Primary Care Heart Failure Education Program to Improve Quality of Life

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Abstract

Heart failure is a public health concern within today’s healthcare system at both the national and local level. As the prevalence of heart failure continues to rise, interventions on improving patient outcomes, reducing mortality, and decreasing the frequent inpatient visits associated with the condition is a necessity. To improve patient outcomes for the heart failure population, a heart failure education program with three participants was conducted on adult heart failure patients at a primary care clinic. The purpose of this evidence-based quality improvement project was to determine if evidence-based education, motivational interviewing, and telephone follow-up interventions improve symptoms, quality of life, and decrease 30-day hospital readmission rates in adult heart failure patients within a primary care setting. Patient symptoms and quality of life were measured with the Kansas City Cardiomyopathy Questionnaire. The results of the heart failure education program concluded that patient symptoms improved by 1.21% and quality of life improved by 19.31%. Heart failure is a major public health concern that is both burdensome to patients and costly to the healthcare system. The evidence indicates that educational interventions are warranted to help improve outcomes and the quality of life for those suffering from heart failure.

Keywords: heart failure, primary care, education, improve outcomes, quality of life
Primary Care Heart Failure Education Program to Improve Quality of Life

Heart failure is a prevalent public health concern within the United States associated with reduced quality of life, increased mortality, and significant financial expenditures (Gerdes & Lorenz, 2013). Heart failure is a frequently treated condition within the clinical setting and is a disease with one of the highest mortality rates (Ramos, Prata, Goncalves, & Coelho, 2014). Approximately 5.7 million individuals currently residing within the United States suffer from heart failure, and it is estimated that one in nine deaths are a result of the condition (CDC, 2016). It is predicted that 550,000 individuals living within the United States are diagnosed with heart failure each year (McClintock, Mose, & Smith, 2014). Heart failure is associated with an estimated 15 million outpatient office visits each year and by the year 2040, the number of individuals living with heart failure within the United States is expected to double (Case, Haynes, Holaday, & Parker, 2010; Petruccelli, 2007). The major cause of hospital admissions and readmissions within the older adult population is heart failure (Pinkerman et al., 2013). Despite current guidelines and advances within medicine, the prevalence of heart failure continues to rise (Luttik et al., 2014).

Significance with Economic, Policy, and Health System

Heart failure places a significant financial burden on patients, communities, and healthcare organizations (McClintock et al., 2014). Heart failure alone costs the United States healthcare system $30.7 billion annually (CDC, 2016). Individuals with heart failure are classified as one of the most expensive disorder groups within the United States and result in approximately 5 million hospital stays annually with an approximate cost of $8 billion each year (McClintock et al., 2014). A single hospital admission for heart failure costs approximately $23,077 per patient visit (Yancy et al., 2013).
Local Issue

Heart failure is a growing public health concern at both the national and local level. According to the Centers for Medicare and Medicaid Services, it is estimated that 13.1% of Medicare patients living within the state of Kansas currently have heart failure (KHM, 2017). In the state of Kansas from 2012 to 2014, approximately 180.1 per every 100,000 individuals were admitted to the hospital for heart failure (KHM, 2017). The prevalence of heart failure within the state of Kansas is proportionately high and is expected to rise as the population of those 65 years of age and older increases (KHM, 2017). Heart failure is significantly high in those 65 years of age and older and by the year 2050, one in five individuals living in the United States will fall within the 65 years of age and older category (Yancy et al., 2013). The project site, a primary care clinic, currently has 64 patients that suffer from heart failure (personal communication, December 13, 2017).

Diversity Considerations

Self-care behaviors and management are key components when treating patients with heart failure (Davidson et al., 2007). The knowledge, values, and attitudes expressed by patients are impacted by diversity and culture and significantly affect the individuals’ adherence in regards to self-care behaviors (Davidson et al., 2007). The heart failure education program was conducted within a primary care setting that serves a wide array of patients with diverse cultural backgrounds. Heart failure predominantly affects individuals over the age of 65 years (Roger, 2013). The evidence-based practice project regarding heart failure education did not discriminate against the race, religion, or sex of the project participants.
Problem and Purpose

Problem Statement

The prevalence of heart failure continues to increase and interventional measures to help improve outcomes, decrease mortality, and improve quality of life for individuals suffering from this chronic condition is a priority within today’s healthcare system. Heart failure education, telephone follow-up, and motivational interviewing are key interventions to improve patient outcomes, decrease mortality and reduce hospital readmissions (Masterson Creber et al., 2016; Pinkerman et al., 2013). Despite advancements within medicine heart failure prevalence remains high with a continued need for patient education within the primary care setting during office visits (Pinkerman et al., 2013).

Intended Improvement with Purpose

Heart failure is a growing public health concern that is both burdensome to patients and costly to the United States healthcare system. The increase in prevalence and mortality for heart failure shows the need for highly efficient heart failure management (Ramos et al., 2014). The purpose of this doctor of nursing practice (DNP) heart failure project was to determine if evidence-based education, motivational interviewing, and telephone follow-up interventions improved symptoms, quality of life, and decreased 30-day hospital readmission rates in adult heart failure patients within a primary care setting (see Appendix A).

Facilitators and Barriers

Various facilitators and barriers were associated with the implementation and sustainability of the project focused on heart failure education. The facilitators of the education project included high levels of evidence indicating a need for education within a primary care setting and low cost of project implementation. The evidence supports a need for heart failure
education within the clinic setting and concludes that heart failure education and management is substandard within the primary care arena (Luttik et al., 2014). The barriers included a small participant size, lack of heart failure knowledge for primary care providers, poor patient adherence, poor health literacy, and lack of patient motivation. The evidence supports an increased need for heart failure patient education which aided in the sustainability throughout project implementation and following completion of the project.

**Review of Evidence**

**PICOTS**

In congestive heart failure patients, does the utilization of an outpatient education program and telephone follow-up compared to no education program improve patient symptoms, quality of life, and decrease hospital 30-day readmission rates over a 4-month period in a primary care clinic?

**Search Strategies**

The databases that were utilized to gather evidence regarding heart failure education programs included PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, the National Guideline Clearing House, and Cochrane Database of Systematic Review. The literature search began with broad key terms including heart failure, nurse practitioner education, heart failure programs, and heart failure readmissions. The search then became focused and utilized the key search terms of heart failure guidelines, heart failure primary care, heart failure self-care, heart failure telephone follow-up, and motivational interviewing. Inclusion criteria was met if the literature contained the most recent evidence-based guidelines on the treatment of heart failure or focused on outpatient heart failure education, heart failure self-care, follow-up appointments via telephone, and motivational interviewing.
techniques to improve heart failure outcomes. Additional inclusion criteria consisted of adult patients and outpatient care. Exclusion criteria included literature that was dated prior to 2003, articles containing foreign languages, and heart failure care associated with inpatient care.

A multitude of articles and systematic reviews were associated with the inquiry regarding improving outcomes within the heart failure population. A total of 22 out of 87 guidelines and studies were directly associated with the inquiry and provided the strongest evidence regarding a heart failure education program and were included in the synthesis of evidence (see Appendix B). The search for evidence resulted in two evidence-based practice guidelines, three systematic reviews with Level I evidence, three qualitative research studies with Levels V and VI evidence, and eleven quantitative research articles with Levels II, III, IV, and VI evidence (Melnyk & Fineout-Overholt, 2015, adapted). The search also included two mixed methods research studies with Level IV quantitative evidence (Melnyk & Fineout-Overholt, 2015, adapted).

Evidence Synthesis

The literature search resulted in the following synthesis categories associated with the proposed question: (a) clinical practice guidelines, (b) outpatient heart failure education, (c) heart failure self-care, (d) telephone follow-up, and (e) motivational interviewing.

Heart Failure Guidelines

Two evidence-based practice guidelines provided guidance on the importance of heart failure education, self-care management, and telephone follow-up to improve outcomes and decrease mortality within the heart failure population (Pinkerman et al., 2013; Yancy et al., 2013). A key component of improving outcomes within the heart failure population is non-pharmacological management through patient education (Pinkerman et al., 2013; Yancy et al., 2013). The guidelines indicate that heart failure patients should receive education on dietary
management, fluid restrictions, daily weight monitoring, and provider notification of symptoms (Pinkerman et al., 2013; Yancy et al., 2013).

Additional components that are key to heart failure education according to the guidelines include medication management, routine participation in an exercise program, and smoking cessation (Pinkerman et al., 2013; Yancy et al., 2013). Heart failure self-care and adherence to the prescribed and desired treatment plan is imperative for improving outcomes within the heart failure population (Pinkerman et al., 2013; Yancy et al., 2013). The guidelines indicate that outpatient heart failure education has been shown to decrease costly heart failure hospital admissions and readmissions, as well as emergency department visits (Yancy et al., 2013).

**Outpatient Heart Failure Education**

The literature indicates that heart failure education programs are imperative for improving patient outcomes and reducing the morbidity and mortality associated with heart failure (Gerdes & Lorenz, 2013; Lowery et al., 2012; Ryan, Kang, Dolacky, Ingrassia, & Ganeshan, 2013). Outpatient heart failure education programs are considered a gold standard of care for heart failure patients according to the most recent guidelines (Boyde & Peters, 2014). Inadequate outpatient education leads to poor performance of self-care measures and non-compliance to the prescribed treatment regimen (Boyde & Peters, 2014). Poor self-care management and non-compliance to prescribed treatment regimens often leads to frequent and costly hospital admissions and readmissions for individuals with heart failure (Boyde & Peters, 2014). The literature search resulted in one systematic review, two randomized control trials, one quasi-experimental study, one retrospective study, and four qualitative research studies that were directly correlated with heart failure education and education programs.
Chronic illness management including that of heart failure directly impacts an individual’s daily lifestyle, and it is essential for individuals to have the knowledge and tools to effectively manage chronic conditions (Otsu & Moriyama, 2011). Heart failure education is a management measure that is directly correlated with decreased mortality rates within the heart failure population (Fonarow et al., 2011; Luttik et al., 2014). Despite current guidelines and proposed management plans, heart failure care within the primary care setting is substandard (Smeets, Van Roy, Aertgeerts, Vermandere, & Vaes, 2016). The substandard care within the primary care setting can be attributed to the lack of expertise within the field of heart failure for primary care providers (Faut, Hungin, & Murphy, 2003; Smeets et al., 2016). A primary care setting is an optimal arena for improving outcomes through education for the heart failure population (Case et al., 2010; Sarkar et al., 2011; Smeets et al., 2016).

**Heart Failure Self-Care**

The evidence-based guidelines indicate that heart failure self-care and adherence to the recommended treatment regimen is imperative for improving outcomes within the heart failure population (Pinkerman et al., 2013). Promoting heart failure self-care is vital for improving patient outcomes, although it is a difficult task for providers (Moser et al., 2012). The two most common self-care measures that result in increased hospital admissions include diet and medication non-adherence (Moser et al., 2012). The literature indicates that effective self-care measures decrease the mortality rate and hospital readmissions associated with heart failure (Moser et al., 2012). Three quantitative research studies, one qualitative systematic review, and one mixed methods study were closely related to self-care behaviors and the effects of heart failure self-care on improving patient outcomes (Martensson, Stromberg, Dahlstrom, Karlsson,
& Fridlund, 2005; Peters-Klimm et al., 2012; Riegel, Vaughan Dickson, Kuhn, Page, & Worrall-Carter, 2010; Strachan, Currie, Harkness, Spaling, & Clark, 2014).

