Shared Medical Appointments to Improve Self-Care Actions in the Adult Heart Failure Patient

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Abstract

Heart failure affects about 5.7 million people in the United States and is the leading cause of hospitalizations of people over 65 years of age. In 2010, the CDC estimated that heart failure costs the nation $30.7 billion each year. The purpose of the quality improvement intervention was to determine if the evidence-based shared medical appointment model improves self-care actions as measured by the Self-Care of Heart Failure Index and decreases heart failure hospital admissions in the adult heart failure population. The quasi-experimental intervention included four adult patients with a diagnosis of heart failure with preserved ejection fraction or heart failure with reduced ejection fraction who receive their primary care at a family medicine clinic associated with a Midwest university hospital. Participants met for their heart failure medical appointments in a group setting once a week for four weeks to engage in a multidisciplinary education program. Due to limited participation, this quality improvement project did not yield an opportunity for outcome evaluation. Although barriers to group appointments exist, shared medical appointments have been shown to have positive effects on both patient outcomes and patient experiences and can be used to help lessen the economic burden of heart failure.

Keywords: shared medical appointments, self-care, peer support, heart failure

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Shared medical appointments (SMAs) are outpatient office visits conducted in a group setting designed to provide personal and interprofessional team care, support, and education on a particular health problem (Kirsh et al., 2017; Mackey, 2009). Shared medical appointments are designed to provide patients with education regarding a shared medical diagnosis in a model that includes a private physical examination plus a support intervention. Shared medical appointments have been shown to be an effective management intervention for multiple chronic processes including diabetes, fibromyalgia, heart failure (HF), and hypertension (Lin, Cavendish, Born, Ofstad, & Seidensticker, 2008; Yehle, Sands, Rhynders, & Newton, 2009).

Significance

Heart failure occurs when the heart cannot pump a sufficient amount of blood and oxygen to support the other organs in the body (CDC, 2019). One in five American adults over the age of 40 will develop HF (American Heart Association [AHA], 2017). It is the leading cause of hospitalizations of people over 65 years of age (CDC, 2019). Will, Valderrama, and Yoon (2012) attributed the high hospitalization rate to the outpatient health care system not adequately managing and treating chronic disease. Heart failure costs the nation over $30 billion each year; 80% of which is directly related to hospital costs (AHA, 2017). Exacerbations of HF have a significant impact on patients' quality of life (QOL) with symptoms including dyspnea, fatigue,

and edema. These symptoms can lead to a decline in cognitive, social, emotional, and daily functioning (Yehle et al., 2009). Patients diagnosed with HF are expected to recognize symptoms associated with the disease and call their provider for recommendations or make specific changes in their medication dosages and diet based on those symptoms. However, education and self-care management tools must be provided to patients before they can be expected to manage their symptoms. Therefore, education for patients and caregivers in a supportive environment is a warranted initiative for healthcare. Implementing successful SMAs utilizing a multidisciplinary approach might improve patients' QOL and decrease the economic burden of hospitalizations related to HF.

Local Burden

According to Zohrabian, Kapp, and Simoes (2018), the average cost per HF index admission in 2014 was $7,241. The average readmission cost was $9,803. It is estimated that a total of 1,048 HF hospital admissions in persons age 65 and older occurred in Wyandotte County, Kansas in the year 2014 (CDC, 2018; United States Census Bureau, 2018). Although no data was available for HF admission cost per county, using the national average price it can be assumed that HF admissions of those aged 65 and older cost Wyandotte county $10,273,544 in 2014.

Diversity, Cultural, and Geographic Considerations

African-Americans are one and a half times more likely to develop HF than Caucasians (CDC, 2018). The incidence is equally frequent in men and women. The intervention was conducted at a family medicine clinic at a Midwest university hospital. The clinic utilizes the Patient-Centered Medical Home model and seeks to provide comprehensive, coordinated care for each patient. According to the U.S Census Bureau (2018), 67% of the population in the clinic's

county is Caucasian, 23% is African American, and 29% is Hispanic. Other races present in the county are American Indian, Asian, and Native Hawaiian. Data support that similar peers are more likely to have mutually supportive relationships (Heisler et al., 2013). Therefore, racial and cultural considerations are imperative for peer support interventions such as SMAs.

Problem/Intended Improvement

A documented provider shortage exists and is projected to worsen as a result of the aging baby boomer cohort (Stults et al., 2015). Implementing SMAs into clinical practice can provide the educational and support interventions necessary for patients to effectively manage their disease. Shared medical appointments can also aid the provider shortage by improving healthcare access and office productivity. Currently, providers may see six patients in two to three hours depending on the time allotted for each appointment. With the SMA model, the provider can see six to eight patients in 90 minutes. Efficiency and improved patient outcomes are the driving factors for successfully employing SMAs into practice.

