hurdle when managing patients with heart failure, particularly those in the New York Heart Association (NYHA) Class II (symptomatic without physical limitations), III (marked limited activity), and IV (experiencing symptoms at rest) categories. According to the Centers for Disease Control and Prevention (CDC; 2016), there are approximately 5.7 million adults in the United States with CHF and nearly 50% of people will die within the first 5 years of this diagnosis. Additionally, CHF costs the United States $30.7 billion per year (CDC, 2016). Patients diagnosed with CHF are frequently admitted to the hospital due to exacerbations or complications from the disease sequelae, which can lead to enormous amounts of lost revenue for hospitals, unnecessary increases in healthcare expenditures, worsening patient complications, and increased morbidity and mortality rates (Manning, 2011). Uncontrolled outpatient management of patients with CHF is an issue that is extremely significant to nursing practice because care provided by advanced practice nurses has been shown to improve outcomes for patients with CHF by reducing the number of hospital admissions, lengths of stay, healthcare costs, and mortality (Grange, 2005).

Approximately 50% of patients are readmitted to the hospital within 6 months of discharge and an estimated one half of these are preventable (Schell, 2014). Nationally, 30-day readmission rates for CHF average anywhere from 15.3% to 29.4%, while the average cost to treat CHF per admission is $7,800, whereas the average Medicare reimbursement is only $5,759, leading to an average loss of $2,100 for hospitals for each CHF admission (Sieck, 2012). Additionally, based on 2011 data from the Centers for Medicare and Medicaid Services (CMS), the 30-day readmission rate (per 100 admissions) for CHF was 24.5%, and there were approximately 134,500 30-day readmissions for CHF, which equaled a total cost of $1.7 million (Hines, Barrett, Jiang, & Steiner, 2006). Since managing CHF and its comorbidities is a multifaceted and complex process, PCPs rely heavily on collaboration with other specialties, such as cardiologists, pharmacists, cardiopulmonary rehabilitation, case management, home health, physical therapy, and dieticians (Lin, Cavendish, Boren, Ofstad, & Seidensticker, 2008). Furthermore, inpatient care is exponentially more expensive than outpatient care, so it is much more cost-effective to aggressively manage these patients in the outpatient setting (Capomolla et al., 2002). Capomolla et al. (2002) conducted a study using 234 subjects diagnosed with CHF to determine the cost/utility ratio in chronic heart failure and found the average annual cost of readmissions was $178,553, whereas the average cost of managing patients with CHF in the outpatient setting was $167,785, yielding a savings of $10,768.

The primary care practice that was the subject of this quality improvement DNP project had a roster of 105 patients diagnosed with CHF, accounting for 26 hospitalizations, 303 office visits with their PCP, and 11 deaths within the 12 months prior to the implementation of the project. At an average of $7,000 per admission, 26 hospitalizations cost the hospital approximately $182,000, not including penalties imposed by CMS for readmissions within 30 days. As these costs are essentially bundled across the continuum of care, these amounts represent an average loss of $1,200 per CHF admission, which equaled to an estimated loss of $31,200 for this particular primary care office alone over a 12-month period. Because the costs of managing patients with CHF on an inpatient basis is so significant, outpatient management of patients with CHF has been an increasing problem for this practice, which is an outlying clinic for a larger hospital organization.

Purpose

The purpose of this project was to develop an outpatient care program based on an outpatient chronic care management approach and designed to improve quality outcomes and the delivery of chronic care management for patients diagnosed with NYHA Class II, III, and IV CHF. Managing patients diagnosed with CHF requires coordination with numerous subspecialties due to frequent medication changes, educational needs, rehabilitation, physical therapy, and close outpatient monitoring with frequent reassessments, which mandates that PCPs maintain currency with medication records, diagnostic testing, diagnostic results, and communication with their patients (Khunti, Hearnshaw, Baker, & Grimshaw, 2002). The lack of communication between healthcare providers and patients poses a serious gap in practice when managing patients with CHF as they transition from the inpatient to the outpatient setting. For example, within the project site, PCPs were unaware of a patient's hospital admission unless notified by the patient themselves or a family member. The hospital affiliated with the PCP office that was the subject of this project was not consistent in sending notifications of a patient's admission or discharge to their PCP. The gap in communication between patients and providers leads to delays in patient care when the patients return to the office for a follow-up visit posthospital discharge. Valuable time is wasted when the provider has to request the hospital records, then review the records, and then make the necessary changes or adjustments in the patient's treatment plan, all of which is expected to occur within a 15- or 30-minute office visit. Furthermore, patients are oftentimes unaware of the medications they are taking and frequently do not bring their medications to their appointments, which may cause potential risks for medication errors and adverse events or outcomes.

Several additional factors have been identified as obstacles for PCPs to manage heart failure, such as the high costs of medications, difficulty establishing the diagnosis, and medication management (Khunti et al., 2002). Lastly, low education or health literacy, mental illness, and poor socioeconomic status worsen the gap in communication because of the increased demand for thorough teaching and education regarding the CHF disease process, treatments, and signs and symptoms (Manning, 2011). Providing adequate teaching and patient education is a very time-consuming practice that, unfortunately, is often not included in the routine office visit because the focus may be on other more pressing or pertinent issues (Khunti et al., 2002). Several mental illnesses may also aggravate the communication gap between the patient and provider. For instance, patients who have Alzheimer’s disease or other dementia or who have had a history of cerebrovascular accidents may not have the cognitive competency to comprehend the CHF disease process, patient teaching and educational materials, medications, or anticipatory guidance recommendations. Additionally, poor socioeconomic status may further intensify communication gaps, particularly when medication changes or adjustments are necessary or if additional testing is required to improve the treatment plan.

Therefore, it was necessary to create a method that PCPs as well as specialists can use for bridging this communication gap in practice, and one such method is a chronic care management protocol. A coordination-of-care plan for managing outpatients with NYHA Class II, III, and IV heart failure that addresses gaps in communication and the chronic care management of CHF could make a significant difference in these patients’ lives by improving their day-to-day quality of life, reducing morbidity and mortality rates, and preventing unnecessary emergency department (ED) visits and hospital admissions. Thus, the practice-focused question that guided this project was: Will a 6-week CHF clinic offered in the outpatient setting result in better care management of the patient diagnosed with CHF as measured by adherence to the treatment plan, daily journaling of activity and symptom control, compliance with dietary recommendations, and medication management?

Nature of the CHF Project

The evidence-based chronic care management protocol that formed the basis of this project was guided by recent research and consisted of two major components: (a) an educational program for clinical nurse practitioners (NPs) providing patient education that included daily journaling tools for monitoring vital signs, weights, medications, and recording physical activity and symptoms; and (b) a communication plan between the patient and the PCP so that the patient had easy and prompt access to address any concerns or changes in symptoms. The approach I used in this DNP project was to identify patients with NYHA Class II, III, and IV CHF who experienced one or more exacerbations within the previous 12 months and enroll them in a 6-week outpatient, NP-directed, chronic care program in an effort to improve their quality and quantity of life, prevent future exacerbations, and reduce cardiovascular morbidity and mortality rates.

The first component of the program was the educational portion, which included educational materials that described the pathophysiological process of CHF, its symptoms as well as common medications, their uses, side effects, and possible interactions along with journaling tools for patients to record, track, and monitor their symptoms, vital signs, weights, fluid intake, and physical activity. Additional teaching materials were provided that included evidence-based dietary and lifestyle recommendations pertaining to physical activity, fluid and sodium restrictions, and the importance of flu and pneumonia vaccinations and smoking cessation. The communication component of the program consisted of identifying symptoms or concerns that warranted notifying the provider and establishing a schedule for weekly follow-up appointments and complimentary phone calls between visits.

Significance to Practice

A retrospective study of 10,599 patients in Ontario, Canada found that subjects seen by both cardiologists and PCPs within the first 30 days post hospital discharge had lower mortality rates at 1 year and that mortality was also lower among subjects who were seen at least by a PCP versus no provider at all within the first 30 days (Lee et al., 2010). Additionally, a meta-analysis of a total of 47 trials discovered that multidisciplinary outpatient CHF clinics reduced 3- to 6-month readmission rates as well as 3- to 6-month mortality rates (Lee et al., 2010). Management of heart failure requires a multidisciplinary approach in conjunction with comprehensive outpatient and inpatient programs, including discharge planning, patient education, and frequent outpatient assessments to reduce hospitalizations and improve morbidity and mortality outcomes (Yancy et al., 2013). Furthermore, it is estimated that heart failure care costs more than $33 billion annually in the United States and that from 1994 to 2004 heart failure-related deaths increased by 28% (Smith et al., 2012). Moreover, the prevalence of heart failure is projected to increase by 25% by the year 2030 (Schell, 2014).