A significant non-pharmacological treatment of heart failure is patient self-care (Martensson et al., 2005; Peters-Klimm et al., 2012; Pinkerman et al., 2013; Riegel et al., 2010; Strachan et al., 2014). Heart failure self-care is focused on adherence to a prescribed treatment regimen, the ability to recognize symptoms associated with clinical decline, management of fluid and sodium intake, a healthy diet regimen, smoking cessation, and physical activity programs (Martensson et al., 2005; Peters-Klimm et al., 2012).

Heart failure education programs that focus on self-care and include telephone follow-up are linked to improved patient outcomes and quality of life (Martensson et al., 2005). Education provided by healthcare providers has been directly linked to an increase in self-care behaviors (Martensson et al., 2005; Riegel et al., 2010; Strachan et al., 2014). Approximately 50% of heart failure hospital admissions could be prevented if patients performed adequate self-care behaviors including diet and medication management, symptom recognition, and exercise programs (Holst, Willenheimer, Martensson, Lindholm, & Stromberg, 2007).

**Telephone Follow-Up**

The evidence-based guidelines indicate that telephone follow-up management programs that include education on diet, medication compliance, and monitoring of signs and symptoms have been directly linked to a reduction in heart failure readmissions (Ferrante et al., 2010; Pinkerman et al., 2013). Patients with heart failure often have a poor quality of life due to the increase in hospital stays (Ferrante et al., 2010). Improving the quality of life for heart failure patients is directly linked to the inquiry associated with heart failure education. One systematic review and two randomized control trials provided the highest level of evidence for improving
quality of life and decreasing the frequent hospital admissions related to heart failure through the use of a telephone follow-up intervention (Clark, Inglis, McAlister, Cleland, & Stewart, 2007; Ferrante et al., 2010).

The frequent hospital admissions and readmissions associated with heart failure can be decreased with improved compliance in diet and medication use and reporting of the progression of heart failure symptoms (Ferrante et al., 2010). Ferrante et al. (2010) concluded that out of 1,518 heart failure patients, those that received telephone follow-up focused on education and a self-behavior assessment had a decline in mortality rates and hospital readmission rates.

There are several barriers to participation within heart failure programs including patient location and funding (Clark et al., 2007). Clark et al. (2007) concluded that a telephone follow-up program for chronic heart failure patients decreased mortality and hospital readmissions by approximately one fifth (Clark et al., 2007). Holst et al. (2007) concluded that heart failure education programs conducted in a clinic with telephone follow-up resulted in improved self-care behaviors, decreased mortality, and less frequent hospital admissions.

**Motivational Interviewing**

Motivational interviewing is a technique associated with an increased performance in heart failure self-care behaviors (Riegel et al., 2017). A multitude of research studies have evaluated the effects of motivational interviewing and outcomes associated with exercise regimens, self-care behaviors, quality of life, and hospital readmissions (Riegel et al., 2017). One mixed methods study and one randomized control trial focused on motivational interviewing and heart failure outcomes and provided the highest level of evidence regarding the inquiry (Masterson Creber et al., 2016; Riegel et al., 2017). Riegel et al. (2017) concluded that
motivational interviewing is a highly effective technique for creating a change in self-care behaviors within the heart failure population.

Poor self-care adherence results from a multitude of causes and motivational interviewing is an effective technique to improve poor self-care behaviors associated with intentional factors (Riegel et al., 2017). Motivational interviewing is directly correlated to improving self-care behaviors within the heart failure population (Masterson Creber et al., 2016; Riegel et al., 2017). Patient confidence is a key factor that allows patients to engage in efficient self-care behaviors, and effective self-care behavior measures ultimately improve outcomes within the heart failure population (Masterson Creber et al., 2016). Masterson Creber et al. (2016) conducted a randomized control trial with 67 patients utilizing motivational interviewing techniques through a telephone-based program over a 90-day period. The results of the study concluded that motivational interviewing is highly effective for increasing self-care behaviors and ultimately improving patient outcomes, quality of life, and decreasing hospital readmissions (Masterson Creber et al., 2016).

**Project Theory**

The project theory utilized for the heart failure education program was The Theory of Planned Behavior (TPB) developed by Icek Ajzen. The TPB was designed to envision and discuss human behavior in various situations (Ajzen, 1991). The theory includes the three concepts of subjective norm, attitude toward behavior, and perceived behavioral control that are linked with behavior intentions (Ajzen, 1991). The subject norm concept is associated with societal influence on participating or not participating with certain behaviors, the attitude toward the behavior focuses on the individuals perceived idea of a certain behavior, and perceived behavioral control evaluates the perceived ease or obstacles associated with performing a
particular behavior (Ajzen, 1991). The three concepts associated with the TPB frame an individuals’ intentions and projected behavioral outcomes (Ajzen, 1991). The TPB closely aligns with the heart failure education program and provides a foundation for discussing self-care behaviors within the heart failure population (see Appendix C). A multitude of studies have utilized the TPB to evaluate a wide array of variables and patient behaviors. A research study conducted by Wu, Lennie, Dunbar, Pressler, and Moser (2009) evaluated low sodium diet adherence through the use of the TPB in heart failure patients and concluded that a patients’ support and subjective norm from family members increased adherence to the recommended diet regimen.

Methods

IRB and Site Approval

The heart failure education program was conducted at a primary care clinic located in a metropolitan area. The project facilitator was an adult nurse practitioner at the primary care clinic. The primary Institutional Review Board (IRB) for the heart failure education program was the University of Missouri-Kansas City. The heart failure education project was categorized as not Human Subjects Research and was conducted as an evidence-based quality improvement project. The University of Missouri-Kansas City IRB granted approval of the heart failure education program on November 28, 2017 and project implementation was initiated on December 14, 2017 (see Appendix D).

Ethical Issues

The major research ethics that were maintained throughout the heart failure education project included autonomy, beneficence, and patient confidentiality. Autonomy is directly linked with informed consent (Terry, 2015). All heart failure patients who met the inclusion criteria of
the proposed project were allowed to make an autonomous decision regarding participation in the project. The project participants were protected from harm throughout the duration of the project with the intent to improve outcomes through increased heart failure education and self-care management. Patient confidentiality was respected in accordance with the Health Information Portability and Accountability Act (HIPAA). The project focused on providing group education sessions utilizing motivational interviewing and telephone follow-up to enhance self-care behaviors and patient quality of life, which provided low risk of harm to the participants. Student investigator (SI) research conflicts regarding implementation of the heart failure education project were not present throughout the implementation of the program.

Project Funding

Project funding for the heart failure education program was received through the University of Missouri-Kansas City Women’s Council Graduate Assistance Fund. The Graduate Assistance Fund provides monetary awards for educational avenues aside from regular course work (UMKC, 2016). An application for the Graduate Assistance Fund was submitted during the Fall 2017 semester, and grant funding was awarded for the project in the amount of $665.00. The total cost of project implementation and materials was approximately $474.31 (see Appendix E).

Settings & Participants

The project site for the evidence-based project regarding a heart failure education program was a primary care clinic. The primary care clinic is located in a metropolitan area and is an independent family medicine practice that provides care to a wide array of patient populations. Approximately 64 individuals that receive primary care services at the primary care clinic had a diagnosis of heart failure. No heart failure education materials or sessions were
previously utilized at the primary care clinic, which increased the need for the DNP project within that location.

The participants for the heart failure education program included adult patients within a primary care setting. Participants were selected for the heart failure education project based on certain inclusion and exclusion criteria. Inclusion criteria consisted of male and female patients over the age of 18 with new onset or a history of heart failure and an operable telephone for follow-up teaching. Exclusion criteria included individuals under the age of 18 and hospitalized patients. Participants were selected based on the inclusion and exclusion criteria using convenience sampling. The goal was to obtain data from at least 30 participants using convenience sampling, although due to a low participation rate only three participants were included in the project.

**EBP Intervention**

The evidence-based interventions to improve quality of life and decrease hospital readmissions for patients with heart failure included a group educational program utilizing motivational interviewing with telephone follow-up within a primary care setting. The project implementation took place from December 2017 to April 2018 (see Appendix F). Recruitment began in December 2017 using a database to screen for individuals with heart failure that received primary care services at the clinic, and the clinic staff provided the SI with the names and addresses of the patients with a heart failure diagnosis. Following identification of heart failure patients via the patient database recruitment letters and recruitment flyers were distributed to gain participation for the project (see Appendix G). A total of 77 recruitment letters were mailed by the SI to potential heart failure participants and 12 recruitment flyers were hung in the clinic rooms by the nursing staff. The SI also completed telephone calls to recruit individuals for
the heart failure education program, and approximately 60 telephone calls were made in attempt to recruit participants for the project. Informed consent was not obtained from the participants because the IRB categorized the heart failure education program as an evidence-based quality improvement project. The participants were asked to notify the SI prior to attending a scheduled group education session. Five group education sessions were offered at the clinic from December 2017-February 2018.

Pre-data was obtained prior to the educational intervention by chart reviews and the Kansas City Cardiomyopathy Questionnaire (KCCQ). Chart reviews were utilized to obtain demographic data and readmission data on the participants. The KCCQ was distributed to participants by the SI upon arrival to the first education session, and participants completed the questionnaire and returned to the SI prior to the start of the session. Patients with a new diagnosis or history of heart failure received a 30-minute group education session provided by the SI during one of the offered education sessions. The educational intervention utilized motivational interviewing and focused on diet, medication management, exercise adherence, daily weight monitoring, and symptom monitoring. Heart failure informational handouts provided by the American Heart Association and daily weight monitoring logs created by the SI were provided to participants during the educational session (see Appendix H). Participants were advised to monitor daily weights each morning, record the daily weight in the provided weight monitoring log, and report daily weight changes as needed as well as during telephone follow-up visits. Patients were provided with a digital weight scale to monitor daily weights at home.

A 10-minute telephone follow-up was scheduled monthly in February and March following the educational teaching session to conclude the interventional period and focused on the reinforcement of the education provided in the clinic (see Appendix I). In March 2018, chart
reviews were conducted to evaluate 30-day heart failure readmission rates of the participants, and the KCCQ was mailed to the three participants to collect the post-data of patient symptoms and quality of life. Participants were asked to complete the KCCQ and return the questionnaire in the stamped envelope to the SI.

**Change Process and EBP Model**

Kotter and Cohen’s Model of Change was chosen as the change process model for the DNP project focused on improving the quality of life for heart failure patients. The model focuses on eight components to allow change within an organization (Appelbaum, Habashy, Malo, & Shafiq, 2012). The model guides behavior changes by using visualization and communication (Appelbaum et al., 2012). Kotter and Cohen’s Model of Change was chosen for the student project focused on heart failure education to provide guidance on changing self-care behaviors within the heart failure population.