Purpose Statement

The purpose of the evidence-based quality initiative was to determine if the SMA model improves self-care actions and decreases HF hospital admission in the adult HF population at a Midwest family medicine clinic.

Facilitators & Barriers

The support provided by physicians and staff at the family medicine clinic was a major facilitator of the project. The values of the clinic include a team-based approach to ensure continuity of care. In order to create organizational change, there must be a shared vision between a team of individuals grounded in a culture of evidence-based practice (EBP).

The clinic, as a stakeholder, had the resources available to develop and sustain SMAs as their focus is an interprofessional approach to healthcare. The clinic has the necessary resources of providers, medical assistants, nurses, social workers, a pharmacist, and a nutritionist to sustain SMAs. The financial benefit is another important factor to sustainability of the quality improvement project. It has been shown that SMAs can reduce the cost of healthcare (Paul, Yehle, Wood, Wingate, & Steg, 2013; Scott et al., 2004). The potential barriers to the success of the evidence-based initiative were conflicts with scheduling, transportation, and a low number of eligible participants.

Inquiry

In adult HF patients, will SMAs at a family medicine clinic compared to standard individual office visits improve self-care behaviors and reduce HF readmissions over five months?

Literature Search

An extensive search of CINAHL, Pubmed, Google Scholar, and Trip databases was conducted using the search terms medical appointments, group medical visits, self-care, education, peer support, social support, heart failure, and EBP. Studies specifically related to HF were included in the synthesis of evidence. Studies researching SMAs related to other chronic disease processes such as diabetes were excluded. Only one systematic review related to HF SMAs was identified from the Cochrane database.

A total of 22 studies were reviewed. The topics of the studies include SMAs, HF self-care, HF education, and effects of social support in chronic disease management. Four of these studies were Level I evidence—with two clinical practice guidelines and two systematic reviews. Eight Level II quantitative, RCT trials were included in the review. Five Level III quasi-

experimental studies, one Level IV cohort study, three Level VI qualitative studies, and one Level VII integrative review were presented in the synthesis of evidence (see Appendix A for the Synthesis of Evidence table and Appendix B for a PRISMA diagram).

Evidence by Themes

The synthesis of evidence with appraisal of the guidelines and studies revealed four themes. These themes included self-care, education, hospitalization, and social support. These themes each play a pivotal role in successful implementation of SMAs.

Self-Care

Patients who exhibit self-care maintenance of chronic illness have an awareness of their disease and are able to recognize and interpret symptoms (Riegel & Dickson, 2008; Yehle et al., 2009). The patient can then proceed to disease management which includes making decisions based on those symptoms (Kirsh et al., 2017; Riegel & Dickson, 2008). Those who are active participants in their chronic disease through both self-care maintenance and self-care management are able to make independent actions regarding their chronic illness (Barnason, Zimmerman, & Young, 2012; Liou et al., 2015; Riegel & Dickson, 2008).

Self-care maintenance behaviors for HF include monitoring daily weight, following a sodium-restricted diet, regulating fluid intake, adhering to the prescribed medication regimen, participating in regular physical activity, and eliminating harmful substances (AHA, 2017). The American College of Cardiology Foundation (ACCF) and AHA HF guidelines (2013) directly addressed this concept by stating self-care is a complex and multifaceted phenomenon, yet essential for improved outcomes. Furthermore, self-efficacy, or a patient's confidence to direct

behavior change, is an intermediate step to implementing self-care actions (Barnason et al., 2012).

Liou et al. (2015), Lin et al. (2008), and Yehle et al. (2009) used the Self-Care Heart Failure Index (SCHFI) to show a significant increase in self-care maintenance of those engaging in a shared medical visit intervention. Smith et al. (2015) found greater self-care compliance among SMA participants versus controls. A significantly greater percentage of patients in an SMA intervention reported they complied with monitoring daily weights 12 months after the intervention. At six and 12 months, a significantly greater number of participants in the same intervention group had reduced salt intake, increased adherence to HF medications, and greater participation in an exercise program when compared with the control (Smith et al., 2015). When patients are able to recognize and interpret symptoms by participating in their disease management, they are more likely to report exacerbation of symptoms to their healthcare provider (Al-Sutari & Ahmad, 2017; Barnason et al., 2012; Smith et al., 2015).

Education

For patients to successfully improve self-care management and maintenance, they must be provided sufficient education in a supportive environment (Yancy et al., 2013; Yehle et al., 2009). Education can be provided in a variety of settings including the standard office visit, SMAs, in-home counseling, or telephone encounters (Barnason et al., 2012). Shared medical appointment intervention groups had significantly higher comprehensive knowledge test scores when compared with standard office visits (Smith et al., 2015; Powell et al., 2010; Yehle et al., 2009).