Despite improvements in diagnosis and treatments of heart failure, morbidity and mortality rates as well as poor quality of life continue to cause deleterious outcomes for the patients affected. The risks for death after CHF-associated hospitalizations increases to approximately 35% at 1 year, and doubles with each additional subsequent hospitalization (Mallick et al., 2016). Current literature is clear and conclusive that patients seen by both cardiologists and PCPs within the first 30 days posthospital discharge have lower mortality rates at 1 year and that mortality was also lower among patients who were seen at least by a PCP versus no provider at all within the first 30 days (Lee et al., 2010). Therefore, implementing quality improvement initiatives, such as a chronic care management protocol for outpatient management of CHF, are imperative to improving outcomes and promoting positive social change because these initiatives will improve patient education and compliance, reduce hospitalizations and exacerbations, improve quality of life, and reduce unnecessary healthcare expenditures.

Summary

CHF affects millions of people around the world and is a primary reason for hospital admissions, predominantly among the elderly (Lin et al., 2008). CHF is also a chronic disease that oftentimes can be effectively managed in the outpatient setting; however, this task remains difficult as evidenced by the high percentages of 30-day hospital readmissions (Schell, 2014). An outpatient chronic care protocol involving an interdisciplinary team of healthcare providers, frequent follow-up visits with patients, and detailed educational tools and treatment recommendations that include quality improvement interventions will help improve outcomes and lead to a positive social change for patients diagnosed with CHF. Furthermore, literature reviews of previous research studies have shown that the most effective methods for outpatient management of CHF include a multidisciplinary, team-based approach that consists of improved communication strategies between patients and providers, frequent patient assessments, and enhanced patient education. Likewise, using an established concept, model, or theory as a foundation for the development of an outpatient care delivery system or program enhances the probability of successful outpatient management of chronic diseases.

Section 2: Background and Context

Introduction

Management of heart failure requires a multidisciplinary approach in conjunction with comprehensive outpatient and inpatient programs. A coordination-of-care plan for the outpatient setting that includes a multidisciplinary approach and addresses gaps in communication between patients and providers could make a significant difference in patients with CHF by improving their day-to-day quality of life, reducing morbidity and mortality rates, and preventing unnecessary emergency department (ED) visits and hospital admissions. Based on a chronic care model approach, the aim of this project was to determine whether a 6-week outpatient clinic would result in better care management of the patient diagnosed with CHF as measured by adherence to a specified treatment plan, daily journaling of activity and symptom control, compliance with dietary recommendations, and medication management.

Concepts, Models, and Theories

According to Fawcett & Garity (2009), *knowledge* is a term used to encompass everything that is known about something, and *research* is a systematic inquiry that uses existing information to develop new knowledge and solve problems, thereby increasing the body of knowledge. Additionally, research is also a process in which knowledge, information, and data are collected to analyze and develop general principles, draw conclusions, and create new theories and concepts (Fawcett & Garity, 2009). The term *theory* consists of ideas or statements that are found at the end of the knowledge spectrum pertaining to the subject matter (Fawcett & Garity, 2009). A theory is a final, conclusive statement or concept (or set of statements or concepts) that results after conducting a comprehensive evaluation of a collection of data, knowledge, and information (Fawcett & Garity, 2009). Concepts, models, and theories are fundamental components of a doctoral project because they help lay the foundation on which the project is based and provide a blueprint for expansion of the project.

Effective Outpatient Management

Effective outpatient management of CHF has been difficult for PCPs due to several obstacles, such as diagnostic confusion, lack of access to diagnostic tests, and lack of knowledge for appropriate treatment (Khunti et al., 2002). Khunti, Hearnshaw, Baker, and Grimshaw (2002) conducted a qualitative study of 38 general practitioners in 18 primary care practices and found that general practitioners often relied on a variety of clinical symptoms rather than a systematic method for diagnosing heart failure, and many providers had differing opinions as to what constituted CHF symptoms. They conducted semi-structured interviews, called “academic detailing,” that focused on methods PCPs use to diagnose and manage CHF patients, their level of confidence, and perceived obstacles to diagnosing and appropriately managing these patients (Khunti et al., 2002).

Khunti et al.’s (2002) analysis of the interviews was based on open coding using a constant comparative approach, which yielded two major themes: (a) current methods of diagnosing and managing patients diagnosed with CHF and (b) obstacles to the diagnosis and management process. The researchers also discovered several problems general practitioners encounter when managing patients with CHF in the outpatient setting. First, PCPs often relied on a variety of clinical symptoms rather than having a systematic method for diagnosing CHF (Khunti et al., 2002). Second, there were differing views and opinions as to what clinical symptoms were indicative of CHF, and some PCPs would exclude CHF as a diagnosis if the patient was asymptomatic (Khunti et al., 2002). PCPs also reported a lack of easy access to diagnostic tools; long wait times for scheduling; and the high costs of tests, medications, and procedures as additional obstacles to effectively managing CHF on an outpatient basis (Khunti et al., 2002).

Huntington, Guzman, Roemen, Fieldsend, and Saloum (2013) developed a hospital-to-home project to evaluate its impact on 30-day readmission rates. The objective of their study was to bridge the continuum of care beyond the inpatient setting by implementing a multidisciplinary approach while engaging the patient and family as one unit (Huntington et al., 2013). They implemented several interventions on a total of 250 subjects over a 12-month period (Huntington et al., 2013). Intensive education and follow-up plans were implemented and included an educational session with handouts prior to discharge; a complimentary home visit within 48 hours of discharge that also included an additional comprehensive education and review session; a medication reconciliation review, confirmation of a follow-up appointment with their PCP within 10 days of discharge; and a minimum of four telephone calls, with the initial call being made 30 days after discharge (Huntington et al., 2013).

Using a Fisher’s Exact Test, Huntington et al. (2013) demonstrated that the 30-day readmission rate among the enrolled group was decreased by 11% compared to the non-enrolled group, which was significant at a *p* value of 0.043. Although not statistically significant, there were three deaths in the non-enrolled group and zero deaths in the enrolled group (Huntington et al., 2013). Furthermore, medication discrepancies were found to be twice as likely to occur in subjects readmitted compared to those who were not, which was statistically significant at a *p* value of 0.038 (Huntington et al., 2013). Lastly, a 128% return on investment was seen due to lower readmission rates, and for each readmission avoided, an average of $1,200 was saved (Huntington et al., 2013).

Koelling, Johnson, Cody, and Aaronson (2005) found that a patient-centered heart failure education program provided upon hospital discharge led to a reduction in hospitalizations and mortality rates after 6 months. Their study included a total of 223 subjects which were divided into two groups: a controlled group with 116 subjects and an education intervention group with 107 subjects. The intervention group participated in a 60-minute, one-on-one teaching session that included written discharge materials regarding medications, dosages, and instructions for taking as well as drug and food interactions and possible side effects (Koelling et al., 2005). The subjects in the intervention group also received written instructions on the significance of proper dietary restrictions, fluid intake, daily weights, pneumococcal vaccination, smoking cessation, and physical activity as well as descriptions of common heart failure symptoms, when to notify the physician, and follow-up appointment information (Koelling et al., 2005).

Koelling et al. (2005) administered scripted questionnaires to subjects at the time of enrollment and again at 30-, 90-, and 180-day intervals, and subjects in the intervention group were found to be more involved with self-care practices, such as weighing themselves daily and adhering to dietary and fluid restrictions. The specified primary end-point of their study was the number of days hospitalized and/or the number of deceased patients at the end of the 180-day period. Comparison of the distribution of days hospitalized and/or number of deceased patients for the control group versus the education group was performed using the Wilcoxon rank-sum test (Koelling et al., 2005). Furthermore, the results of their study illustrated an increase in overall healthcare savings related to uncontrolled CHF. The overall cost of care in the control group increased by $2,823 per subject, which was statistically significant at a *p* value of 0.035 (Koelling et al., 2005). The results illustrated that a patient-targeted heart failure education program delivered at the time of hospital discharge led to a reduction in the number of hospitalized days or overall deaths at the end of 6 months, and the combined end-point of rehospitalization or death was also significantly reduced by 35% among the subjects in the education group versus the control group (Koelling et al., 2005).