The Model for Evidence-Based Practice Change was the evidence-based practice model utilized for the DNP project. The Model for Evidence-Based Practice Change includes six stages to integrate and implement a change of practice within the clinical setting (Larrabee, 2004). The chosen practice model provides an avenue for nurse practitioners to make a change within practice to improve patient outcomes (Larrabee, 2004). The model provided exceptional guidance utilizing the six proposed stages to implement and sustain a project to improve health outcomes within the heart failure population (Larrabee, 2004).

The evidence supports a need for heart failure education within the clinic setting and concludes that heart failure education and management is substandard within the primary care arena. Providing heart failure management and education in primary care clinics along with the care already provided in heart failure specialty clinics can ultimately improve patient outcomes.
and decrease mortality rates. The sustainability of the education program at the primary care clinic is low due to decreased interest expressed by potential participants, although the need of the heart failure project is high due to the increased need for heart failure educational interventions within primary care as indicated in the literature. The ease and low cost of implementation for the heart failure education program has the potential to increase the project sustainability.

**Study Design**

The project regarding a heart failure education program was Not Human Subjects and was conducted as an evidence-based quality improvement project to evaluate patient behavior and outcomes. The project included one group of adult heart failure patients and was to use a paired t-test to analyze data on patient symptoms and quality of life, although due to a low participation rate descriptive statistics were utilized to discuss the project data.

**Validity**

All participants were provided with the same educational sessions and handouts to ensure that the data was not altered. The KCCQ was administered twice during the project to prevent testing which would threaten the internal validity of a project. Attrition did occur during the project as two of the participants did not answer and respond to the telephone follow-up intervention. One measurement tool was used to prevent attrition and to avoid overwhelming participants (Melnyk & Fineout-Overholt, 2015).

External validity was considered throughout the implementation and completion of the project. Due to the increasing prevalence of heart failure, the results of the project are applicable to the general heart failure population. The findings are generalizable to a multitude of metropolitan and rural populations including vulnerable populations. The project included a
vulnerable population of elderly individuals over the age of 65. The simplicity of the project and intervention as well as the low cost of implementation also makes this intervention transferable to the heart failure population.

**Measured Outcomes**

The measured outcomes of the heart failure education project included patient symptoms, quality of life, and 30-day hospital readmission rates. The evidence supports the need for outpatient heart failure education programs and the goal of the heart failure education project was to improve patient symptoms, quality of life, and decrease 30-day hospital readmission rates (Barnason, Zimmerman, & Young, 2011; Clark et al., 2007; Ferrante et al., 2010; Otsu & Moriyama, 2011).

**Measurement Instruments**

The project outcomes were evaluated through chart reviews and the KCCQ. Chart reviews assisted the SI to evaluate patient demographic data including age, gender, heart failure class, ejection fraction, and length of heart failure diagnosis. Chart reviews were also utilized to obtain 30-day readmission rates on the participants following the heart failure educational intervention (see Appendix J). Patient symptoms and quality of life were measured with the Kansas City Cardiomyopathy Questionnaire (see Appendix K). The Kansas City Cardiomyopathy Questionnaire is a 23-item questionnaire that measures quantitative data including patient symptoms, physical and social function, quality of life, and self-efficacy (CVO, 2017). The reliability of the KCCQ is reported by a Cronbach’s alpha of 0.88 (CVO, 2017). Permission and licensure was required to utilize the tool and was completed through Cardiovascular Outcomes Inc. A license was purchased to administer the KCCQ to participants
throughout the heart failure education project (see Appendix L). Participants completed the KCCQ prior to the group educational session and following implementation of the project.

**Quality of Data**

A power analysis was conducted to determine the number of project participants needed for the heart failure education program. The results of the power analysis concluded that a minimum of 31 participants would be needed for a power of .8, medium effect, and alpha .05. According to published studies the Kansas City Cardiomyopathy Questionnaire is a highly valid and reliable measurement tool with a Cronbach’s alpha of 0.72 for the quality of life domain and a 0.80 or higher for all remaining domains including patient symptoms and self-efficacy (Arnold et al., 2013).

The results of the proposed heart failure education project were compared to the data reported in similar studies. Holst et al. (2007) conducted research that most closely aligned with the DNP project. The study indicated insignificant findings in regards to heart failure self-care behaviors and quality of life following a primary care heart failure education program with telephone follow-up (Holst et al., 2007). The insignificant results of the research findings warrant a stronger benchmark for future comparison through additional research in the area of heart failure education within a primary care setting.

**Statistical Analysis**

Descriptive statistics were utilized to discuss patient demographic data and 30-day readmission rates. The pre-and post-test data gathered from the Kansas City Cardiomyopathy Questionnaire was initially planned to be analyzed through the use of a paired t-test, but due to a small sample size descriptive statistics were utilized to analyze the data. The percent change in patient symptoms and quality of life pre and post-intervention was analyzed through descriptive
statistics. The level of statistical significance for the project was set at .05 but no statistical analysis was performed due to small sample size.

**Results**

**Setting and Participants**

The project setting was a primary care clinic in a metropolitan area. A patient database was utilized to determine the patients with a diagnosis of heart failure at the clinic. A low representative population of heart failure patients was available at the clinic for participation in the project as the total number of current heart failure patients that receive primary care services at the clinic was 64 (personal communication, December 14, 2017). Of the 64 heart failure patients invited to attend the heart failure education program, three elected to attend the group heart failure education sessions and one participated with the telephone follow-up intervention over a four-month period.

**Intervention Course**

The evidence-based practice project began in June 2017 with CITI training, faculty approval, completion of the IRB application, and IRB approval which was obtained through the University of Missouri-Kansas City (see Appendix M). Two previous project sites were explored prior to the implementation of the project at a primary care clinic which delayed the start of the recruitment and implementation stages of the project. The SI conducted a meeting with the office manager at the project site on November 13\(^{th}\), 2017 to discuss the project intervention and schedule the education session dates. The heart failure education program began in December 2017. On December 14\(^{th}\), 2017 a heart failure patient list was developed through a database at the clinic and 47 recruitment letters were mailed to potential participants. In addition to the recruitment letters, 12 recruitment flyers were distributed in the patient rooms at the clinic.
Initially, three educational sessions were scheduled throughout December 2017 and January 2018. Only one participant attended the last education session at the end of January 2018. Due to low interest of participation expressed by the heart failure patients, the SI notified potential participants via telephone of the heart failure education program in an attempt to recruit additional participants for the project in mid-January 2018. Two additional patients expressed interest in the program and agreed to attend the heart failure session at the end of January 2018, unfortunately only one participant attended that education session. Due to low participation rates, the SI received a more updated list of potential heart failure participants in January 2018 and sent out thirty additional recruitment letters to heart failure patients at the clinic. Two additional education sessions were scheduled in February 2018, although only two heart failure patients elected to attend the first February session.

The heart failure educational sessions were conducted by the SI and included evidence-based heart failure education materials created by the SI and gathered from the American Heart Association (AHA). Permission was obtained by the American Heart Association to distribute heart failure education materials available through the AHA to the participants of the education program (AHA, 2018). Each of the educational sessions included an interactive PowerPoint presented by the SI and provided information including a heart failure overview, daily weights, sodium-restricted diets, medication management, physical activity, symptom monitoring, provider notification, and tobacco cessation. The SI included individual motivational interviewing techniques to determine each participants’ barriers to completing the self-care behaviors that are essential for managing heart failure. The one-month telephone follow-up calls took place in March and April 2018, and only one of the three patients participated in the telephone follow-up calls which allowed the SI to reinforce the education provided in the
educational sessions and answer any questions. The post-survey KCCQ was mailed to the three participants at the end of March 2018 to assess post-intervention symptoms and quality of life, and all three post-surveys were returned to the SI.

**Outcome Data by Sub-Topic**

The primary outcomes of the heart failure education program were patient symptoms, quality of life, and 30-day hospital readmission rates. Patient symptoms and quality of life data were obtained through the use of the KCCQ, which was administered to the patients during the pre and post-interventional time period (see Appendix N). Due to a low sample size descriptive statistics was utilized to analyze patient symptoms and quality of life. The KCCQ evaluated patient symptoms including shortness of breath, fatigue, and ankle swelling over a two-week period (CVO, 2017). Out of the three participants there was a total percent change of 1.26% as one participant had no change between the pre and post-intervention patient symptom score. The quality of life domain on the KCCQ evaluated enjoyment of life with a heart failure diagnosis, feelings on current diagnosis of heart failure, and discouragement with the heart failure diagnosis (CVO, 2017). Out of the three heart failure participants there was a total percent change of 19.31% within the quality of life domain, and one participant had no change in quality of life regarding heart failure prior to and following implementation of the intervention.

Pre-intervention 30-day hospital readmission rates were not available in the patients chart and were unable to be reported. A comparison of the pre and post-intervention 30-day hospital readmission rates were excluded from the final data analysis because the pre-intervention hospital admission data was unavailable. The most recent clinic note was provided to the SI by the clinic staff and none of the three participants were admitted to the hospital throughout the implementation of the heart failure education project. The pre and post-intervention scores and
percent change for the patient symptoms and quality of life outcomes were recorded (see Appendix O).

Missing data included heart failure classification, payer source, telephone follow-up of two participants, and 30-day hospital readmission rates pre-intervention for all three of the project participants.

Discussion

Successes of Project

The evidence-based project regarding heart failure education accrued a variety of successes to improve outcomes for the heart failure patients at the primary care clinic. The biggest success of the project was an improvement in quality of life as indicated by a 19.31 percent change following the education program. Another large success of the heart failure education program was the ability to purchase and provide digital weight scales through the use of grant funding provided by the University of Missouri-Kansas City Graduate Assistance Fund. All three of the participants were appreciative and thankful for the education, weight scales, and resources provided through the heart failure education program, and they reported increased knowledge obtained from the group education sessions. Unfortunately, only one patient participated in the monthly telephone follow-up calls but he expressed his gratitude for the telephone follow-up calls and reported that he had been monitoring his daily weights and sodium intake within his diet.

Study Strengths

Study strengths include the need for heart failure education programs by healthcare providers within the primary care setting and the interest expressed by the physicians and nurse practitioners for the heart failure education program at the primary care clinic. The clinic
currently does not provide heart failure education materials or educational sessions for the 64 heart failure patients at the clinic. The lack of current heart failure education at the primary care clinic increased the need for the heart failure education program to improve patient symptoms, quality of life, and decrease 30-day readmission rates. The office manager and nurses at the clinic were instrumental in providing dates for the heart failure education sessions, distributing the recruitment flyers within the patient clinic rooms, and for providing the SI with the demographic data of the three participants including heart failure clinic notes, ejection fraction, and length of heart failure diagnosis.

The interventional components of the project including group heart failure education sessions, educational handouts, telephone follow-up, and motivational interviewing were all implemented with great success and are an added strength of the project. The process of the educational and follow-up interventions provided by the SI was highly efficacious for meeting the needs of the heart failure participants through the extensive preparation process and organization of the intervention.