A systematic review of 35 educational intervention studies for HF patients established that HF education can improve knowledge and self-monitoring (Boren, Wakefield, Gunlock, &

Wakefield, 2009). The majority of studies reviewed included both printed material and verbal communication by a nurse in an after-discharge education intervention (Caldwell, Peters, & Dracup, 2005; Powell et al., 2010). Most of the studies also utilized telephone care follow-up (Caldwell et al., 2005; DeWalt et al., 2006; Powell et al., 2010). Some studies used video education that followed AHA self-care guidelines (Albert, Buchsbaum, & Li, 2007; Smith et al., 2015). More recent literature supports these same findings for similar educational telephone follow-up interventions (Abbasi, Ghezeljeh, & Farahani, 2018; Al-Sutari & Ahmad, 2017; Matthew & Thukha, 2018).

Yancy et al. (2013) suggested that education can be delivered in a variety of formats by reporting that a mixed quality of evidence exists that one mode is superior to another. However, one common component of successful education interventions is the utilization of a multidisciplinary approach. Disease management programs that focus solely on self-care activities do not show as great of a reduction in all-cause hospitalization and mortality than those that utilize a multidisciplinary team (Yancy et al., 2013). Group visit interventions have been found to have greater utilization of multidisciplinary members than interventions that employ extra education provided to one individual patient at a time. Only 40% of the studies reviewed by Boren et al. (2009) used a healthcare team member other than a nurse. However, all of the SMA studies reviewed implemented a team-based approach utilizing members such as nutritionists, pharmacists, social workers, psychologists, and even an exercise physiologist (Lin et al., 2008; Paul, Yehle, Wood, Wingate, & Steg, 2013; Smith et al., 2015; Yehle et al., 2009). One of the main benefits to the SMA model is the efficiency of the appointment, for example, allowing six to eight patients to be seen in a 90-minute time frame (Paul et al., 2013; Yehle et al., 2009). The ability to educate multiple patients in a group format allows for expanded use of the

multidisciplinary team. Given the complexity of HF pathophysiology and self-care management, the team approach is extremely useful in helping patients master the treatment regimen (Caldwell et al., 2005).

Hospitalization

Due to the high healthcare costs of HF hospitalizations, decreased admission rate is one of the major incentives for effective disease management programs. Nearly all of the reviewed studies researched disease management programs using hospitalizations as an outcome measurement.

Of the studies that measured an extra education intervention, two studies showed improvement in both all-cause hospitalizations and cardiac-related hospitalizations for patients in the intervention group (DeWalt et al., 2006; Mathew & Thuka, 2018). Al-Sutari and Ahmad (2017) and Brandon et al. (2009) showed a significant decrease in HF-related hospitalizations in education intervention participants. However, despite an increase in self-care management and improvement in self-efficacy scores, some studies were unable to show a difference in hospitalizations after an education intervention (Liou et al., 2015; Reigel & Carlson, 2004; Powell et al., 2010; Sullivan et al., 2009).

A greater percentage of SMA studies showed an improvement in hospitalizations than did studies that focused on individual concepts such as education or peer support alone. Scott et al. (2004) showed that members of the Cooperative Health Care Clinic support group had fewer emergency room visits and fewer inpatient hospital stays than did the control group. Smith et al. (2015) showed a significant decrease in rehospitalization for SMA participants with a 33%

decrease one year after the intervention. Lin et al. (2008) studied the effects of a multidisciplinary group visit model and found the number of hospital admissions for any diagnosis decreased from 11 to eight and the number of HF-related admissions decreased from four to two.

Social Support

Group teaching can allow people with similar problems an opportunity to identify with each other and gain encouragement. The ability to learn and talk to other people with HF has been demonstrated by qualitative studies. Sharing similar experiences based on common phenomena among HF patients minimizes a sense of isolation. Even participants who had strong support from family and friends reported these benefits after a structured peer support program (Lockhart, Foreman, Mase, Heisler, 2015; Paul, 2013; Watts, 2009). Graven, Gordona, Keltnerb, Abbotta, Bahorskib (2018) showed a significant improvement in self-care maintenance and self-confidence and a marginal improvement in self-care management after a social support and problem-solving intervention. Although few studies which focused solely on peer support showed quantitative significance for HF self-care and hospitalizations, many SMA studies cited social support as an added benefit.

One of the main advantages of the group intervention model is the open discussion that occurs between participants with questions being answered that some patients may not have thought to ask on their own (Lin et al., 2008; Smith et al., 2015; Yehle et al., 2009). Self-care management and self-efficacy improved markedly in a multitude of SMA studies (Fivecoat, Sayer, & Reigel, 2018; Lin et al., 2008; Scott, et al, 2004; Smith et al., 2015; Yehle et al., 2009). Additionally, a common theme of SMAs was similar to the peer support studies in that patients

stated they do not feel alone in their chronic condition (Lin et al., 2008; Sullivan et al., 2009; Yehle et al., 2009). Some studies even showed an improvement in depression scores of the intervention group compared to the control group (Lin et al., 2008; Smith et al., 2015; Yehle et al., 2009) while others showed a significant improvement in coping scores (Sullivan et al., 2009). This may be directly attributed to the support participants gained from others in the group.