Communication Strategies Between Patients and Providers

Researchers have estimated that one third to one half of all adults struggle with health literacy, which is defined as the ability to obtain, process, and act appropriately with health information (Mackert, Ball, & Lopez, 2011). Additionally, decreased health literacy also leads to longer and more frequent hospitalizations as well as increased difficulty for clinicians to manage chronic illnesses (Mackert et al., 2011). Low health literacy also causes challenges for patients regarding their receptiveness and understanding of instructions and explanations related to their conditions, which further contributes to poorer outcomes (Mackert et al., 2011). Mackert et al. (2011) conducted a study to assess the perceived knowledge among clinicians regarding health literacy and tools for communicating with low health literate audiences. They held a total of 10 training sessions at a hospital between January and June of 2010 and included a total of 166 participants, including social workers, nurses, NPs, health educators, office staff, administrators, and other miscellaneous personnel (Mackert et al., 2011).

Mackert et al. (2011) conducted pretraining surveys using a numerical Likert scale ranging from 1 (*strong disagreement*) to 7 (*strong agreement*) to assess the participants' baseline knowledge of health literacy and their ability to interact with low health literate patients. The participants then engaged in a 90-minute training session that was designed to meet three objectives: (a) define health literacy and explain its importance, (b) discuss the role health literacy plays in patient care, and (c) provide participants with strategies for communicating more effectively with low health literate populations (Mackert et al., 2011). These objectives were met by teaching the participants how to implement specific techniques and strategies to improve communication such as using plain language, drawing pictures, using a teach-back technique, videos, patient-friendly reading materials, and role-playing (Mackert et al., 2011). Posttraining surveys were conducted using the same Likert scale after the 90-minute training session and compared to pretraining surveys to reexamine the initial knowledge base; however, the posttraining survey included two additional factors: the degree in which the participants overestimated their knowledge of health literacy and the techniques used to improve communication with patients (Mackert et al., 2011).

Mackert et al. (2011) analyzed the data using basic descriptive statistics and used paired sample *t* tests to assess the impacts the interventional training session had on the participants' perceived knowledge of health literacy. Statistical analyses were conducted with a *p* value of 0.05 (Mackert et al., 2011). Posttraining surveys showed an improvement in the perceived knowledge and understanding of low health literacy and specific techniques and communication tools for improving dialogue with low health literate populations (Mackert et al., 2011). The mean standard deviation of perceived knowledge was 2 on the pretraining surveys and 0.7 on the posttraining surveys (Mackert et al., 2011). The mean standard deviation of the participants' ability to implement communication tools was 1.5 on the pretraining surveys and 0.8 on the posttraining surveys (Mackert et al., 2011). Moreover, the results of their study showed a significant number of participants (pretest SD = 1.3 and posttest SD = 0.75) overestimated their understanding of health literacy and perceived ability for identifying low health literate populations (Mackert et al., 2011). Although their study was primarily geared towards improved communication techniques among low literacy populations, it illustrated how important communication between clinicians and patients is and provides insight into improved methods that can be used for engaging with all types of patients to provide education, counseling, and empowerment for self-management, which is a critical component for patients to effectively learn how to manage chronic illnesses (Jenerette & Mayer, 2016).

Chronic Care Model

The chronic care model (CCM), developed by Edward Wagner, was designed to help practitioners and healthcare providers improve health outcomes by transforming the daily care for patients with chronic illnesses through a combination of six critical elements: (a) effective team care, (b) clinical information systems, (c) delivery system design with planned interactions, (d) self-management support, (e) effective use of community resources, and (f) integrated decision support (Coleman, Austin, Brach, & Wagner, 2009). The aims of the CCM are to transform care for patients with chronic illnesses from an acute and reactive perspective to a proactive, preventative, and planned approach as well as strengthen the provider-patient relationship and improve health outcomes (Coleman et al., 2009). The CCM was initially developed from a collective evaluation of interventions proven to improve care among various chronic illnesses, which demonstrated that practice changes in four main categories led to the greatest improvements in health outcomes: (a) increasing providers' expertise and skill, (b) educating and supporting patients, (c) delivering care from a team-based and collaborative approach, and (d) making better use of registry-based information systems (Coleman et al., 2009). Patients who have participated in CCM for CHF were more knowledgeable on their illness, more compliant with recommended therapies, had fewer ED visits, and experienced 35% fewer days in the hospital (Coleman et al., 2009).

The CCM could be used at this project site by implementing specific interventions for each element of the model. For example, to achieve the effective team care element, relationships between patients and providers and the relationships between providers themselves, could be accomplished by improving the collaboration of care by using an interpersonal communication tool that would provide notifications and updates on a patient's status. For instance, a one-page form identifying the patient, reason for hospital admission, date of admission (and discharge), and a simplified list of any changes to the patient's treatment plan could easily be e-mailed or faxed to the patient's PCP. Second, clinical information systems could be used to provide patients with reminder phone calls, allowing for better communication and collaboration of care between providers and patients.

The delivery system design could be applied and instituted as a proactive approach to heart failure management by implementing planned interactions such as structured care with weekly or biweekly follow-up appointments, patient instructions for when to notify the PCP, and scheduled referrals. Self-management support, the fourth element of the CCM, could include promoting empowerment behaviors for self-care and extensive educational sessions to prepare patients for managing their illness. Educational tools could consist of handouts and a teach-back tool on the disease process, symptoms, and sequelae of CHF as well as flow sheets for patients to record their daily weights and blood pressures (BPs). Additionally, strategies for goal-setting, action planning, and problem-solving techniques could also be included. Encouraging patients to participate in community programs, such as the local senior center or gym, and collaborating with case management for additional community resource options are ways the effective use of community resources element of the CCM could be implemented in the primary care practice that was the subject of this project. Lastly, integrated decision support could be accomplished with the creation of a chronic care management program, which is founded on using evidence-based practice guidelines for managing CHF on an outpatient basis.

Existing research suggests that a multidisciplinary approach including physician collaboration, nutrition, pharmacy, and social services is effective in reducing hospital admissions, ED visits, mortality rates, and overall improving quality of life among CHF patients (Lin et al., 2008). For example, a pilot study conducted on 33 participants enrolled in an outpatient CHF clinic during a 6-month period found using a shared medical appointment approach increased patient satisfaction, improved quality of life, and reduced the number of hospitalizations (Lin et al., 2008). Between August 2004 and February 2005, 33 participants who were diagnosed with NYHA Class III or IV heart failure, had multiple heart failure admissions, or had a history of aggressive initiation and/or titration of heart failure medications were enrolled in an outpatient CHF clinic (Lin et al., 2008). Two 2-hour educational sessions were held once a week with 6 to 8 participants scheduled per session, and during the first portion of the meeting, participants were gathered in a group setting and nurses reviewed vital signs, medications, and pertinent histories obtained on predesigned flow sheets (Lin et al., 2008). The participants were then escorted to an exam room where the provider discussed pertinent findings on the history questionnaires and performed a physical assessment. For the second half of the meeting participants were congregated with the remaining members of the multidisciplinary team, including a dietician, a psychologist, a nurse, a pharmacist, and a physician moderator as well as other family members (Lin et al., 2008).

The physician moderator addressed each participant’s assessment and plan, emphasized important facts and aspects about the pathophysiology of CHF, along with benefits and adverse effects of their medications (Lin et al., 2008). Additionally, education and guidance were provided on the importance of daily weight monitoring, routine exercise, and dietary modifications (Lin et al., 2008). The multidisciplinary team also used these sessions to highlight areas for common mistakes and to rectify any confusion and answer any questions (Lin et al., 2008). Data were collected at the initial visit by using the Heart Failure Clinic Satisfaction Survey, which was verified and validated by including the Left Ventricular Dysfunction Questionnaire, the Self-Care Management Index, the Beck Depression Inventory, and the Health Partnership Scale (Lin et al., 2008).