**Results Compared to Evidence in the Literature**

The research associated with heart failure education programs within the primary care setting is limited and further research is warranted regarding this aspect of heart failure care. The literature indicates a high need for heart failure education programs within the primary care arena (Luttik et al., 2014). Although there is limited research in regards to heart failure education programs within the primary care setting, the results of the heart failure education project correlated with the evidence which indicates that outpatient heart failure education programs are associated with reduced patient symptoms, improved quality of life, and reduced 30-day hospital readmission rates. Holst et al. (2007) conducted research which most closely aligned with the
heart failure education program. The randomized control trial evaluated the quality of life and self-care behaviors of 60 heart failure patients that received heart failure education in a primary care setting followed by monthly telephone follow-up calls over a 12-month period (Holst et al., 2007). The results of the study indicated no significant correlations between the quality of life and self-care behaviors pre and post-implementation of the heart failure education session and telephone follow-up (Holst et al., 2007). Research associated with heart failure education within the primary care setting is limited and further research is warranted to evaluate patient symptoms and quality of life for these individuals.

The results of the heart failure education project are comparable to the research conducted by Holst et al. (2007). The heart failure education program included a comparable concept of heart failure education sessions within the primary care setting followed by monthly telephone follow-up calls. The heart failure education program was implemented over a shorter time period than the compared study, but the project results concluded insignificant correlations between patient symptoms and quality of life following the heart failure education program due to a small sample size.

**Limitations**

**Internal Validity Effects**

The largest internal validity effect that correlated with the outcomes of the heart failure education program was a small sample size. The initial projected number of participants needed for a high power study of .8, medium effect, and alpha 0.5 was 30, although after an extensive recruitment period only three participants volunteered to participate in the project. Convenience sampling was utilized to recruit adult heart failure patients for the project which resulted in a bias selection of participants, threatening the internal validity of the project. An additional
confounding variable which affected the internal validity of the project included participants receiving heart failure education at a heart failure specialty clinic. According to the participants and per documentation all three of the project participants received heart failure care and education at a heart failure specialty clinic, which affected the internal validity of the project. Attrition also occurred throughout implementation of the heart failure education program due to two of the participants not answering or responding to the telephone follow-up intervention.

**External Validity Effects**

Factors effecting the external validity and generalizability of the project include participants within the same age group and heart failure class, similar diagnosis length, and a small sample size. The three project participants were 75-79 years of age, were classified as having stage I and II heart failure in accordance with the New York Heart Association classification scale and based on symptoms, and were all diagnosed with heart failure for greater than 10 years. The similarities in age, heart failure class, and length of heart failure diagnosis limit the generalizability of the heart failure project to the general heart failure population within a primary care setting. The small sample size of three participants also inhibits the generalizability of the heart failure education program to a variety of metropolitan and rural settings. The simplicity of the project makes this heart failure education intervention transferable to a variety of heart failure patients and primary care settings, although the generalizability can not be determined based off this project due to limited intervention at one primary care clinic in a metropolitan area.

**Sustainability of Effects and Plans to Maintain**

The evidence-based practice guidelines emphasize the importance of heart failure education and telephone follow-up to improve patient outcomes and decrease mortality rates
HEART FAILURE EDUCATION PROGRAM

(Pinkerman et al., 2013; Yancy et al., 2013). The sustainability of heart failure education at the primary care clinic is crucial to improve outcomes for the heart failure patients within this setting. While the sustainability of the group education sessions is limited, continued heart failure education regarding daily weights, sodium-restricted diets, medication management, exercise, and symptom monitoring during clinic appointments is essential for improving outcomes for the heart failure population. No previous heart failure education materials were offered at the primary care clinic, and the plans to maintain effects through the distribution of the daily weight logs and heart failure education handouts would be beneficial for both patients and providers.

**Efforts to Minimize Study Limitations**

Efforts were taken to minimize the limitations of the project. All 64 heart failure patients at the primary care clinic were invited to participate in the project. Extensive recruitment and additional education sessions were offered in attempts to increase the sample size of the project. The small sample size interfered with the interpretation and application of the project findings. An increased sample size with variable patient characteristics would strengthen the results of the project and allow the project findings to be more generalizable to the general heart failure population. The limited number of project participants posed difficulties on determining the true effects of the heart failure education program.

**Interpretation**

**Expected and Actual Outcomes**

The expected outcomes of the heart failure education program include decreased patient symptoms, improved quality of life, and decreased 30-day hospital readmission rates (see Appendix P). The overall average patient symptom score concluded an increased percent change
of 1.26 and the quality of life symptom score resulted in an increased percent change of 19.31. The data analysis indicates improved patient symptom and quality of life scores, but due to a small sample size this data could be skewed. Unexpected results include the unknown correlation between patient symptoms and quality of life pre and post-intervention due to the inability to perform a statistical analysis secondary to a small sample size. Additional unexpected results include the inability to obtain the pre-intervention 30-day hospital readmission rates. The clinic staff was unable to provide the SI with the pre-intervention 30-day hospital readmission rates so that data analysis was deferred from the final results.

The most evident reason for the differences between the observed and expected outcomes was the small sample size for the heart failure education program. Despite extensive recruitment there was decreased interest expressed in regards to the heart failure project from several patients at the primary care clinic. Another factor was the timing of the intervention which evolved over the winter and holiday season and could have had a significant impact on the ability to recruit participants for the project. A larger sample size would have allowed the SI to conduct a statistical analysis of the data to determine if the heart failure education program had a significant impact on the expected outcomes.

**Intervention Effectiveness**

Inferences consistent with the strength of the study include the educational information and handouts provided by the SI and the high need for heart failure education at the primary care clinic. The educational information and handouts were developed and obtained from reliable sources including the most recent evidence-based practice guidelines and from the American Heart Association. The evidence-based educational materials and the increased need of heart failure education materials at the project site assisted with the intervention’s effectiveness.
The settings in which the heart failure education program is most likely to be effective includes primary care clinics that have the time and resources to provide evidence-based education to heart failure patients. It was difficult to obtain participants for the heart failure group education sessions, so an ideal environment should include the time and availability of individualized education sessions during clinic appointments.

**Intervention Revision**

Intervention modifications that might improve attainment of the project outcomes include conducting individualized education sessions in place of the group sessions. The group education sessions required patients to schedule an extra trip to the clinic. Another modification if group education sessions continued to be utilized would be to avoid scheduling the education sessions during the winter months and holiday season. Scheduling the education sessions outside of the winter and holiday season could potentially improve the attainment of the project outcomes.

**Expected and Actual Impact to Health System, Costs, and Policy**

The heart failure education program is vital for improving the health system, policy, and healthcare costs within the United States. Heart failure is a growing public health concern and interventions, specifically focused on outpatient education are essential for improving outcomes for patients and the healthcare system (Pinkerman et al., 2013; Yancy et al., 2013). The expected impact for the heart failure education intervention is to control patient symptoms and keep heart failure patients out of the hospital, thus improving the quality of life for these individuals. The costs associated with a heart failure admission within today’s healthcare system are substantial, and a single hospital admission for heart failure costs approximately $23,077 per patient visit (Yancy et al., 2013).
The costs associated with heart failure within the United States are substantially higher than the implementation of the heart failure education intervention. The initial estimated costs of project implementation and materials was proposed at $875.00, although the final cost of project implementation was $474.31. The economic sustainability of the heart failure education program is low especially as the project costs exclude the time of a primary care provider to conduct the intervention. The project facilitator discussed adding a billable code to the heart failure education sessions in order to reimburse providers for their time associated with the intervention, which could improve the sustainability.

The heart failure education program was graciously funded by the University of Missouri-Kansas City Women’s Council Graduate Assistance Fund in the amount of $665.00. The project funding covered the costs of digital weight scales, printing of education materials, and dissemination of the project proposal.

Conclusions

Heart failure education, patient self-care, telephone follow-up and motivational interviewing are vital components for improving outcomes within the heart failure population and outpatient heart failure care that is focused on education is recommended throughout the guidelines and literature (Bowers, 2013; Pinkerman et al., 2013; Riegel et al., 2017). As the prevalence of heart failure continues to increase interventional measures including heart failure education programs to improve outcomes and quality of life for individuals suffering from this chronic condition is a priority.

Practical Usefulness/Further Study of Intervention

The evidence-based practice intervention of heart failure education provides practical usefulness within a multitude of primary care settings. As the literature indicates, educational
programs for heart failure patients are essential for improving patient outcomes and decreasing the financial burden of the condition (Holst et al., 2007). The ease of transferability to various clinical sites and high need for improved outcomes within the heart failure population increases the practical usefulness of the heart failure education program. Further research is warranted to determine the effectiveness of a heart failure education program within the primary care setting.

**Dissemination**

Dissemination of the heart failure education program occurred in October 2017 via a podium presentation at the Kansas State Nurses Association Membership Assembly in Wichita, Kansas. Additional dissemination plans include a manuscript publication of the Synthesis of Evidence during the Summer of 2018, and a poster presentation of project results at the UMKC Research Summit in Spring 2018. Heart failure is a significant public health concern, and the increasing prevalence of the condition warrants interventions such as heart failure education programs within the primary care setting to improve the quality of life and decrease 30-day readmission rates for individuals living with this chronic condition.
References


Appendix A

Definition of Key Terms

Heart Failure: a clinical syndrome associated with reduced ejection of blood or ventricular filling of the heart (Yancy et al., 2013).

Adult: for the proposed project, adult is defined as any individual 18 years of age or older.

Motivational Interviewing: a counseling approach to evaluate and encourage a patient’s ability for behavioral change (Masterson Creber et al., 2016).

Self-Care: a measure sustaining health through various health behaviors and practices to manage disease and illness (Moser et al., 2012).
## Appendix B