Studies have shown that the concept of social support is such an integral part of HF management that it is addressed in the most current HF national guidelines (Yancy et al., 2013). Although few specific interventions have been identified and successfully applied to clinical practice, it is known that disease management programs designed with social support can produce a significant improvement in outcomes (Yancy et al., 2013). Disease management programs such as SMAs should address symptom control, psychosocial distress, patient and caregiver support, and preferences about end-of-life care to be compliant with national guidelines (Yancy et al., 2013).

Theory

Bandura (1989) defined self-efficacy as people's judgments of their ability to have control over events that affect their lives. One’s self-efficacy influences the likelihood of behavior change in health promotion (Lenz & Shortidge-Baggett, 2002). The main idea of the theory is that for one to attempt a certain behavior change and persist when difficulties arise, there must be a desired outcome and the task must be achievable. Many studies that have focused on disease self-actions have used Bandura’s self-efficacy theory as a guide (Sousa & Zauszniewski, 2006). The concepts present in Bandura’s theory are observational learning, imitation, and modeling (McEwen & Wills, 2014). The major theoretical perspectives of the theory are as follows: people have influence and control over what they do; actions are made up of triadic reciprocal causation including person, behavior, and environment; determinism

indicates the production of effects by events; and beliefs of personal efficacy regulate motivation by sharpening one's aspirations and expected outcomes (Bandura, 1997). The theory directly aligns with the inquiry as both include the concepts of self-care and social support (see Appendix C for Theory to Application Diagram).

Methods

Institutional Review Board

A review of this project was conducted by the university hospital's institutional review board (IRB). This project was approved as quality improvement (Appendix D). Faculty approval of the project through the School of Nursing at the University of Missouri-Kansas City was also obtained in 2019 (Appendix E).

Ethics

Although SMAs have been shown to enhance beneficence through improved health outcomes, hindrance to patient privacy and confidentiality must be considered when conducting this appointment model. In the invitation to participate, information was provided that the patient would be participating in group discussions with multiple other patients and patients' family members. The patients were respected for their choice to either participate in the SMA or opt-out. They were also made aware that they should not feel obligated to share any information in the group that they do not wish others to know. Although it is the facilitator's goal to provide the best care to every patient in the SMA, it may not be the goal of others in the group. Similarly, healthcare professionals have a legal obligation to protect patients' autonomy, but the other group members do not. Despite whether group members agree by contract to not share personal

information discussed in the SMAs, a chance that medical information may be shared outside the group still exists, especially with the rise of social media.

Signed privacy and confidentiality statements were required by each participant which set rules that information disclosed during the meetings would not be shared with any entity outside of the appointments. No project leader conflicts were present as participants were recruited from their primary care provider (see Appendix F for the Privacy and Confidentiality Statement).

Project Cost

The projected cost to initiate the intervention was $1,727.66, with personnel being the greatest expense (see Appendix G). The current design of the family medicine clinic allows for multidisciplinary team members to be a part of the patients' primary care visit. Therefore, the initial cost of an SMA model was not seen as a barrier to this specific clinic. However, the initial cost may be seen as a barrier to the transferability of the project to standard outpatient clinics. According to Group Health Cooperative (2001), each participant can be billed under the appropriate current procedural terminology code. More data on long-term costs savings is needed to promote the transferability of the project.

Setting & Participants

The project was implemented in a family medicine clinic associated with a Midwest university hospital. The SMAs were conducted in a large conference room to accommodate participants and caregivers. The tables were moved into a small circle to provide a sense of connectedness between participants. The conference room had a large screen available to project education material. The quality project leader, which was also the group facilitator, and the physician were in the room early to greet the patients as they entered. The clinic left one exam room vacant during the time of the SMA for the physician to conduct individual assessments.

Inclusion criteria consisted of age greater than 18 years, a diagnosis of New York Heart Association (NYHA) class II-IV with preserved ejection fraction or reduced ejection fraction, a plan for reliable transportation to the appointments, able to read and write in English, and voluntary agreement to sign the privacy and confidentiality statement. Patients who did not meet all inclusion requirements were excluded from the invitation list. The sampling method for this project was a convenience sample. The expected number of participants was six to eight HF patients and their family members or caregivers.

EBP Intervention

A list of patients with a HF diagnosis was generated from the clinic's database. This list contained patients from three different providers. The quality project leader and the physician created an invitation letter for patients to attend the SMAs (Appendix H). The letters were then personally signed by each participants' respective primary care provider. The invitation letters were hand addressed and sent out one month prior to the first appointment. Two weeks prior to the intervention, the project leader and physician called each invitee to follow up on the invitation. The project leader called the patients of the two providers who were not participating in the intervention, and the physician who would be present for the assessments called her patients.