The same surveys were obtained again at the 6-month period and statistical analyses of the data were validated by using McNemar's test (Lin et al., 2008). Results of the study demonstrated that at the completion of the 6-month period, the number of all-cause hospital admissions decreased from 11 to 8 and the number of heart failure admissions decreased by 50% (from 4 to 2; Lin et al., 2008). Additionally, the Left Ventricular Dysfunction Questionnaire showed statistically significant improvements in heart failure symptomology and participants reported less fatigue, exhaustion, and physical limitations at the end of the 6-month enrollment period (Lin et al., 2008).

The Institute for Healthcare Improvement and the Robert Wood Johnson Foundation have provided specific interventions for an effective hospital-to-home transition for CHF patients, which reduced 30-day readmission rates from 15% to 6% (Schell, 2014). The interventions included (a) enhanced teaching and learning sessions, (b) enhanced admission assessments, (c) patient and family-centered hand-off communication, and (d) post-acute follow up care (Schell, 2014). During a randomized controlled trial conducted by Koelling et al. (2005), a 1-hour in-person teaching session with a nurse educator along with a follow up phone call at 30-, 90-, and 180-days posthospital discharge showed that participants had a lower risk of readmission or death

(Schell, 2014). Enhanced discharge communication and education have also shown to be beneficial in improving CHF outcomes. Standard written discharge instructions and information that included the following: (a) a list of medications, dosages, instructions for taking, side effects, potential interactions; (b) instructions on diet, daily weights, activity, pneumococcal and influenza vaccinations; (c) follow-up appointment information; (d) smoking cessation; and (e) a description of common CHF symptoms and instructions regarding what to do and when to call the provider, all showed to improve CHF outcomes and reduce readmissions by 35% (Schell, 2014). One recommendation for improving outpatient management of CHF within the PCP office is to increase collaboration with discharge planning and case managers (Schell, 2014), which is integral for arranging outpatient appointments and providing patients with access to community resources and home needs.

Relevance to Nursing Practice

Conducting and reviewing research regarding the outpatient management of and treatments for patients diagnosed with CHF is relevant to nursing practice because it increases our knowledge on the subject, which directly encourages and promotes further research. Improving the processes of outpatient management of CHF will allow patients to receive the most current treatments available and will allow providers to stay abreast of evidence-based practices and continue to develop new theories and protocols. The ultimate goals of research are to enhance knowledge and develop theory. Accordingly, an in-depth review of the literature facilitated and provided the underpinning support of this DNP project and provided evidence that demonstrated how to best manage patients with

CHF to minimize mortality and morbidity rates and improve quality-adjusted life years. Addressing and managing CHF on an outpatient basis by implementing a chronic care model is relevant to nursing practice because it has shown to be cost-effective and improve patients' quality of life.

Paul (1997) described how an outpatient, multidisciplinary CHF clinic is a cost-effective tactic for treatment of CHF and prevention of exacerbations. The clinic consisted of two cardiologists with a subspecialty in CHF management, a NP, and a pharmacist (Paul, 1997). During the initial visit, participants were evaluated and assessed by a cardiologist while the NP provided teaching notebooks and discussed the basics of heart failure, dietary and exercise information, and appropriate situations in which the participant should contact the provider (Paul, 1997). The pharmacist performed comprehensive evaluations of the participants' medications and reviewed the uses, dosages, and side effects (Paul, 1997). At the end of the initial visit, participants would meet with the cardiologist, NP, and pharmacist to discuss treatment plans and develop specific, individualized patient goals (Paul, 1997). The NP then observed and managed the participants with frequent telephone calls, follow-up visits, and any medication adjustments necessary (Paul, 1997). Frequency of in-person visits were determined by the NP based on participant symptoms and clinical status, and the NP maintained 24-hour availability via a paging system, so participants could immediately communicate any needs directly with a provider (Paul, 1997). Throughout the course of the clinic, participant satisfaction increased, their knowledge of the disease process increased, and participants were better able to self-manage their illness (Paul, 1997). Furthermore, rates of hospitalizations and ED visits decreased because of the increased access and communication with a provider (Paul, 1997). Reducing the complications and sequelae of CHF such as end-stage renal disease, coronary artery disease, and pulmonary dysfunction has resulted in an increase in quality-adjusted life years at a price that has been considered cost-effective from a social standpoint (Coleman et al., 2009). Furthermore, care provided by advanced practice nurses has been shown to improve outcomes for CHF patients by reducing the number of hospital admissions, lengths of stay, healthcare costs, and mortality rates (Grange, 2005).

Local Background and Context

According to the CDC, there are approximately 5.7 million adults in the United States diagnosed with CHF and nearly 50% of people will die within the first 5 years of diagnosis (CDC, 2016). Furthermore, CHF costs the United States $30.7 billion per year (CDC, 2016). Approximately 50% of patients are readmitted to the hospital within 6 months of discharge and an estimated ½ of these are preventable (Schell, 2014, p. 224). Not only is CHF an extremely costly chronic disorder, it is a complicated and multifaceted process often requiring collaboration among numerous medical professionals, specialists, and community resources to effectively manage these patients. Furthermore, inpatient care is exponentially more expensive than outpatient care, so it is much more cost-effective to aggressively manage these patients in the outpatient setting.

The DNP project discussed in this paper was a quality improvement initiative aimed at the development of a chronic care management program for outpatient PCPs to utilize when managing patients diagnosed with CHF in the outpatient setting, in an effort to reduce the rates of hospital readmissions, prevent unnecessary exacerbations, reduce healthcare costs, and overall improve the quality of life for these patients. The DNP project took place during a 6-week period in an outpatient primary care office with three medical physicians and one family NP with a roster of 105 patients diagnosed with CHF, which accounted for at least 26 hospitalizations, 303 total annual office visits with the PCP, and 11 deaths within the previous 12 months.

Role of the DNP Student

As the DNP project manager, I facilitated the entire project, operations, functions, and tasks. I collaborated with the three medical physicians and NP employed at the office as well as the office manager and nurses who were responsible for the primary interactions with the patients enrolled in the program. In addition, I was motivated to improve the outcomes of CHF patients because of the severity of this chronic illness, and because advanced practice nurses play an unequivocal and integral role in promoting positive social change by helping improve the quality of life for these patients. There were no known or potential biases prior to or during this project.

Summary

Heart disease ranks as one of the top three leading causes of death in the United States accounting for an estimated $320 billion annually, with CHF alone costing the United States $30.7 billion per year (CDC, 2016). Outpatient management of patients with CHF is a complex and multifaceted process. Based on information obtained from literature reviews of previously published outcomes and research, the purpose of this DNP project was to establish a quality improvement initiative that included the development of a 6-week chronic care management program provided in an outpatient PCP practice. The project included specific interventions to determine adequacy of symptom control and compliance, as well as improve the day-to-day management of the patient with CHF, reduce the rates of hospital readmissions, prevent unnecessary exacerbations, and overall improve the quality of life for this patient population. Archival and operational data were obtained from several sources, including a thorough literature review of previously published research and direct procedural data obtained during the 6-week implementation period.

Section 3: Collection and Analysis of Evidence

Introduction

Patients with CHF are frequently admitted to the hospital due to exacerbations or complications from the disease sequelae, which can lead to enormous amounts of lost revenue from hospitals, unnecessary increases in healthcare expenditures, worsening patient complications, and increased morbidity and mortality rates (Manning, 2011). Approximately 50% of patients with CHF are readmitted to the hospital within 6 months of discharge and an estimated one half of these are preventable (Schell, 2014). Managing patients with CHF requires a collaborative approach from numerous subspecialties due to frequent medication changes, educational needs, rehabilitation, physical therapy, and close outpatient monitoring with frequent reassessments, which mandates that PCPs maintain currency with medication records, diagnostic testing, diagnostic results, and communication with their patients (Khunti et al., 2002). Moreover, several obstacles have been identified among PCPs when managing heart failure patients, particularly those categorized in the NYHA Class III and IV categories. The high costs of medications, diagnostic confusion, lack of access to diagnostic tests, patient populations with low education or poor socioeconomic status, poor medication management or polypharmacy, lack of time for sufficient teaching and education, and lack of communication between patients and providers are all reasons that have been identified as complicating the outpatient management of CHF (Khunti et al., 2002).