### Evidence Table

<table>
<thead>
<tr>
<th>First Author, Year, Title, Journal</th>
<th>Research Design &amp; Evidence Level</th>
<th>Sample &amp; Sampling</th>
<th>Measures &amp; Reliability (if reported)</th>
<th>Results &amp; Analysis Used</th>
<th>Limitations</th>
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</thead>
<tbody>
<tr>
<td><strong>Heart Failure Guidelines (2)</strong></td>
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<tr>
<td>Yancy, C.W., Jessup, M., Bozkurt, B., Butler, J., Casey, D.E., Drazner M.H., . . . Wilkoff, B.L. (2013). 2013 ACCF/AHA guidelines for the management of heart failure. <em>Circulation</em>.</td>
<td>Evidence-Based Guidelines from the American College of Cardiology and American Heart Association</td>
<td>A review of literature that includes a multitude of research studies, reviews, and evidence-based articles were reviewed to develop guidelines for the treatment of heart failure.</td>
<td>Measures and reliability not reported.</td>
<td>The guidelines include the management and treatment of adult patients with heart failure. The guidelines include both medication adherence and lifestyle modifications as effective management for heart failure.</td>
<td>None present.</td>
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<tr>
<td><strong>Outpatient Heart Failure Education (10)</strong></td>
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<tr>
<td>Smeets, M., Roy, S.V., Aertgeerts, B., Vermandere, M., &amp; Vaes, B. (2016). Improving care for heart failure patients in primary care, GPs’ perceptions: A qualitative evidence synthesis. <em>BMJ</em></td>
<td>Qualitative Evidence Synthesis Level 5</td>
<td>18 qualitative studies were evaluated in the evidence synthesis. A multitude of qualitative studies were reviewed that included various sampling methods.</td>
<td>The Critical Appraisal Skills Programme checklist was utilized to ensure the quality of the research studies. Only moderate and high quality research was included. Three reviewers evaluated studies for inclusion criteria for the evidence synthesis.</td>
<td>The included research resulted in various themes including “uncertainty about clinical practice” “interdisciplinary collaboration” and “ideas for improvement.” The evidence synthesis concluded that general practitioners had reservations when treating heart failure patients in primary care, due to a lack of education. Thematic analysis was utilized.</td>
<td>The search strategy did not utilize methodological filters which created challenges. The results of the evidence synthesis were taken from research conducted in the United Kingdom and Canada affecting the transferability of the results.</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Population</td>
<td>Intervention/Control</td>
<td>Outcomes</td>
<td>Statistical Analysis</td>
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<tr>
<td>Luttik, M.L.A., Jaarsma, T., van Giel, P.P., Brons, M., Hillege, H.L., Hoes, A.W., . . . van Veldhuisen, D.J. (2014). Long-term follow-up in optimally treated and stable heart failure patients: Primary care vs. heart failure clinic. Results of the COACH-2 study. <em>European Journal of Heart Failure.</em></td>
<td>Quantitative Randomized Control Trial Level 2</td>
<td>The sample included 189 heart failure patients either within a primary care clinic or heart failure clinic in the Netherlands. Random Sampling</td>
<td>Heart failure patients were given optimal heart failure medications for 4 weeks then patients were assigned to follow-up with a primary care provider which was the experimental group, or a heart failure clinic which was the control group. Follow-up was conducted after 12 months utilizing the Guideline Adherence Indicator (GAI) and medication possession ratio (MPR).</td>
<td>The results concluded that management of heart failure in a heart failure clinic and a primary care clinic are similar, although further research is indicated in regards to caring for patients within the primary care arena. Analysis of the data included the Fisher’s exact test, Mann-Whitney U-tests, Student’s t-tests. The statistical significance was a p value of &lt;0.05.</td>
<td>Small sample size. Limited generalizability of the research results. The research study only evaluated clinically stable heart failure patients. Bias due to some heart failure patients only wanted to follow-up with a heart failure clinic.</td>
</tr>
<tr>
<td>Ryan, J., Kang, S., Dolacky, S., Ingrassia, J., &amp; Ganeshan, R. (2013). Change in readmissions and follow-up visits as part of a heart failure readmission quality improvement initiative. <em>The American Journal of Medicine.</em></td>
<td>Quantitative Cross-Sectional Level 4</td>
<td>A chart review was conducted on 398 patients. Purposive Sampling</td>
<td>Chart reviews were done to collect data following the implantation of 7-day follow-up appointments at discharge, and the association to readmission rates.</td>
<td>Following the implementation of a mandatory 7-day follow-up appointment for all heart failure patients, the hospitals readmission rate decreased. A z-test, t-test, and binomial test was used to analyze the data.</td>
<td>Chart reviews and data could only be collected on patients that had documentation. This study was a single-centered analysis. The findings are not generalizable to other facilities.</td>
</tr>
<tr>
<td>Lowery, J., Hopp, F., Subramanian, U., Wiitala, W., Welsh, D.E., Larkin, A., . . . Vaitkevicius, P. (2012). Evaluation of a nurse practitioner disease management model for chronic heart failure: A multi-site implementation study. <em>Congestive Heart Failure.</em></td>
<td>Quantitative Prospective, Quasi-Experimental Level 3</td>
<td>The study focused on 4 various VA Medical Centers, and 1 outpatient veteran clinic. The study included a total of 969 veterans. Purposive Sampling</td>
<td>Demographic information was collected via chart reviews. The other measures were heart failure education provided to patients at clinic follow-up appointments. The intervention groups were the determining factor and focused on how the information was presented to the patients.</td>
<td>The study concluded that the nurse practitioner-led intervention group showed an improvement in health outcomes, and reduced mortality rates for heart failure patients. The statistical analysis was significant at 0.05. Chi-square tests, and t-tests were used to analyze data.</td>
<td>The focus on only veterans. The severity of illness was not measured between the intervention groups. The sample was not random.</td>
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<td>Study</td>
<td>Design</td>
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<td>Barnason, S., Zimmerman, L., &amp; Young, L. (2011). An integrative review of interventions promoting self-care of patients with heart failure. <em>Journal of Clinical Nursing.</em></td>
<td>Integrative Review</td>
<td>The integrative review included a total of 3,166 patients from a total of 19 studies. Random Sampling</td>
<td>The researchers developed a data collection instrument to obtain information regarding the sample, intervention, self-care measures, data collection times, and patient outcomes. Two doctoral prepared heart failure nurses also reviewed the articles for inclusion in the integrative review. The integrative review concluded that education alone is not an effective method of increasing patient compliance and self-care management within the heart failure population. The review strongly indicates the importance of a standardized heart failure education program. Cognitive behavioral interventions were highly effective in improving self-care behaviors of patients.</td>
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<td>Fonarow, G.C., Albert, N.M., Curtis, A.B., Gheorghiade, M., Heywood, J.T., Liu, Y., . . . Yancy, C.W. (2011). Associations between outpatient heart failure process-of-care measures and mortality. <em>Circulation.</em></td>
<td>Quantitative Longitudinal Cohort Study</td>
<td>The study included 15,177 patients at 167 various cardiology clinics throughout the United States. Random Sampling</td>
<td>Heart failure quality measures are directly linked to improved patient mortality rates. Possible inaccurate data from the medical chart reviews. The study was only conducted at clinics that use IMPROVE HF measures, so this does not make the study very diverse.</td>
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<tr>
<td>Otsu, H., &amp; Moriyama, M. (2011). Effectiveness of an educational self-management program for outpatients with chronic heart failure. <em>Japan Journal of Nursing Science.</em></td>
<td>Quantitative Randomized Control Trial</td>
<td>The study included 102 outpatients with congestive heart failure in Japan. Random Sampling</td>
<td>Education session were conducted on heart failure management. The study utilized interviews to collect data from patients. The intervention group included a social and mental assessment, and the control group received the standard of care previously developed at the facility. Data was collected via interviews initially and then at 3, 6, 9, and 12 months. The results of the study concluded educational sessions provided to patients in the experimental group regarding diet, exercise, weight monitoring, and symptom management showed a significant improvement as compared to the control group. The data was analyzed utilizing chi-squared tests and Mann-Whitney U-tests. The SPSS ver. 15.0 was used to analyze the data and data of significance was indicated by at rate of less than 5 percent. The sample of participants were retired and had no barriers in regards to participating in the study. A small-scale trial was evaluated.</td>
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<tr>
<td>Study</td>
<td>Research Design</td>
<td>Sample Size</td>
<td>Data Collection</td>
<td>Analysis</td>
<td>Findings</td>
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<td>Sarkar, U., Schilling, D., Bibbins-Domingo, K., Napoles, A., Karlner, L., &amp; Perez-Stable, E.J. (2011). Patient-physicians’ information exchange in outpatient cardiac care: Time for a heart to heart? Patient Education and Counseling.</td>
<td>Communication Study Qualitative Level 6 Quantitative Level 4</td>
<td>179 patients and a total of 56 physicians participated in the study. Purposive Sampling</td>
<td>Questionnaires including the SF-12, and Test of Functional Health Literacy Assessment were administered to patients.</td>
<td>The study discovered that communication between physicians and patients is not efficient and more evidence is needed in this area of research. Data was analyzed using concordance measures, and significance tests.</td>
<td>The results are not generalizable. The sample size was modest. Not all of the physicians turned in the post-visit questionnaire.</td>
</tr>
<tr>
<td>Case, R., Haynes, D., Holaday, B., &amp; Parker, V.G. (2010). Evidence-based nursing: The role of the advanced practice registered nurse in the management of heart failure patients in the outpatient setting. Dimensions of Critical Care Nursing.</td>
<td>Systematic Review 4 studies utilized randomized clinical trials, and 2 studies were quasi-experimental Level 1</td>
<td>The systematic review included a total of 1,118 patients in six various studies. Random Sampling</td>
<td>Various chart reviews and questionnaires were utilized. One study specifically used the Minnesota Living with Heart Failure questionnaire.</td>
<td>The results of the studies concluded that the use of a multidisciplinary team can decrease both readmission rates and mortality for heart failure patients. The nurse practitioner has the ability to help improve the quality of life for patients.</td>
<td>Limited research studies on the effects of nurse practitioners and heart failure outpatient care.</td>
</tr>
<tr>
<td>Faut, A., Hungin, A.P., &amp; Murphy, J.J. (2003). Barriers to accurate diagnosis and effective management of heart failure in primary care: qualitative study. BMJ.</td>
<td>Qualitative Grounded Theory Level 6</td>
<td>The study consisted of 30 general practitioners. Mixed Purposive Sampling</td>
<td>Focus groups were developed from the general practitioners chosen for the research study. Interviews were conducted and followed a grounded theory approach.</td>
<td>Three categories were discovered that contribute to the difficulties that arise when general practitioners are diagnosing and treating individuals with heart failure. The data was analyzed by reading transcripts, and developing themes using a grounded theory method.</td>
<td>No limitations noted.</td>
</tr>
<tr>
<td>Ramos, S., Prata, J., Goncalves, F.R., &amp; Coelho, R. (2014). Congestive heart failure and quality of life. Applied Research Quality Life.</td>
<td>Quantitative Cross-Sectional Study Level 4</td>
<td>124 patients participated in the study. Convenience Sampling</td>
<td>Demographic data and clinical history was obtained from the patient’s chart. Medical Outcomes Study Short Form-36, and the Kansas City Cardiomyopathy Questionnaire were used to assess quality of life. The Beck Depression Inventory Second Edition was used to evaluate depression.</td>
<td>The study found that psychological distress was directly linked to the quality of life for heart failure patients. T-tests and Chi–Square tests were utilized. The analysis of multiple linear regression was utilized for the SF-36 and KCCQ. The statistical significance was 0.05.</td>
<td>Unable to depict causality due to the study design. Only outpatient heart failure patients were studied. There was no control group. The sample size was small.</td>
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</table>

**Heart Failure Self-Care (5)**
<table>
<thead>
<tr>
<th>Study</th>
<th>Study Type</th>
<th>Sample Size</th>
<th>Data Collection</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Strachan, P.H., Currie, K., Harkness, K., Spaling, M., &amp; Clark, A.M. (2014). Context matters in heart failure self-care: A qualitative systematic review. <em>Context and Heart Failure Self Care.</em></td>
<td>Systematic Review</td>
<td>1,398 heart failure patients were included in the systematic review.</td>
<td>Various qualitative mixed methods studies were reviewed and included within the meta-synthesis regarding heart failure self-care.</td>
<td>The results of the studies concluded that efficient heart failure self-care is associated with various contextual factors. These factors include physical, financial, social, and association with disease.</td>
</tr>
<tr>
<td>Peters-Klimm, F., Freund, T., Kunz, C.U., Laux, G., Frankenstein, L., Muller-Tasch, T., &amp; Szecsenyi, J. (2012). Determinants of heart failure self-care behavior in community-based patients: A cross-sectional study. <em>European Journal of Cardiovascular Nursing.</em></td>
<td>Quantitative Exploratory Cross-Sectional Study</td>
<td>318 patients with chronic systolic HF were recruited from a primary care practice in Germany.</td>
<td>Patient reported data was collected from a socio-demographic dataset. Self-care adherence for heart failure was obtained using the European Heart Failure Self-Care Behavior scale. Quality of life was measured using both surveys and questionnaires.</td>
<td>The mean score for heart failure self-care behaviors was 24.7. The study found that there was good level of adherence in heart failure patients.</td>
</tr>
<tr>
<td>Riegel, B., Vaughan Dickson, V., Kuhn, L., Page, K., &amp; Worrall-Carter, L. (2010). Gender-specific barriers and facilitators to heart failure self-care: A mixed methods study. <em>International Journal of Nursing Studies.</em></td>
<td>Mixed Methods Cross-Sectional, Comparative</td>
<td>The study consisted of 27 patients both men and women suffering from heart failure.</td>
<td>Data regarding gender differences in heart failure self-care management was collected via surveys, interviews, and medical record reviews.</td>
<td>Data from the research study interviews was analyzed using the Atlas ti 5 to establish data clusters and themes regarding heart failure self-care gender differences. The study concluded that there are no gender differences regarding heart failure self-care management.</td>
</tr>
</tbody>
</table>

**Limitations**
- Dependence on quality and qualitative studies.
- Limitations regarding contextual factors for heart failure self-care.
- The sample is potentially not representative of the population.
- The chart data that was gathered could be incomplete.
- Some report data was missing.