Emails were sent to staff including medical assistants and schedulers to inform them of the new appointment model. The invitation letter was provided to each scheduler so they could have basic information to answer patient questions when scheduling for the appointments. Emails were also sent to a pharmacist, the clinic's social worker, and a nutritionist to invite them to participate in the intervention.

The facilitator and physician decided on the four main topics that would be discussed during each visit. The four-week agenda included an introduction to SMAs and pathophysiology

of HF, common HF medications, social determinates of health and stress related to chronic disease, and nutrition and exercise related to HF. It was decided that time would be allotted at the first visit to allow patients to decide on specific topics and questions within each concept they would like to cover in the SMA.

On the Friday before the initial visit, the project leader called each participant to remind them of the visit and to answer any last-minute questions regarding SMAs. Visits were expected to be held every Monday in September for 90 minutes. The provider took five to ten minutes with each participant to complete individual assessments and medication management. It was arranged for half of the participants to receive their assessments prior to the appointment and half after the appointment in order to decrease waiting time. A medical assistant obtained weights and vitals prior to the start of each appointment. The remaining time focused on education and group discussion. Other team members involved were a nurse, a pharmacist, and a social worker. The project leader was present during the appointments as the facilitator to lead the education and group discussion portion. The project leader was available as a resource to the provider and other team members (see Appendices I, J, and K for details of the intervention flow). After each session, the team members of the group held a debriefing and discussed what went well and what could be improved for the next session.

Change Process Theory

The change process that guided the intervention was the Change Curve Model. This model was used as it can support the stages of transition for both the patients and the team members of the project. The Change Curve Model is used to understand both personal transition and organizational change (Kearney & Hyle, 2003). Shared medical appointments are different from the standard office visit and it is expected that both parties will go through stages of

acceptance. The four states of the Change Curve Model are status quo, disruption, exploration, and rebuilding. The four reactions that may be expected from each state are shock, anger, acceptance, and commitment, respectively (Kearney & Hyle, 2003). If patients and providers have not been introduced to the idea of SMAs in the past, the initial reaction may be shock. However, it has been documented that after having attended an SMA, patients are pleased with the benefits of getting more time with the provider as well as gaining support from peers and are likely to continue to attend (Watts et al., 2009).

The EBP model that best aligns with the initiative is the Iowa Model of EBP. The model, which was originally developed by a team of nurses in the early 1990s, has widely been used. In 2012, the model underwent revision in order to keep it aligned with current healthcare changes including national and international initiatives promoting adoption of EBP, enhanced interprofessional collaboration, widespread use of electronic data, pay for performance, and enhanced patient engagement (Buckwalter et al., 2017). All of the reasons the model went under revision are the very reasons this model aligns with the initiative.

The likelihood of sustainability of the SMAs at the family medicine clinic is high. Prior to the proposed project, the clinic had been discussing the implementation of a weight management SMA. Additionally, the clinic has been enrolled in a national study for a diabetes SMA.

Study Design

The study design for the evidence-based quality initiative was quasi-experimental with a single group, pre-post-test evaluation, using the Self-Care of Heart Failure Index (SCHFI). Self-care actions were expected to be evaluated at baseline, eight weeks, and sixteen weeks following the intervention. The sixteen-week evaluation allowed for the measurement of sustainability of

self-care actions. Hospitalizations were to be compared from five months prior to the intervention to 5 months following the intervention.

Internal and External Validity

The threats to internal validity included selection bias, maturation threat, and attrition. The non-randomization characteristic of the quasi-experimental design leads to the susceptibility to internal validity threats. The volunteer method of patient recruitment leads to considerable selection bias. In regard to SMAs, the participants are included in the intervention after they have responded to an invitation letter. Therefore, these subjects may share similar personality characteristics such as greater value for health maintenance compared with the general population. Maturation and mortality or attrition are threats to validity due to the HF chronic disease process.

Shared medical appointments have been found to be an effective appointment model for several different types of chronic diseases in several different settings (Lin et al., 2008; Yehle et al., 2009). The evidence supports the transferability of the initiative. However, the unique design of the appointment model, as well as the time and personnel required to initiate the project, can be seen as a threat to external validity. Similar management support and staff buy-in would be required for success at transferring facilities.

Primary and Secondary Outcomes

The primary outcome was an expected increase in self-care actions in adult HF patients as determined by the SCHFI. The secondary outcome was an anticipated decrease in HF-related hospitalizations.

Measurement Tool

The tool to assess the primary outcome was the SCHFI. The tool was developed and disseminated in 2004 and is a measure of health maintenance and disease management. A naturalistic decision-making process of HF self-care exists which involves the choice of behaviors for one to maintain physiologic stability as well as respond to symptoms once they occur (Riegel, Lee, Dickson, & Carlson, 2009). The SCHFI measures maintenance, management, and confidence (see Appendix L for Definition of Terms).