Sources of Evidence

The sources of evidence that I used for this project were based on published literature reviews of qualitative and quantitative research studies related to the outpatient management of CHF. Additionally, direct evidence was obtained from the project participants during the 6-week implementation period. Collection and analysis of this evidence was primarily done via a computerized electronic medical system which had the ability to produce reports and categorize data, which were then placed in an Excel spreadsheet for review and analysis. The data I obtained were used to provide insight into whether a chronic care management program would benefit and improve the outpatient care of patients with CHF in the primary care office that was the subject of this project.

Published Outcomes and Research

I obtained data from published outcomes and research for this project using CINAHL and MEDLINE search engine databases, in conjunction with other databases accessible through the Walden Library. The following key search terms were used to obtain relevant data and information from the literature review: *congestive heart failure, CHF, outpatient management, statistics, chronic care model, transitional care management, care coordination, improving CHF outcomes,* and *improving care for chronic illnesses*. Data and research were limited to content within the past 15 years.

CHF is a complex clinical syndrome that results from any structural or functional cardiovascular disorder or from certain metabolic abnormalities, causing systemic perfusion that is inadequate in meeting the body’s metabolic demands without excessively increasing and overloading the ventricular filling pressures or causing impairment of the myocardial function of the left ventricle (Yancy et al., 2013). According to the NYHA, CHF is further categorized into four main classes: (1) Class I includes patients with heart failure that do not have limitations with physical activity, (2) Class II includes patients with heart failure with only slight limitations in physical activity and are asymptomatic at rest, (3) Class III patients have marked limitations in physical activity but do not have symptoms at rest, and finally, (4) Class IV patients cannot perform any physical activity without experiencing symptoms and typically have symptoms at rest (Yancy et al., 2013). Transition of care is defined as a process or protocol instituted to ensure the coordination and continuity of care as patients transfer between different levels and locations of care (Coleman, Mahoney, & Parry, 2005). Care coordination is defined as the collaboration among healthcare providers, patients, and families along with the implementation of individualized treatment plans to facilitate appropriate delivery of healthcare services that aim to provide the most optimal healthcare possible to achieve maximum results and improve quality of life (Merrill, Sheehan, Carley, & Stetson, 2015).

Archival and Operational Data

I collected quality improvement data during the program by tracking visits, phone calls, and medication changes in the office's computerized electronic medical record. Every interaction between the patient and the team members that was related to CHF was documented electronically and was then de-identified, organized, and summarized into an Excel spreadsheet and provided to me for secondary analysis. Compliance rates and communications with the patients were then quantified at the end of the 6-week period.

Implementing quality improvement initiatives, such as a chronic care management program, for the provision of long-term care to patients in the outpatient setting is imperative to improving outcomes and promoting positive social change because it will improve patient education and compliance, reduce hospitalizations and exacerbations, improve patients' quality of life, reduce unnecessary healthcare expenditures, and ultimately decrease mortality rates.

Evidence Generated for the Doctoral Project

Participants. The participants of the program included 10 patients who met the inclusion criteria, three primary care medical physicians, one family NP, one registered nurse, two licensed practical nurses, and three certified medical assistants. The three physicians were all trained in primary care and had been in practice together for longer than 10 years, accounting for more than 60 years of experience collectively. The registered nurse and two licensed practical nurses also had more than 5 years of experience each, with most of their experiences focused in the outpatient, primary care setting. The NP specialized in family medicine and had been practicing for 4 years. The participants and office staff were employed by their affiliating hospital, which was a larger medical center in the community, and the office manager and clinical director of the hospital expressed full support of this project.

Procedures. I collected data from three primary sources: (a) pre- and posttests of patient knowledge; (b) patient compliance as measured by attending weekly appointments, completion of daily journaling (which included documentation of self-BP monitoring, self-reported medication management, adherence to dietary recommendations of less than 2 grams of sodium intake per day and fluid restriction of less than 52 ounces of fluid per day); and (c) control of symptoms as measured by an increase or decrease in physical activity, presence of shortness of breath, BP control (with an optimal BP goal of </= 130/80), weight gain of no more than four pounds in 24 hours, presence of cough, and presence of orthopnea (as measured by sleeping on more than two pillows).

I used a three-question Likert survey to determine a baseline of the patients' knowledge of CHF and to assess the severity in which they felt CHF limited their quality of life on a daily basis. Two of the questions were related to the degree in which patients felt CHF limited their daily life and the third question was related to the patient's level of knowledge and understanding of CHF. The first two questions had four pre-coded answers: (1) *not at all/rarely*, (2) *some days/occasionally*, (3) *most days/frequently*, and (4) *every day/constantly*. The third question also had four pre-coded answer choices: (1) *very knowledgeable*, (2) *basic understanding*, (3) *very little understanding*, and (4) *no understanding*. The surveys were completed prior to the program start date and repeated at the end of the 6-week period, and I compared the results of the preprogram surveys to the results of the post-program surveys to assess whether the patients' knowledge of CHF improved and whether they felt their daily quality of life had improved. Data were collected via the office's electronic health record (EHR), de-identified, and then compiled in an Excel spreadsheet and provided to me. I then used secondary analyses to determine whether there were improvements in vital signs, weight management, decreased numbers of ER and hospital visits, overall improvement in physical activity as well as compliance with weekly visits, symptom control, and medications at the end of the 6-week period.

At each visit during the 6-week program, compliance and symptom control data were collected and ranked using a numerical rating scale. Compliance data were obtained by assessing the degree to which the patient adhered to each of the following five areas: (a) recorded BP and heart rate daily, (b) recorded weight daily, (c) recorded physical activity daily, (d) attended weekly follow-up visits, and (e) adhered to dietary recommendations and restrictions. I assigned each of the five compliance components with a 1-point value for a minimum of 0 points to a maximum of 5 points, indicating absolute zero compliance to complete compliance with treatment recommendations, respectively. Inversely, symptom control data were measured by recording the presence of the following five symptoms: (a) BP > 140/90, (b) weight gain greater than four pounds in a 24-hour period, (c) shortness of breath, (d) sleeping on more than two pillows, and (e) cough. Each symptom was also assigned with a 1-point value for a minimum of 0 points (*asymptomatic*) to a maximum of 5 points (*very symptomatic*). A score of 0 on the symptom control scale indicated the patient's CHF was very controlled and a score of 5 on the symptom control scale indicated the patient's CHF was very uncontrolled. If a patient did not show for their weekly visit, they were assigned a 0 for compliance and no data were obtained for symptom control.

I obtained further data during the program including all telephone interactions between patients and providers related to CHF during the 6-week implementation period and the number of ER visits or hospitalizations for any cause within the 6 weeks. Preenrollment data that were collected included the number of ER visits or hospitalizations related to CHF in the 6 weeks prior to the program, which was then compared to post-enrollment data collected at the end of the 6-week period, which included all ER visits or hospitalizations that occurred during the implementation period. During the 6-week period, patients were scheduled for 1-hour visits once weekly, which included an educational session, physical assessment, medication reconciliation, and a question-and-answer session.

The educational sessions were held with patients individually and were focused on instructing patients about dietary restrictions and allowances, including a daily sodium restriction of 2 grams or less and a total daily fluid intake of 52 ounces or less. Regular, aerobic exercise in 10- to 15-minute intervals, three times a week and smoking cessation were also encouraged. Patients were also taught how to properly weigh themselves and check their vital signs (BP and heart rate) and instructed on how to record that information daily. Patients were provided with a home BP monitoring kit if they did not possess one, and they were given journaling tools and calendars for data recording. Patients were also informed of the signs and symptoms that warranted a call to the provider, such as more than a four-pound weight gain in 24 hours, worsening shortness of breath with or without activity, BP greater than 160/90, fever greater than 101, increased home oxygen use, chest pain, or abdominal or lower extremity swelling that caused significant tightening of clothes. The patients were provided with the provider’s contact information, who was available 24 hours a day, 7 days a week via a paging system.

Weekly physical assessments were conducted by the NP, who also performed a medication reconciliation at each visit and provided the patients with updated medication lists, noting any medication changes. The NP also provided patients with information related to the uses, side effects, and instructions for taking for any new medications that were prescribed. The question-and-answer session allowed patients to ask any questions and voice any concerns they had regarding CHF as well as allowing the NP an opportunity to ask questions that would indicate potential needs of the patients (e.g., whether oxygen may be necessary based on newly-reported symptoms or if medication changes were indeed warranted).