**Quantitative Randomized Control Trial**

- **Level 2**
- **The sample included 153 heart failure patients.**
- **Random/Cluster Sampling.**

Demographic data was collected from patient charts. Measures included the SF-36, the Minnesota Living with Heart Failure Questionnaire, and the Zung Self-Rating Depression Scale.

The nurse practitioner focused heart failure management groups evidenced minimal improvement in the self-management of patients, although did show improvement in physical aspects and depression. T-tests and Chi-Square tests were used to analyze the nominal variables. The Mann-Whitney U test and Wilcoxon tests were also utilized. The statistical significance was a P value of less than 0.05.

No limitations noted.


**Quantitative Randomized Control Trial**

- **Level 2**
- **The study included 1,518 patients from 51 centers in Argentina.**
- **Random Sampling**

Nurses conducted telephone calls every 14 days until the fourth call when a more individualized phone call schedule could be developed. Patient adherence to diet, medication compliance, exercise, symptom monitoring, and weight was assessed via a questionnaire with each telephone call.

The research concluded that the mortality rate and hospital admission rate for heart failure patients receiving telephone intervention was lower than those not receiving the intervention. Analysis of the data included the log-rank test and Kaplan-Meier curves. The analysis was reported as relative risk and relative risk reduction. A p value of <0.05 was statistically significant.

Bias due to open trial design.


**Systematic Review**

- **Level 1**
- **The systematic review included a total of 4,264 patients in 14 research studies.**
- **Random Sampling**

Data was collected through the utilization of electronic databases and three investigators assessed the reliability of the included studies.

The results of the studies concluded that the use of remote monitoring which includes telephone follow-up improved patient outcomes of heart failure patients. Remote monitoring is highly effective for patients that are unable to access care.

Analysis of data included Der-Simonian and Laird Random Effects Model and RevMan 4.2.

The systematic review was limited by a small sample and research study size.

<table>
<thead>
<tr>
<th>Method</th>
<th>Patients</th>
<th>Setting</th>
<th>Data Collection</th>
<th>Intervention</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Quantitative Randomized Control Trial Level 2</td>
<td>The study included 60 patients at four primary care clinics in Sweden.</td>
<td>Random Sampling</td>
<td>Data was collected through the use of interviews, questionnaires, and chart reviews. Quality of life was assessed through the use of the European Self-Care Behavior Scale.</td>
<td>The results concluded that the utilization of a telephone follow-up call for patients each month does not improve the quality of life in heart failure patients, and additional interventions are needed to ensure improve outcomes for heart failure patients.</td>
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<tr>
<th>Method</th>
<th>Patients</th>
<th>Setting</th>
<th>Data Collection</th>
<th>Intervention</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Methods Quantitative Level 4 Qualitative Level 6</td>
<td>The study included 41 participants and evaluated the implementation of motivational interviewing on improving behavior change within the heart failure population. Purposive Sampling</td>
<td>Self-care of heart failure patients was measured utilizing the Self-Care of Heart Failure Index. The authors also evaluated data using a triangulation approach.</td>
<td>The results concluded that motivational interviewing is an effective technique to promote behavior change and self-care behaviors within the heart failure population. Analysis of the data was obtained through descriptive statistics and the Atlas.ti version 7.0.</td>
<td>The study included a small and selective sample size. Patient priority of intervention was a focus and did not include a variety of self-care behaviors. Some data was collected in the hospital which potentially skewed the data.</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Method</th>
<th>Patients</th>
<th>Setting</th>
<th>Data Collection</th>
<th>Intervention</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Prospective, Single-Blinded, Randomized Control Trial Level 2</td>
<td>67 patients participated in the study from a university hospital within an urban area. Convenience Sampling</td>
<td>The Self-Care of Heart Failure Index was utilized at 90 days to evaluate self-care of heart failure patients following motivational interviewing. The Heart Failure Somatic Perception Scale evaluated heart failure symptoms, and the Kansas City Cardiomyopathy Questionnaire evaluated quality of life.</td>
<td>The results of the study concluded that patients who received motivational interviewing had improved patient outcomes at 90 days. Data analysis was obtained through the use of descriptive statistics, Chi-square, and student’s t-tests.</td>
<td>Participant contact was lost and follow-up was not completed. The study did not objectively measure self-care behaviors.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

Heart Failure Education Theory Application Diagram

**Attitude Toward Behavior**

*Knowledge, skills, previous education, and desire to participate in heart failure self-care behaviors.

**Subjective Norm**

*Support from families, providers, and communities that the heart failure treatment plan is based on evidence-based guidelines and will improve patient outcomes.

**Perceived Behavioral Control**

*Belief that heart failure self-care behaviors including daily weight monitoring, symptom management, diet adherence, exercise programs, medication management, and smoking cessation can manage congestive heart failure.

**Intention**

*Attendance and participation in the heart failure education program utilizing motivational interviewing and telephone follow-up consultation.

**Behavior**

*Adherence to treatment plan and heart failure self-care behaviors including diet, exercise, daily weight monitoring, symptom monitoring, and medication management.

NOT HUMAN SUBJECTS RESEARCH DETERMINATION

Principal Investigator: Dr. Lyla Lindholm
UMKC Health Sciences Building
Kansas City, MO 64108

Protocol Number: 17-434
Protocol Title: Primary Care Heart Failure Education Program to Improve Quality of Life
Type of Review: Not Human Subjects Determination

Date of Determination: 11/28/2017

Dear Dr. Lindholm,

The above referenced study, and your participation as a principal investigator, was reviewed and determined to be Not Human Subjects Research (NHSR). As such, your activity falls outside the parameters of IRB review. You may conduct your study, without additional obligation to the IRB, as described in your application.

The NHSR Determination is based upon the following Federally provided definitions:

“Research” is defined by these regulations as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge."

The regulations define a “Human Subject” as a “living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention or interaction with the individual, or identifiable private information."

Attachments include the following:
   Project Approval Letter Form Faculty.pdf

All Human Subjects Research must be submitted to the IRB. If your study changes in such a way that it becomes Human Subjects Research, please contact the Research Compliance Office immediately for the appropriate course of action.

Please contact the Research Compliance Office (email: umkcrec@umkc.edu; phone: (816)235-5927) if you have questions or require further information.

Thank you,

Rebekah Lee
UMKC IRB Administrative Office
Appendix E

Heart Failure Education DNP Project Cost Table

<table>
<thead>
<tr>
<th>Supplies</th>
<th>Direct Costs</th>
<th></th>
<th>Suppliers</th>
<th>Indirect Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper for participant questionnaires, surveys, and educational materials.</td>
<td>Ream with 500 sheets, $7.99 at Staples.</td>
<td>Electricity, telephones, and clinic setting.</td>
<td>Not applicable as data, intervention, and telephone follow-up will be conducted during the regular business hours of the clinic.</td>
<td></td>
</tr>
<tr>
<td>Printer Ink (3) for questionnaires/education materials</td>
<td>$104.97 per Staples.</td>
<td>Laptop for creating handouts and tracking information for Student Investigator.</td>
<td>Not applicable as laptop for Student Investigator use has already been purchased.</td>
<td></td>
</tr>
<tr>
<td>60 Ink Pens</td>
<td>$5.99 per Staples.</td>
<td>Printer for creating informational handouts.</td>
<td>Not applicable as printer for Student Investigator use has already been purchased.</td>
<td></td>
</tr>
<tr>
<td>Paper Clips</td>
<td>48 binder clips, $6.78 per Staples.</td>
<td>Educational sessions provided by Student Investigator.</td>
<td>Education sessions and data collection will be provided per student; cost of time.</td>
<td></td>
</tr>
<tr>
<td>Folders for informational handouts</td>
<td>100 per box, $17.99 per Staples.</td>
<td>Cost of time for provider for further implementation</td>
<td>Approximately 30 hours of time = $1,370.00 per salary.com</td>
<td></td>
</tr>
<tr>
<td>3 Digital weight scales</td>
<td>$150.00 per Walmart.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 Stamps for recruitment letters post-questionnaires</td>
<td>$45.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Envelopes for questionnaires.</td>
<td>$10.59 per 100 per Staples.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous (Projector)</td>
<td>$125.00 per Amazon</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Project Cost: ~$474.31

(Cost of time for provider not included since intervention was provided by SI).
Appendix F

Heart Failure Education DNP Project Timeline

- May/June 2017 Proposal Presentation at Clinical Institute
- June 2017-November 2017 IRB and Faculty Approval
- November 2017 Project Education at Project Site
- December 2017-January 2018 Project Implementation/Administer Pre-Test
- December 2017-April 2018 Project Intervention/Data Collection
- April 2018 Data Analysis
- March/April 2018 Administer Post-Test
- April 2018 Project Dissemination
- April 2018 Data Analysis
Appendix G

Recruitment Materials
Recruitment Letter #1

Dear ________________.

Hello! My name is Shanna Jones and I am a Doctor of Nursing Practice Student at the University of Missouri-Kansas City. I will be conducting a quality improvement project on the effectiveness of heart failure education within a primary care setting in collaboration with the University of Missouri-Kansas City and the primary care clinic.

The quality improvement project will include a 30-minute group educational session regarding heart failure management at the clinic, and monthly telephone follow-up calls to evaluate management of heart failure and to answer questions over a 4-month period. One questionnaire evaluating symptoms and quality of life will need to be completed prior to and following the education sessions. Heart failure education is ideal for improving quality of life and reducing symptoms.

The group heart failure education sessions will be offered on the following dates:

- Thursday, December 28th, 2017 at 3:00 p.m.
- Thursday, January 11th, 2018 at 3:00 p.m.
- Thursday, January 25th, 2018 at 3:00 p.m.