Three subscales are associated with the SCHFI including the self-care maintenance scale, self-care management scale, and self-care confidence scale. Reliability for each is represented by coefficient alpha 0.553, 0.597, and 0.827, respectively. The low coefficient alpha for the maintenance and management sub-scales is reportedly due to the scales addressing a wide variety of behaviors. Therefore, the internal consistency of the items is low. Predictive validity of the tool has been found to be adequate when compared with the European Heart Failure Self-Care Behavior Scale and health-related quality of life scores (Riegel et al., 2019; Riegel et al., 2009).

The tool uses a self-performance rating scale to assess maintenance and management of chronic HF. Patients were asked to complete the SCHFI prior to the first SMA. No permission is required to use the SCHFI and it is available to the public as SCHFI v7.2 (see Appendix M for the full tool).

The secondary outcome of hospitalizations was expected to be obtained from the electronic medical record. It was planned that patients would also be asked to verbally report to the team members if they had been hospitalized at an outside facility.

Quality of Data

Based on G*Power Statistical Power Analysis, 27 participants were recommended for a dependent t-test study with power 0.8, medium effect 0.5, and alpha of 0.05 (Faul, Erdfelder, Lang, & Buchner, 2007). The literature reveals that SMAs include 6-12 participants. To thoroughly assess the effectiveness of SMAs, three to five SMAs should be studied to decrease the threat to statistical conclusion validity. Two benchmark randomized control trials of HF SMAs were found in the literature. One utilized a sample size of 52 participants (Yehle, 2007) and the other had a sample size of 198 participants (Smith et al., 2015). Yehle (2007) studied the effects on behavior skills and QOL over 16 weeks and Smith et al. (2015) studied behavior skills and QOL at six and 12 months and hospitalizations over 12 months. For this project, one SMA was implemented and studied for quality improvement purposes.

Analysis Plan

Demographics of participants were collected and included age, gender, race, marital status, and NYHA class. Descriptive statistics were used for the demographics, change in self-care, and readmission comparison. A bar chart could have shown the number of hospital admissions at each data evaluation point. Data was planned to be collected at baseline, eight weeks, and sixteen weeks.

Results

Setting and Participants

Group visits were held at a family clinic associated with a Midwest university hospital. The setting included a conference room large enough to fit all of the participants and their invited family members or caregivers. Although no guideline for the timeframe of SMAs exists in the literature, it was decided that this pilot program would be 90-minute appointments, once weekly for four weeks.

Group Health Cooperative (2001) reported that between 30-50% of invited patients will agree to attend group visits. The original list of potential patients obtained from the electronic medical record was 18. This number was promising for six to eight to be agreeable to participate. However, due to one patient leaving the practice, one patient not having updated contact information, and one patient experiencing issues with the provider related to a pain contract, only 15 patients received an invitation letter. After invitation phone calls were made in August, four patients agreed to be placed on the schedule to attend the shared appointments.

Patient demographics were collected. Three patients were between the ages of 55-60, and one patient was between 60-65. Three were female and one was male. Half of the participants were African American and the other half was White. Only one participant was married, two were divorced, and one was never married. Two participants were classified by the NYHA class as class II, one participant as class III, and the final participant as class IV.

Intervention Course

Three of the four patients and one spouse attended the first appointment in September. The one patient who did not attend stated she had been in the parking garage but turned around due to anxiety. No participants attended the second visit. It was found that the schedulers did not place the participants on the schedule for each Monday in September, so the patients did not receive any reminder phone calls or texts about the appointment. Additionally, one of the patients was hospitalized due to HF during the time of the second visit.

Only one participant and their spouse attended the third visit. The other participants did not come for various reasons. One participant called and stated she would no longer be able to attend the appointments due to a new caregiving role she had undertaken. The one participant who did not attend the first visit continued to struggle with depression and anxiety and was

unable to attend any of the appointments. The final participant never answered as to why she terminated attending the group visits. A fourth visit was not held due to attrition.

Major components of the intervention included IRB submission to ensure quality improvement status, coordinating with office management, recruitment of participants, facilitating with multidisciplinary team members, completing reminder phone calls, material preparation for each session, and reflecting on project strengths and weaknesses with the team members. Institutional review board submission and approval processes were completed the year prior to the intervention. Coordinating with office management began in August. Organizing with multidisciplinary team members began in August and extended through the completion of the project. Reminder phone calls were completed by the project leader prior to the first, third, and fourth scheduled visits. Educational and discussion topic preparation was completed by the project leader prior to each scheduled visit. Project reflection occurred after each session.

Outcome Data

This project did not yield an opportunity for evaluation of outcomes due to the low number of participants. The baseline SCHFI tool was completed by the three patients who attended the first group. However, the eight and 16-week scores were not collected due to the termination of the SMAs. Hospital admission data was not collected.