Protections. The project was considered an important quality improvement initiative for providing improved outpatient care management for patients with CHF at this particular primary care office. Patients and providers signed a waiver of approval agreeing to participate in the project and data were obtained, de-identified, and transferred from the practice’s computerized, EHR and provided to me in an Excel spreadsheet for secondary analysis and synthesis. All participants (providers and patients) remained anonymous, and I instituted measures throughout the process to permit the withdrawal of participants and patients without any penalties or negative consequences. Furthermore, I obtained approval for this project from the Walden Institutional Review Board (Approval #04-18-18-0382934) as well as the office and hospital with which the primary care clinic that was the subject of this project was affiliated.

Analysis and Synthesis

I conducted secondary analyses using de-identified data downloaded from the EHR and anonymous pre- and postsurvey test data. Content and face validity were established by the three medical physicians and a NP in the office. Paired *t* tests with a significance level of less than 0.05 were originally intended to be used to determine the effectiveness of the 6-week outpatient care program on adherence to the treatment plan, control of symptoms, and patient knowledge of CHF management. The incidence of ED visits and inpatient admissions were also compared to the number of hospital visits in the 6-week timeframe immediately prior to the care management protocol implementation. Due to the small sample size, the assumptions of normality were not met; therefore, I substituted descriptive statistics and qualitative analyses for an inferential approach.

Summary

Outpatient management of CHF requires frequent follow-up assessments, frequent medication changes, accessible communication methods between the patient and provider, and adherence to current evidence-based practices. A 6-week outpatient care program can improve CHF outcomes by improving quality of life on a daily basis, reducing exacerbations and hospitalizations, and decreasing morbidity and mortality rates. Weekly visits, daily journaling, and education regarding the disease process, treatment recommendations, and self-care techniques are essential components of effective, long-term, outpatient CHF management. The outcomes data at the conclusion of this program were expected to be fewer ER visits, no hospitalizations, stable and satisfactory vital signs and weight management, and improved daily physical capabilities and functionality. There were also several unanticipated findings as well as various themes related to knowledge of CHF and treatment compliance that emerged during the project.

Section 4: Findings and Recommendations

Introduction

Approximately 5.7 million adults in the United States have CHF, of which nearly 2.8 million will die within the first 5 years of diagnosis and which an estimated $30.7 billion is spent annually providing care for in the United States (CDC, 2016). In addition, an estimated 50% of patients are readmitted to the hospital within 6 months of discharge and an estimated one half of these are preventable (Schell, 2014). The primary care office in which this project took place had a roster of 105 patients diagnosed with CHF, accounting for 26 hospitalizations, 303 office visits with their PCP, and 11 deaths within the 12 months prior to the implementation of the project. The 26 hospitalizations cost the facility an average of $7,000 per admission, which resulted in an approximate loss of $182,000, not including penalties imposed by CMS for readmissions within 30 days. Furthermore, managing patients with CHF requires a collaborative approach from numerous subspecialties due to frequent medication changes, educational needs, rehabilitation, physical therapy, and close outpatient monitoring with frequent reassessments, which mandates that PCPs maintain currency with medication records, diagnostic testing, diagnostic results, and communication with their patients (Lin et al., 2008). Since the mortality rate of CHF is so high and the costs of managing patients with CHF on an inpatient basis are so significant, successful and effective outpatient management of patients with CHF is paramount and imperative to improving patient outcomes. The purpose of this project was to develop an outpatient care program based on a chronic care management approach and designed to improve quality outcomes and the delivery of chronic care management for patients diagnosed with NYHA Class II, III, and IV CHF.

The sources of evidence that I used for this project were based on published literature reviews of qualitative and quantitative research studies as well as peer-reviewed evidence-based protocols and recommendations related to the outpatient management of CHF. I obtained data from published outcomes and research for this project using the CINAHL and MEDLINE search engine databases and direct evidence from the project participants during the 6-week implementation period. Collection and analysis of the evidence was primarily done via a computerized EHR that had the ability to produce reports and categorize data, which was then de-identified and placed in an Excel spreadsheet for my review and analysis. I used the data to provide insight into whether a chronic care management program would benefit and improve the long-term outpatient care of patients with CHF in the primary care setting.

Findings and Implications

Initially, there was an expectation that 20 patients discharged from the inpatient setting would have been enrolled in the outpatient care program within 7 to 14 days of their discharge date. Although most of the patients with CHF in the practice were classified as Class II, III, and IV, they were being adequately managed by the PCPs on a day-to-day basis, and none were found to have been hospitalized within the 6-week period immediately preceding the program’s commencement date; therefore, I had to adjust the inclusion criteria for the program. A total of 10 participants were eventually enrolled in the program (five White men, two African-American women, and three White women), whose ages ranged from 51 to 84 years old, with a median age of 70.6 years old.

Although I originally intended to perform statistical analyses, the small sample size precluded the use of inferential statistics. Instead, descriptive and de-identified qualitative data were collected from the narrative in the EHR and used in this analysis. There were eight participants who disclosed verbally they had increased knowledge and understanding of CHF and felt their CHF symptoms were better controlled. One participant revealed no change in knowledge and understanding of CHF and no change in daily routine. There was also one participant who disclosed increased knowledge of CHF but did not feel there was any improvement in how CHF affected daily routine. Of the total 10 participants, five began the program at NYHA Class II heart failure, and the remaining five participants began at NYHA Class III heart failure. At the end of the program, three of the NYHA Class III participants had improved to NYHA Class II, and the remaining seven participants concluded the program at NYHA Class I heart failure (see Table 1).

Table 1

CHF Patient Progress NYHA Staging Week 1 to Week 6

Patient No.	NYHA CHF Class at Baseline	NYHA Class at Week 6
1	2	1
2	3	1
3	2	1
4	2	1
5	2	1
6	3	2

7	3	2
8	3	1
9	3	2
10	2	1

Only two of the participants did not attend every weekly appointment. One participant had scheduling conflicts due to work schedule, and the other participant was hospitalized during the program due to an unrelated but serious condition. Participants were contacted via a phone call the day after they failed to attend the weekly scheduled appointment to inquire about the reason the appointment was missed and to assess for the presence of any needs, changes, or concerns. If the participant had any needs, questions, or concerns, they were presented to the appropriate provider for evaluation and treatment. There was a total of 12 phone calls related to CHF between the participants and staff during the 6-week intervention period. There were no ED visits among any of the participants in the 6-week period prior to the start date of the program or during the 6-week implementation period. There were also no hospitalizations during the 6 weeks preceding the program; however, during the program, one participant was hospitalized due to worsening CHF and another participant was hospitalized due to renal failure during the implementation period.

Participant Number 7 was one of the two participants who missed one of the weekly visits due to hospitalization. The patient was admitted for a 3-day hospital stay secondary to chronic kidney disease that eventually advanced to end-stage renal failure and was therefore admitted for correction of electrolyte imbalances and started on hemodialysis. The participant was contacted by the primary care office staff upon hospital discharge and was scheduled for an outpatient follow-up appointment. The participant's CHF symptoms were stable and controlled for the remainder of the 6-week period, and the patient did not have any further ER visits or hospitalizations.

Participant Number 9 was compliant with weekly journaling and weekly visits; however, was admitted to the hospital for 3 days due to escalating CHF symptoms that were secondary to severe aortic stenosis. The patient required a surgical evaluation for aortic valve repair and was deemed to not be a surgical candidate. Interestingly, the only major symptom related to CHF during the 6-week program and hospitalization was weight gain secondary to edema. The patient did not experience the typical symptoms associated with worsening CHF such as increased fatigue, nocturnal dyspnea or orthopnea, resting or exertional shortness of breath, decreased physical capacity, cough, fluid retention, or oxygen supplementation (Grange, 2005).

Participant Number 6 was noncompliant with treatment recommendations and did not attend weekly follow-up visits due to work and scheduling conflicts. The participant was given the option to complete the daily journaling tools and fax the results or simply leave them at the front desk of the office for the provider to review as well as the option of conducting the weekly questionnaires via telephone rather than in-person but declined both alternatives. The participant also displayed high levels of anxiety related to CHF symptoms throughout the 6-week program and self-discontinued hypertension medications. Moreover, the participant also did not appear for several appointments for diagnostic tests that were ordered and scheduled by the provider.