The education sessions will be held at:
Primary Care Clinic

If you are interested in participating with this optional heart failure education program, please select a date to attend and notify the student investigator prior to the educational session via phone or email. A short survey will be provided for you to complete at the clinic prior to the scheduled education session. The survey will evaluate patient symptoms and quality of life.

Thanks in advance for your time and consideration of this quality improvement project. If you have any questions or would like additional information regarding the project, please contact the student investigator, Shanna Jones at ssjg6x6@mail.umkc.edu or 620-794-4471.

Sincerely,
Shanna S. Jones, DNP Student, RN, BSN
University of Missouri-Kansas City
Email: ssjg6x6@mail.umkc.edu
Phone: 620-794-4471
Recruitment Letter #2

Hello!

My name is Shanna Jones and I am a Doctor of Nursing Practice Student at the University of Missouri-Kansas City. I will be conducting a quality improvement project on the effectiveness of heart failure education within a primary care setting in collaboration with the University of Missouri-Kansas City and the primary care clinic.

The quality improvement project will include a 30-minute group educational session regarding heart failure management at the clinic, and monthly telephone follow-up calls to evaluate management of heart failure and to answer questions over a 2-month period. One questionnaire evaluating symptoms and quality of life will need to be completed prior to and following the education sessions. Heart failure education is ideal for improving quality of life and reducing symptoms.

The group heart failure education sessions will be offered on the following dates:

- Thursday, February 8th, 2018 at 3:00 p.m.
- Tuesday, February 27th, 2018 at 9:00 a.m.

The education sessions will be held at:
Primary Care Clinic

If you are interested in participating with this optional heart failure education program, please select a date to attend and notify the student investigator prior to the educational session via phone or email. A short survey will be provided for you to complete at the clinic prior to the scheduled education session. The survey will evaluate patient symptoms and quality of life.

Thanks in advance for your time and consideration of this quality improvement project. If you have any questions or would like additional information regarding the project, please contact the student investigator, Shanna Jones at ssjgx6@mail.umkc.edu or 620-794-4471.

Sincerely,

Shanna S. Jones, DNP Student, RN, BSN
University of Missouri-Kansas City
Email: ssjgx6@mail.umkc.edu
Phone: 620-794-4471
HEART FAILURE
EDUCATION
PROGRAM

STUDENT INVESTIGATOR:
SHANNA S. JONES, DNP STUDENT,
BSN, RN

The purpose of this quality improvement project is to determine if evidence-based education, motivational interviewing, and telephone follow-up improve patient symptoms, quality of life, and decrease 30-day hospital readmission rates in adult heart failure patients within a primary care setting.

The education program will be offered on December, 28\textsuperscript{th}, 2017, January 11\textsuperscript{th}, 2018, and January 25\textsuperscript{th}, 2018 at 3:00 p.m.

To participate in this project, you must:
• Be 18 years or older
• Have a diagnosis of heart failure.
• Have access to a telephone.

Participation in this project involves:
• Attendance at one 30-minute group educational session at the clinic.
• 10-minute monthly telephone follow-up calls until March 2018.

CONTACT INFORMATION:
TO FIND OUT MORE ABOUT THIS PROJECT, PLEASE CONTACT:
• Shanna Jones
• 620-794-4471
• ssjgx6@mail.umkc.edu
Appendix H

Education Materials

PowerPoint
Heart Failure Daily Weight Log

- Weigh yourself daily in the morning, before eating, after using the bathroom, and wearing the same amount of clothing.
- Notify your doctor if you gain more than 3 pounds in 24 hours or 5 pounds in 1 week.
- Bring this record with you to your scheduled appointments with your doctor.

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
<th>Blood Pressure</th>
<th>Symptoms</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>
What is Heart Failure?

If you have heart failure, you’re not alone. About 5.7 million Americans are living with it today. In fact, it’s one of the most common reasons people age 65 and older go into the hospital. It can take years for heart failure to develop. Heart failure is called congestive heart failure when fluid builds up in various parts of the body. So if you don’t yet have it but are at risk for it, you should make lifestyle changes now to prevent it.

Heart failure symptoms usually develop over time as your heart becomes weaker and less able to pump the blood that your body needs. Heart failure usually results in an enlarged heart (left ventricle).

Does your heart stop?

When you have heart failure, it doesn’t mean that your heart has stopped beating. It means that your heart isn’t pumping blood as it should. The heart keeps working, but the body’s need for blood and oxygen isn’t being met. Heart failure can get worse if it’s not treated. It’s very important to do what your doctor tells you to do. When you make healthy changes, you can feel a lot better and enjoy life much more!

What can happen?

- Your heart does not pump enough blood.
- Blood backs up in your veins.
- Fluid builds up in your body, causing swelling in your feet, ankles and legs. This is called “edema.”
- Fluid builds up in your lungs. This is called “pulmonary edema.”
- Your body does not get enough blood, food and oxygen.

What are the signs of heart failure?

- Shortness of breath, especially when lying down
- Tired, run-down feeling
- Coughing or wheezing, especially when you exercise or lie down
- Swelling in feet, ankles and legs
- Weight gain from fluid buildup
- Confusion or can’t think clearly

What are the causes?

The most common cause of heart failure is coronary artery disease (CAD). CAD occurs when arteries that supply blood to the heart muscle become narrowed by buildups of fatty deposits called plaque.

Other common risk factors that lead to heart failure are:

- Past heart attack has done some damage to the heart muscle
- Heart defects present since birth

(AHA, 2018).
What is Heart Failure? Education Handout

- High blood pressure
- Heart valve disease
- Diseases of the heart muscle
- Infection of the heart and/or heart valves
- Abnormal heart rhythm (arrhythmias)
- Being overweight
- Diabetes
- Thyroid problems
- Alcohol or drug abuse
- Certain types of chemotherapy

**How is it treated?**
- Your doctor may give you medicine to strengthen your heart and water pills to help your body get rid of excess fluids.
- Your doctor will recommend a low-sodium (salt) diet.
- You may be provided oxygen for use at home.
- Your doctor may recommend certain lifestyle changes.
- Surgery or cardiac devices may be needed, in some cases.

**What can I do to manage my heart failure?**
- Follow your doctor’s advice.
- Quit smoking, if you smoke.
- Take your medicines exactly as prescribed.
- Weigh daily to check for weight gain caused by increased fluid.
- Track your daily fluid intake.
- Monitor your blood pressure daily.
- Lose or maintain your weight based on your doctor’s recommendations.
- Avoid or limit alcohol and caffeine.
- Eat a heart-healthy diet that’s low in sodium, saturated fat and trans fat.
- Eat less salt and salty foods.
- Be physically active.
- Get adequate rest.

**HOW CAN I LEARN MORE?**
1. Call 1-800-AHA-USA1 (1-800-242-8721), or visit heart.org to learn more about heart disease and stroke.
2. Sign up to get Heart Insight, a free magazine for heart patients and their families, at heartinsight.org.
3. Connect with others sharing similar journeys with heart disease and stroke by joining our Support Network at heart.org/supportnetwork.

**Do you have questions for the doctor or nurse?**
Take a few minutes to write your questions for the next time you see your healthcare provider. For example:
- How much salt may I eat?
- How much weight gain is too much?

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit heart.org/answersbyheart to learn more.

(AHA, 2018).
HEART FAILURE EDUCATION PROGRAM

Self-Check Plan for HF Management

Excellent – Keep Up the Good Work!
- No new or worsening shortness of breath
- Physical activity level is normal for you
- No new swelling, feet and legs look normal for you
- Weight check stable
- Weight: _____
- No sign of chest pain

Great! Continue:
- Daily Weight Check
- Meds as Directed
- Low Sodium Eating
- Follow-up Visits

Pay Attention – Use Caution!
- Dry, hacking cough
- Worsening shortness of breath with activity
- Increased swelling of legs, feet, and ankles
- Sudden weight gain of more than 2-3 lbs in a 24 hour period (or 5 lbs in a week)
- Discomfort or swelling in the abdomen
- Trouble Sleeping

Check In!
- Your symptoms may indicate:
  - A need to contact your doctor or provider
  - A need for a change in medications

Medical Alert – Warning!
- Frequent dry, hacking cough
- Shortness of breath at rest
- Increased discomfort or swelling in the lower body
- Sudden weight gain of more than 2-3 lbs in a 24 hour period (or 5 lbs in a week)
- New or worsening dizziness, confusion, sadness or depression
- Loss of appetite
- Increased trouble sleeping; cannot lie flat

Warning! You need to be evaluated right away.
- Call your physician or call 911

www.RiseAboveHF.org

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Nationally supported by:

(AHA, 2018).
Avoid Hidden Sources of Sodium

Most of us take in more sodium through packaged convenience foods and snacks than by using table salt. Always look for "low-salt" or "low-sodium" labels on cans and packages. This label means the food has 140 milligrams or less sodium per serving. "No added salt" means that no salt was added during processing. Some foods labeled "no added salt" may contain less sodium than foods labeled "low-sodium" but some may contain more. Always compare the sodium content for several similar foods and choose the food or beverage product with the lowest amount of sodium. Also, look for food packages labeled "sodium-free," "salt-free," "no sodium" and "very low sodium."

"Reduced-salt" or "reduced-sodium" simply means that the product has at least 25 percent less sodium than the original version of the same product. These foods may still have more sodium than you should eat.

Be sure to check the labels on the following foods:

- Canned soups and dry soup mixes
- Canned meats and fish
- Ham, bacon and sausage
- Salted nuts and peanut butter
- Instant cooked cereals, such as grits
- Salted butter and margarine
- Processed meats, such as deli items and hot dogs
- Prepared baking mixes (pancake, muffin, cornbread, etc.)
- Prepackaged frozen dinners
- Preseasoned mixes (tacos, chili, rice, sauces, gravies, etc.)
- Snack foods (pretzels, potato chips, olives, pickles)
- Cheese
- Canned tomatoes or tomato sauces
- Salad dressings
- Fast food items

Many foods contain more than one form of sodium. Any of the following ingredients means that the product has sodium in it:

- Sodium alginate
- Sodium sulfate
- Sodium caseinate
- Disodium phosphate
- Sodium benzoate
- Sodium hydroxide
- Monosodium glutamate or MSG
- Sodium citrate

Some medicines are also high in sodium. Always read the sodium content and warnings before taking any over-the-counter medicine. Avoid headache or heartburn medications that contain sodium carbonate or bicarbonate. Ask your healthcare provider to recommend the over-the-counter medications that are best for you.

www.RiseAboveHF.org

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Reading Food Labels to Look for Sodium

Easy-to-read food labels can help you find foods low in sodium. This will help you keep track of the number of grams (g) or milligrams (mg) you consume each day. According to Food and Drug Administration regulations, no manufacturer can say that their product is "low-sodium" unless they can prove that claim. Learning to read food labels is a good first step in a sensible eating plan.