Discussion

Successes

Although patient satisfaction was not specifically measured, all three patients who attended the first session reported to the physician during their assessments that they enjoyed the group format and learned from talking with one another. The one participant who could no longer attend due to a new caregiving role was very disappointed and asked if there would be

other opportunities for group visits. The one patient, who was hospitalized during the second visit but came to the first and third visits, reported increased satisfaction with care and stated enjoyment of time spent with the social worker.

Study Strengths

Administrative support was the greatest study strength found after completion of the project. The site had a large conference room that was accommodating for all participants, family members, and team members. The clinic was able to provide adequate resources cited in the literature including a physician, a social worker, a pharmacist, a medical assistant, and schedulers all already on staff. The organizational culture of the family medicine clinic also supported the adoption of a quality improvement project. Active reflection after each session of strengths as well as areas of improvement for the next session is imperative in organizational change. Office management which allowed team members to be available for the shared appointments during session times provided a positive influence on the idea of implementing quality improvement in the clinic.

The one intervention component that yielded little success was the number of patients in the sampling pool. This barrier was secondary to the setting of utilizing a family medicine clinic to target the adult heart failure population. Additionally, the socioeconomic status of the patients receiving care at the clinic indicated that financial constraints for transportation were barriers to participation.

Results Compared to Evidence in the Literature

Barriers to implementation and attendance are addressed in the literature. The greatest barrier to successful HF SMAs cited in the literature was the attrition of participants. This is in part due to the nature of the frailty of the patient population studied.

Smith et al. (2015) cited three times of disruptions during the intervention which affected the SMA agenda. Two disruptions were caused by acute symptoms of HF exacerbation in which the patients were required to be transported to the ED by the clinic staff. The last disruption was caused by a patient who experienced an emotional reaction to the struggles of living with HF. Lin et al. (2008) reported that six of the 39 patients enrolled in a study died before results were obtained on the study outcomes. Three of these patients died from complications of co-morbidities, while the remaining three passed from progressive HF (Lin et al., 2008).

Yehle (2007) reported considerable attrition, not of participation, but instead of completing and returning the measuring tools. The two reasons cited for failure to return the follow-up measurement tools were the length of the measurement tools and that the lead cardiologist left during the intervention which may have reduced the willingness of participants to complete the instruments for the study.

Paul et al. (2013) also reported attrition of three originally scheduled participants without citing exact reasons for the patients leaving the group. The author did not share how many times participants had to be in attendance at the SMA to be included in result data. Sullivan et al. (2009), however, did report that participants only had to be in attendance at one SMA to be included in the data analysis. Although this author did not suggest how many times participants were present during the eight weeks, the study does cite that nine out of the 117 participants enrolled were not included in data analysis because they decided not to attend the SMAs at all (Sullivan et al., 2009).

Although attrition secondary to acute illness and mortality in frail populations are unavoidable, the literature suggests offering compensation, snacks, or door prizes to participants to increase retention rates. Group Health Cooperative (2001) suggested offering simple, healthy

refreshments during each SMA. Yehle et al. (2009) informed participants at the beginning that they would receive $20 compensation at the completion of the study. It has also been suggested that incentives or raffle tickets can be used to promote retention for group visits, as well as ensuring that the first appointment is fun and inviting to promote an excellent first impression of SMAs (Centering Healthcare Institute, 2016).

It has been indicated that between 30 and 50% of patients invited to SMAs will be amendable to attending (Group Health Cooperative, 2001). It is evident from both this quality initiative project as well as the review of the literature that even those agreeable to attend SMAs will not necessarily be compliant with attending all or any of the group visits. Therefore, the recruitment and enrollment processes are essential in implementing successful SMAs. However, this process has also been cited to be a barrier to this appointment model.

Group Health Cooperative (2001) suggested that invitation letters are viewed most positively if they are personally signed by the specific provider the patient follows at the clinic. It has been shown that 80% of patients will be agreeable to attend if they are invited by their provider, 40% if invited by a nurse, and 20% if invited by a receptionist (Australian Society of Lifestyle Medicine [ASLM], 2016). The process of changing every name, address, and signing each letter to all eligible participants is time consuming. Additionally, most studies followed up the invitation letter with telephone calls from the nurse or staff attending the SMA (Paul et al., 2013; Smith et al., 2015; & Yehle et al., 2009). This is also a lengthy process that takes personnel resources. Smith et al. (2015) listed the enrollment process as one of the limitations of their study. The authors recognized that preparing letters, invitation calls, and reminder calls for subsequent appointments are a significant component of personnel cost that was not tabulated in their total intervention cost.

Limitations

Internal Validity Effects

Many internal validity effects existed in this project. As with all SMAs, the subjects had to voluntarily agree to participate in this type of appointment model. The patients who agree to attend this unique appointment type may be patients who have a greater worth for health maintenance than the general population. This leads to a non-representative sample for generalizability. Additionally, this project had an insufficient number of subjects available for recruitment. A larger number could have minimized the threat of attrition on outcome measurements. Attrition and mortality are major threats to internal validity when studying subjects with chronic disease processes as cited in Lin et al. (20080), Smith et al. (2015), and Yehle et al. (2009).