Two major themes related to knowledge of CHF and the importance of awareness of physical symptoms emerged during this project. First, there was an improved level of education and understanding of CHF as evidenced by verbal feedback provided and documented as narratives in the EHR. Daily journaling did help improve compliance with CHF treatments and recognition of early warning signs that could possibly have indicated a deterioration of physical status evidenced by a change in all 10 participants' CHF class from a higher level to a lower level, which showed an improvement in symptoms. Several participants reported unawareness of the significance that minor vague symptoms, such as slight elevations in BP and weight or slight decreases in physical ability and capacity, had on detecting a potential imminent exacerbation. Several statements that verified this theme included, "I did not realize how important it was to check my blood pressure every day," and "I noticed I had not been able to walk as far as I normally could, but I did not pay it any attention." Three participants notified the providers of weight gain and subsequently had medication adjustments, and two participants notified the providers of increased BP, which also resulted in medication adjustments.

By the end of the program, one major theme emerged related to compliance, which was that daily journaling was time-consuming. Several participants reported concerns related to the amount of time it took to write down their daily symptoms, vital signs, weights, and physical activities; however, they also acknowledged recognition of the significance of daily journaling and how it provided insight into the management of CHF and the improved day-to-day control of their symptoms as a result. One patient stated, "It takes a while to write everything down, but now I can see what my blood pressure has actually been and now I know when to call the doctor." Additionally, several patients had to be reminded weekly and reeducated frequently on how to complete the journaling tools and document their vital signs and physical activities.

I discovered several unanticipated outcomes during the program's development and implementation periods. For example, the program initially planned for a total of 20 participants; however, due to unforeseen circumstances and various reasons, such as numerous, prescheduled appointment obligations with other providers, work or scheduling conflicts, and transportation issues, several participants decided not to participate. Additionally, I expected there to be more uncontrolled NYHA Class III and IV heart failure patients within the primary care practice, which resulted in a smaller sample size. Unfortunately, two of the participants who initially qualified for the program died prior to the program's commencement date. Finally, I had not anticipated that patients would have such difficulty with maintaining the daily journaling tools, specifically with recording their physical activities and dietary consumptions.

Recommendations

Care provided by advanced practice nurses has been shown to improve outcomes for patients with CHF by reducing the number of exacerbations and hospital admissions, lengths of stay, and healthcare costs (Manning, 2011). One method an advanced practice nurse can use to provide this intimate care is through a chronic care management program. Implementing quality improvement initiatives, such as a chronic care management program for the provision of long-term care to patients in the outpatient setting, are imperative to improving outcomes and promoting positive social change because they improve patient education and compliance and quality of life, reduce unnecessary healthcare expenditures, promote self-empowerment and self-care, and ultimately decrease mortality rates. Management of chronic conditions and numerous comorbidities is rapidly becoming a daily task for providers and patients, particularly in the outpatient setting (Bodenheimer, Wagner, & Grumbach, 2002), and in order to provide safe, effective care to an aging population and help maintain healthy communities, a systematic method for chronic care delivery is imperative.

Strengths and Limitations

The small sample size of the project was both a strength as well as a limitation. Since the sample size was so small, the NP was able to devote extensive time to each patient during the weekly follow-up appointments. Unfortunately, the small sample size precluded the use of statistical analyses, and although the findings of the project were consistent with results that were discovered in similar projects I researched during the literature review, it may be misleading to assume these findings could be applicable to the general population without further research. Since this project was successful in verifying that a chronic care management program can improve outcomes and quality of life for patients with CHF, it has laid a foundation for conducting future research and similar studies.

Section 5: Dissemination Plan

I plan on disseminating the findings of this doctoral project to the primary care office in which the project took place as well as the local hospital in which it is affiliated via a Powerpoint presentation. Appropriate venues for disseminating this project to the broader nursing profession include Powerpoint or poster presentations at annual healthcare conferences, hospitals, or other healthcare organizations as well as publication in nursing and medical journals. Furthermore, this data and information can be used as a blueprint to help create official, formal outpatient chronic care management programs, either for CHF patients or other chronic conditions, by hospitals or other primary care practices in the community.

Analysis of Self

As Project Manager

The project manager's responsibilities are to: (a) define the goals and objectives of the project, (b) determine when and by whom the various project components are to be completed, and (c) ensure that completed components meet a certain standard (Stanley, 2016). The project manager is also responsible for identifying resources and establishing effective lines of communication as well as balancing the demands of the project and modifying the project as required throughout its duration (Stanley, 2016). As an advanced NP conducting a DNP project, it was sometimes difficult for me to separate the roles and responsibilities between provider and project manager, which required frequent cognizance to maintain appropriate boundaries between the two. My time-management and prioritization skills were sharply refined due to meeting strict deadlines; collecting, documenting, and analyzing data; and disseminating results while being the sole project manager and team leader. Furthermore, the use of delegation throughout the entire process was priceless and allowed me to be a successful project manager.

As Practitioner

Developing a chronic care management program for practitioners in the outpatient setting aligns with my personal long-term professional goals because my practice focus is primary care, and chronic care management of numerous conditions has become part of my daily routine as well as a daily struggle because providing sustained, evidence-based care to patients indefinitely is an extremely challenging and occasionally, even a daunting task. According to Wallace et al. (2015), general practitioners identified four primary areas in which they experience difficulties in caring for patients with chronic illnesses: (a) the disorganization and fragmentation of care, (b) a lack of specific guidelines for management of chronic diseases, (c) challenges in delivering patient-centered care, and (d) barriers to shared decision making. General practitioners also discussed the sense of professional isolation they experience in managing these patients since they are typically the only providers responsible for the collective care of patients (Wallace et al., 2015). Through qualitative research, Wallace et al. also discovered that patients struggle with chronic care management, specifically with the psychological distress caused by understanding and self-managing their illnesses, attending multiple appointments, and managing complex drug regimens. In an Australian survey of 7,620 patients in primary care, 23% of those with one chronic condition reported depression compared to 40% of those with five or more chronic conditions (Wallace et al., 2015). Providing long-term care and management for chronic diseases is oftentimes filled with uncertainty and despair when observing beloved patients struggle with chronic conditions and depending on practitioners to make them better. On the other hand, it is also rewarding and humbling to have the ability and responsibility to be able to provide guidance, encouragement, love, and compassion to others and be a vessel for promoting positive social change and helping create a healthier and happier population.

As Scholar

A scholar denotes a person who possesses a profound knowledge of any specific subject, intellectual curiosity, creative thinking, and proper communication skills who devotes time and energy to scientific and artful inquiry, disseminates research findings, and creates ways to fortify knowledge (Bunkers, 2005). Additionally, as a scholar and professional healthcare practitioner, I believe the ability to regularly and skillfully adapt to change in a positive manner is a fundamental personal trait that is necessary for effectively working within the healthcare system. A major insight I gained during this doctoral project process was the importance of recognizing personal strengths and weaknesses as well as capabilities and limitations. As a scholar, it has been somewhat frightening to realize that I have transitioned from being a student to a leader. Leadership and expertise involve more responsibilities, authority, accountability, and obligations. Due to the expanded roles and functions of being a leader and a scholar, and the insecurities in which these newly-found positions create, it has been a very difficult and ongoing personal struggle, and a somewhat frightening experience, to accept that I am now considered a leader and an expert within my field of practice.

Completion of the Project

Although I encountered challenges during the process of conducting and completing this scholarly project, such as the difficulty in obtaining IRB approval, overall as a project manager, I am satisfied with my work and leadership skills. My ability to find solutions to problems in this project was largely based on having impeccable time management and prioritization skills and making use of helpful resources such as my committee members, mentors, professors, colleagues, friends, and family. Effective project management requires efficient schedule management and planning, communication management, and risk management (Hwang & Ng, 2012). Managing an entire project while working full-time and simultaneously collecting, organizing, and disseminating data and compiling the entire project into a formalized document has been an excellent learning experience. Moreover, learning how to anticipate problems and develop alternative solutions to unexpected outcomes were other essential insights I gained during this journey. According to Hwang and Ng (2012), the required skill for addressing unexpected challenges and uncertainties during a project is problem solving; therefore, project managers must be proficient in problem-solving to be successful.