<table>
<thead>
<tr>
<th>If the Label Says:</th>
<th>One Serving of the Product Has:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium-free, salt-free</td>
<td>Less than 5 mg of sodium and no sodium chloride in ingredients</td>
</tr>
<tr>
<td>or no sodium</td>
<td></td>
</tr>
<tr>
<td>Very low sodium</td>
<td>35 mg or less of sodium</td>
</tr>
<tr>
<td>No added salt or unsalted</td>
<td>No salt added to the product during processing (this is not a sodium-free product)</td>
</tr>
<tr>
<td>Low sodium</td>
<td>140 mg or less of sodium</td>
</tr>
<tr>
<td>Reduced or less sodium</td>
<td>At least 25 percent less sodium than the regular product</td>
</tr>
<tr>
<td>Light in sodium</td>
<td>50 percent less sodium than the regular product</td>
</tr>
</tbody>
</table>

Always compare the sodium content for several similar products and choose the food or beverage with the lowest amount of sodium.

(AHA, 2018).
Appendix I

Educational Telephone Follow-Up Script

Introduction:

- Hello, this is Shanna Jones. I am a Student Investigator at the primary care clinic.
- Is this (patient name)? Or Is (patient name) available?
- If patient was not initial person to answer the telephone, then restate introduction.

Reason for Call:

- You are currently participating in the heart failure education project and I am calling to follow-up regarding the heart failure education that you received on (date).
- Include the following questions:
  - How are things going?
  - How are you feeling?
  - Have you been having any increased symptoms such as swelling, shortness of breath, difficulty participating in daily activities, chest pain, or cough?
  - Have you been taking your medications as scheduled? Do you have any questions about your medications?
  - Have you been monitoring your weights daily? Have you had any weight gain?
  - How has your diet been? Have you been monitoring your salt intake?
  - If current tobacco user. Ask if there is a desire to stop smoking.

Conclusion:

- If following educational recommendations: Sounds like you are doing a great job managing your heart failure. Continue to follow the recommended treatment plan. Do you have any questions or concerns today?
- If not following the educational recommendations, then provide additional education as needed.
- Thank you for your time today and for your continued participation in the quality improvement project. I will call you again in approximately one month. If you have any questions or concerns prior to that please call your healthcare provider. Thank you and have a great day!
Appendix J

Heart Failure Education Program Participant Flow Diagram

Step 1: Recruitment
December 2017-January 2018
*Convenience sampling utilized to recruit participants.
*Screen and recruit participants based on inclusion and exclusion criteria.
*No informed consent required as this is an evidence-based quality improvement project.

Step 2: Pre-Data/Test
December 2017-February 2018
*Obtain patient demographics per chart reviews.
*Obtain hospital admission data per chart reviews
*Administer Kansas City Cardiomyopathy Questionnaire to obtain pre-data on patient symptoms and quality of life.

Step 3: Intervention
December 2017-April 2018
*Provide group education sessions at clinic (education to be provided by Student Investigator).
*Education will utilize motivational interviewing techniques and informational handouts.
*Provide monthly telephone follow-up calls to patients following the group education intervention to reinforce heart failure education.

Step 4: Post-Data Test
March 2018-April 2018
*Obtain hospital admission and readmission data to evaluate 30-day readmission rates.
*Administer Kansas City Cardiomyopathy Questionnaire to obtain post-data on patient symptoms and quality of life.
Appendix K
Kansas City Cardiomyopathy Questionnaire

Copyright and permission obtained for use of Kansas City Cardiomyopathy Questionnaire. Tool in private domain.
Appendix L

Permission for Use of Kansas City Cardiomyopathy Questionnaire

SCHEDULE A: LICENSED PROPERTIES

KCCQ – English (US)

This version of the KCCQ has been validated among English-speaking residents of the US. This zip file includes two PDF files: the KCCQ itself and scoring instructions.

SCHEDULE B: DESCRIPTION OF STUDY

Project Name

Primary Care Heart Failure Education Program to Improve Quality of Life

Project Type

Quality Assessment/Improvement

Project Dates

Start: 11/28/2017

End: 05/30/2018

Duration: 183 days

Enrollment

Sites: 1

Average subjects per site: 30

Total enrollment: 30

Schedule of Use

Administer to subjects thus: Pre-Test and Post-Test

Total uses per subject: 2

Total uses: 60
HEART FAILURE EDUCATION PROGRAM

Sponsor Name
University of Missouri-Kansas City

Sponsor Type
Other

SCHEDULE C: LICENSE FEES & PAYMENT TERMS

Payment Terms
Payable on Receipt

Total Instrument Fees
$ 115.00

Total License Fee
$ 115.00
Appendix M

Faculty Approval Letter

July 11, 2017

Members of UMKC Institutional Review Board
University of Missouri-Kansas City
Kansas City, MO 64108

Primary Project Site IRB

UMKC IRB or Primary Project Site IRB,

This letter serves to provide documentation regarding Shanna Jones’ Doctor of Nursing Practice (DNP) Project proposal. Ms. Jones obtained approval for her project proposal, Primary Care Heart Failure Education Program to Improve Quality of Life, from the School of Nursing DNP faculty committee on July 11, 2017.

If I can provide any further information, please feel free to contact me.

Sincerely,

Susan J. Kimble, DNP, RN, ANP-BC, FAANP
Clinical Associate Professor
DNP Programs Director
UMKC School of Nursing and Health Studies
816-235-5962
kimble6@umkc.edu
Appendix N

Data Collection Template

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>HFClass</td>
</tr>
<tr>
<td>EF</td>
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<tr>
<td>LengthOfDx</td>
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<tr>
<td>PreReadmis</td>
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<td>PostReadmi</td>
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<td>Post9</td>
</tr>
<tr>
<td>Pre12</td>
</tr>
<tr>
<td>Post12</td>
</tr>
<tr>
<td>Pre13</td>
</tr>
<tr>
<td>Post13</td>
</tr>
<tr>
<td>Pre14</td>
</tr>
<tr>
<td>Post14</td>
</tr>
<tr>
<td>PreTSS</td>
</tr>
<tr>
<td>PostTSS</td>
</tr>
</tbody>
</table>
Data Collection Template

| Age | Gender | HClass | EF | LengthofDx | PreRead | PostRead | Pre3 | Post3 | Pre4 | Post4 | Pre5 | Post5 | Pre6 | Post6 | Pre7 | Post7 | Pre8 | Post8 | Pre9 | Post9 | Pre12 | Post12 | Pre13 | Post13 | Pre14 | Post14 | PreTSS | PostTSS | PreQOL | PostQOL |
|-----|--------|--------|----|------------|---------|----------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|

This table represents a data collection template for various parameters related to heart failure education program. The template includes fields for age, gender, heart class, EF, duration of disease, pre and post readmission, pre and post measurements for different periods (Pre3, Pre4, Pre5, etc.), and post measurements for TSS and QOL.
# Appendix O
## Statistical Analysis Template for KCCQ

### Patient Symptom Domain

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Heart Failure Class</th>
<th>Pre-Intervention Score</th>
<th>Post-Intervention Score</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>II</td>
<td>283.30</td>
<td>300.00</td>
<td>5.89%</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>I</td>
<td>350.00</td>
<td>345.75</td>
<td>-1.21%</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>II</td>
<td>354.00</td>
<td>354.00</td>
<td>0%</td>
</tr>
<tr>
<td>Mean of 3 Participants</td>
<td></td>
<td></td>
<td>329.1</td>
<td>333.25</td>
<td>1.26%</td>
</tr>
</tbody>
</table>

### Quality of Life Domain

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Heart Failure Class</th>
<th>Pre-Intervention Score</th>
<th>Post-Intervention Score</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>II</td>
<td>83.25</td>
<td>100.00</td>
<td>20.12%</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>I</td>
<td>66.50</td>
<td>66.50</td>
<td>0.00%</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>II</td>
<td>66.50</td>
<td>91.50</td>
<td>37.59%</td>
</tr>
<tr>
<td>Mean of 3 Participants</td>
<td></td>
<td></td>
<td>72.08</td>
<td>86.00</td>
<td>19.31%</td>
</tr>
</tbody>
</table>

### Comparison of Total Symptom Score vs. Quality of Life Score

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Heart Failure Class</th>
<th>Total Symptom Percent Change</th>
<th>Quality of Life Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>II</td>
<td>5.89%</td>
<td>20.12%</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>I</td>
<td>-1.21%</td>
<td>0.00%</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>II</td>
<td>0.00%</td>
<td>37.59%</td>
</tr>
</tbody>
</table>
**Appendix P**

**Logic Model**

### Inquiry, PICOTS:

In congestive heart failure patients, does the utilization of an outpatient education program and telephone follow-up compared to no education program improve patient symptoms, quality of life, and decrease hospital 30-day readmission rates over a 4-month period in a primary care clinic?

### Logic Model for DNP Project

<table>
<thead>
<tr>
<th>Student: Shannon Jones</th>
</tr>
</thead>
</table>

#### Major Facilitators or Contributors
1. Evidence supporting the need for heart failure care in primary care.
2. Low cost of implementation.
3. DNP student and DNP advisor.

#### Major Barriers or Challenges
1. Small sample size
2. Primary care provider lack of knowledge regarding heart failure education and treatment.
3. Poor patient adherence to prescribed treatment and education plan.
4. Poor health literacy and misunderstanding regarding patient education.
5. Lack of motivation by patients.

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Intervention(s)</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence, sub-topics</td>
<td>EBF intervention which is supported by the evidence in the input column (brief phrase)</td>
<td>The participants (subjects)</td>
</tr>
<tr>
<td>2. Outpatient Heart Failure Education</td>
<td>Major steps of the intervention (brief phrases)</td>
<td></td>
</tr>
<tr>
<td>3. Heart Failure Self-Care</td>
<td>1. IBR and faculty approval of DNP project. 2. Pre-test regarding patient symptoms and quality of life. 3. Group education sessions at clinic. 4. Monthly follow-up calls to evaluate patient symptoms and adherence. 5. Post-test evaluating patient symptoms and quality of life following project implementation over 4 months. 6. Continuous education and communication to keep the change ongoing.</td>
<td>Site Primary Care Clinic</td>
</tr>
<tr>
<td>4. Telephone Follow-Up</td>
<td>Time Frame 4 months December 2017-April 2018</td>
<td></td>
</tr>
<tr>
<td>5. Motivational Interviewing</td>
<td>Consent or assent Needed No Consent. Evidence-Based Quality Improvement Project</td>
<td></td>
</tr>
</tbody>
</table>

#### Outcomes - Impact

<table>
<thead>
<tr>
<th>Short</th>
<th>Medium</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes to be measured</td>
<td>(after student DNP)</td>
<td>(after student DNP)</td>
</tr>
<tr>
<td>Primary: Heart failure patient symptoms and quality of life. Secondary, if applies: 30-day heart failure hospital admission and readmission rates.</td>
<td>Patient symptoms and quality of life via the Kansas City Cardiomyopathy Questionnaire.</td>
<td>Improve heart failure patient symptoms and outcomes.</td>
</tr>
<tr>
<td>Measurement tool(s)</td>
<td>Cost savings due to implementation of heart failure education program.</td>
<td>Improve heart failure patient quality of life.</td>
</tr>
<tr>
<td>Other person(s) collecting data (yes, no)</td>
<td>Statistical analysis to be used</td>
<td>Decrease 30-day heart failure hospital admission and readmission rates.</td>
</tr>
<tr>
<td>No, DNP student to collect data and provide intervention.</td>
<td>1. Descriptive Statistics</td>
<td></td>
</tr>
</tbody>
</table>