Summary

Managing patients diagnosed with CHF requires coordination with numerous subspecialties and close outpatient monitoring with frequent reassessments, which mandates that PCPs maintain currency with medication records, diagnostic testing, diagnostic results, and communication with their patients (Khunti et al., 2002). This DNP project was a quality improvement initiative that included the development and implementation of a 6-week care management program provided by NPs in an outpatient primary care practice. The goal of the project was to improve the day-to-day management of the patient with CHF, which I addressed by answering the following practice-focused question: Would a 6-week CHF clinic offered in the outpatient setting result in better care management as measured by adherence to a specific treatment plan that included weekly follow-ups, daily journaling, symptom control, compliance with dietary recommendations, and medication management? The project successfully demonstrated the potential for reducing the burden of illness through proactive outpatient management, contributing to a positive social change for the management of CHF by reducing exacerbations and hospitalizations, avoiding unnecessary healthcare expenditures, improving the quality of life for these patients on a daily basis, and most importantly, reducing morbidity and mortality rates.

References

Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness: The chronic care model, Part 2. *Journal of the American Medical Association, 288*(15), 1909-1914. doi:10.1001/jama.288.15.1909

Bunkers, S. S. (2005). A community of scholars: What is it? *Nursing Science Quarterly*, *18*(2), 117-119. doi:10.1177/0894318405274812

Capomolla, S., Febo, O., Ceresa, M., Caporotondi, A., Guazzotti, G., La Rovere, M. T....Gnemmi, M. (2002). Cost/utility ratio in chronic heart failure: Comparison between heart failure management program delivered by day-hospital and usual care. *Journal of the American College of Cardiology*, *40*(7), 1259-1266. Retrieved from http://www.sciencedirect.com/science/article/pii/S073510970202140X

Centers for Disease Control & Prevention. (2016). Division for heart disease and stroke prevention: Heart failure fact sheet. Retrieved from https://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_heart_failure.htm

Coleman, K., Austin, B. T., Brach, C., & Wagner, E. H. (2009). Evidence on the chronic care model in the new millennium. *Health Affairs (Project Hope), 28*(1), 75-85. doi:10.1377/hlthaff.28.1.75

Coleman, E., Mahoney, E., & Parry, C. (2005). Assessing the quality of preparation for posthospital care from the patient's perspective: The care transitions measure. *Medical Care, 43*(3), 246-255. Retrieved from http://www.jstor.org/stable/3768223

Fawcett, J., & Garity, J. (2009). Chapter 1: Research and evidence-based nursing practice. In *Evaluating Research for Evidence-Based Nursing* (pp. 3-20). Philadelphia, PA: F.A. Davis.

Grange, J. (2005). The role of nurses in the management of heart failure. *Heart*, *91*(Suppl 2), ii39–ii42. doi:10.1136/hrt.2005.062117

Hines, A. L., Barrett, M. L., Jiang, H. J., & Steiner, C. A. (2006). Conditions with the largest number of adult hospital readmissions by payer, 2011: Statistical Brief #172. Retrieved from https://www.hcup-us.ahrq.gov/reports/statbriefs/sb172-Conditions-Readmissions-Payer.pdf

Huntington, M. K., Guzman, A. I., Roemen, A., Fieldsend, J., & Saloum, H. (2013). Hospital-to-home: A hospital readmission reduction program for congestive heart failure. *South Dakota Medicine: The Journal of the South Dakota State Medical Association*, *66*(9), 370-373.

Hwang, B., & Ng, W. J. (2012). Project management knowledge and skills for green construction: Overcoming challenges. *International Journal of Project Management*, *31*(2), 272-284. doi:10.1016/j.ijproman.2012.05.004.

Jenerette, C. M., & Mayer, D. K. (2016). Patient-provider communication: The rise of patient engagement. *Seminars in Oncology Nursing*, *32*(2), 134-143. doi:10.1016/j.soncn.2016.02.007.

Khunti, K., Hearnshaw, H., Baker, R., & Grimshaw, G. (2002). Heart failure in primary care: Qualitative study of current management and perceived obstacles to evidence-based diagnosis and management by general practitioners. *European*

Journal of Heart Failure, 4, 771-777. doi:10.1016/S1388-9842(02)00119-8

Koelling, T. M., Johnson, M. L., Cody, R. J., & Aaronson, K. D. (2005). Discharge education improves clinical outcomes in patients with chronic heart failure. *Circulation, 111*(2), 179-185. Retrieved from circ.ahajournals.org/content.111/2/179.short

Lee, D. S., Stukel, T. A., Austin, P. C., Alter, D. A., Schull, M. J., You, J. J., … Tu, J. V. (2010). Improved outcomes with early collaborative care of ambulatory heart failure patients discharged from the emergency department. *Circulation, 2010*(122), 1806-1814. doi:10.1161/CIRCULATIONAHA.110.940262.

Lin, A., Cavendish, J., Boren, D., Ofstad, T., & Seidensticker, D. (2008). A pilot study: Reports of benefits from a 6-month, multidisciplinary, shared medical appointment approach for heart failure patients. *Military Medicine, 173*(12), 1210-1213. Retrieved from http://militarymedicine.amsus.org/doi/abs/10.7205/MILMED.173.12.1210

Mackert, M., Ball, J., & Lopez, N. (2011). Health literacy awareness training for healthcare workers: Improving knowledge and intentions to use clear communication techniques. *Patient Education and Counseling, 85*(3), e225-e228. doi:10.1016/j.pec.2011.02.022

Mallick, A., Gandhi, P. U., Gaggin, H. K., Ibrahim, N., & Januzzi, J. L. (2016). The importance of worsening heart failure in ambulatory patients. *Journal of American College of Cardiology, 4*(9), 749-755. doi:10.1016/j.jchf.2016.03.012

Manning, S. (2011). Bridging the gap between hospital and home: A new model of care for reducing readmission rates in chronic heart failure. *The Journal of Cardiovascular Nursing, 26*(5), 368-376. doi:10.1097/JCN.0b013e318202b15c

Merrill, J. A., Sheehan, B. M., Carley, K. M., & Stetson, P. D. (2015). Transition networks in a cohort of patients with congestive heart failure: A novel application of informatics methods to inform care coordination. *Applied Clinical Informatics*, *6*(3), 548-564. doi:10.4338/ACI-2015-02-RA-0021

Office of Disease Prevention & Health Promotion. (2017). HealthyPeople.gov: Heart disease & stroke. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/heart-disease-and-stroke

Paul, S. (1997). Advanced practice nursing. Implementing an outpatient congestive heart failure clinic: The nurse practitioner role. *Heart & Lung, 26*(6), 486-491. doi:10.1016/S0147-9563(97)90042-X.

Schell, W. (2014). A review: Discharge navigation and its effects on heart failure readmissions. *Professional Case Management, 19*(5), 224-234. doi:10:1097/NCM.0000000000000000040

Sieck, S. (2012). The economics and reimbursement of congestive heart failure. In *Short Stay Management of Acute Heart Failure* (pp. 9-32). Retrieved from https://pdfs.semanticscholar.org/ada5/d60e64ff17c8080572013ab2ddf45c0a9e4d.pdf

Smith, D. H., Johnson, E. S., Blough, D. K., Thorp, M. L., Yang, X., Petrik, A. F., & Crispell, K. A. (2012). Predicting costs of care in heart failure patients. *BMC Health Services Research, 12,* 434. doi:10.1186/1472-6963-12-434

Stanley, D. (2016). Performance potential. Project management supports the change process. *Nursing Management, 47*(6), 52-55. doi:10.1097/01.NUMA.0000483130.35813.d9

Wallace, E., Salisbury, C., Guthrie, B., Lewis, C., Fahey, T., & Smith, S. M. (2015). Managing patients with multimorbidity in primary care. *BMJ*, *350*(176), 10-1136. Retrieved from https://www.bmj.com/bmj/section-pdf/889538?path=/bmj/350/7992/Clinical_Review.full.pdf

Yancy, C. W., Jessup, M., Bozkurt, B., Butler, J., Casey, D. E., Drazner, M. H.... Johnson, M. R. (2013). 2013 ACCF/AHA guideline for the management of heart failure: Executive summary: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Journal of the American College of Cardiology, 62*(16), 1495-1539. doi:10.1016/j.jacc.2013.05.020