External Validity Effects

One major external threat to the transferability of the project was the clinical setting chosen. Although the setting of a family care clinic was unsuccessful for studying adult HF patients due to a limited number of eligible participants, a cardiology clinic may be able to sustain the model to a more successful level. However, this does not mean that this model cannot be effective in the same clinic setting for a different patient population.

Another external threat consideration for this type of appointment model is the reactive effects of team member characteristics, especially that of the facilitator. Included in patients' decision to return to the SMA is whether they felt they gained from the appointment and if they sensed a feeling of connectedness with other group members (Centering Healthcare Institute, 2016). An effective facilitator can aid in the reduction of attrition. The ASLM (2016) describes the facilitator as the driver of the intervention. The facilitator not only coordinates all the team

members including the provider, the schedulers, and the allied health professionals, but also works to ensure the patients are gaining from the experience and keeps the appointments running efficiently. The ASLM (2016) suggests the facilitator be trained in the role to deal with difficult situations that may arise. Provider buy-in, management support, team member collaboration, and facilitator experience can all be external threats to transferability (Group Health Cooperative, 2001).

Sustainability of the Effects and Plans to Maintain Effects

Although SMAs for the adult HF patient is not sustainable at the particular project site due to a limited number of eligible participants, SMAs for other chronic disease processes may prove to be maintainable. At the family medicine clinic in which the project was implemented, there has since been an ongoing diabetes SMA connected with a large national study as well as a weight management SMA which was initiated by the providers of the clinic. Unfortunately, the diabetes SMA has shown a high rate of attrition as well. The barrier was thought to be minimal provider buy-in as the project was driven by a larger national study (A. Gordee, personal communication, October 29, 2019). However, the weight management SMA was showing a higher participation rate prior to the unforeseen discontinuation of the group due to the COVID19 pandemic. Plans exist to restart this group after social distancing precautions are lifted. Given this site's managerial support, team-based approach to healthcare, and immense access to multidisciplinary team members, the likelihood of SMA sustainability is high if the right patient population is chosen and provider buy-in exists.

Efforts to Minimize the Study Limitations

Efforts were made by the project leader and the clinic to minimize the study's limitations. The first effort that was made was obtaining signatures of each patient's respective provider on their invitation letter. This complies with the recommendation that recruitment to SMAs should be personalized to enhance agreement of participation (Group Health Cooperative, 2001). An additional effort to minimize attrition was reminder phone calls prior to the scheduled appointments. Unfortunately, the patients were not placed on the schedule for the second appointment due to error in staff communication; therefore, the patients did not receive a reminder phone call for the second visit. The project leader placed phone calls to each participant prior to the first, third, and fourth visits in addition to the robocalls automatically generated by the schedule.

Despite these efforts, the limitations of the project had significant effects on the interpretation and application of findings. Project outcomes were unable to be determined based on the project's limitations of small sample size with significant attrition. Post-test tools were not distributed due to the decision to terminate the group appointments. The focus of the project then shifted to examining the barriers of implementing successful SMAs.

Interpretation

Expected and Actual Outcomes

The expected results of the quality improvement initiative were an increase in self-care actions in adult HF patients as determined by the SCHFI and a decrease in HF-related hospitalizations (Appendix O). The actual results of the project were unable to be determined due to a low number of participants. The main problem of the intervention was the setting in which the project was completed. Although the clinic chosen had excellent resources for SMA implementation, the clinic's patient population did not support the target population for the

SMA. Other possible reasons for differences between expected and observed outcomes included the inability of the clinic to provide transportation to participants. Additionally, this was a pilot program for this clinic, and advertisement for the appointment model was not disseminated. Advertisement including brochures and posters in the clinic site as well as social media announcements have been shown to be an effective way to increase patient buy-in to SMAs (Group Health Cooperative, 2001).

Intervention Effectiveness

The type of setting in which the study intervention is most likely to be effective might be a large, suburban cardiology clinic. This would give the team members an adequate group for participation. Additionally, the socioeconomic status of the surrounding location may have an effect on involvement, as finances for transportation is one major barrier for patients to agree to attend.

Intervention Revision

The major intervention modification that might improve the attainment of the outcomes would be to implement the project in a site with a greater number of eligible participants. Other intervention modifications to improve involvement would be effective advertising, greater involvement in providers during the recruitment process, transportation provided by the clinic, and higher availability for alternate appointment times. During the recruitment phone calls, many patients reported they were interested in attending but the offered weekly time did not fit their schedule. Hence, if more patients are available for participation, more appointment times can be offered for greater flexibility.

Expected and Actual Impact to Health System

The expected impact on the health system was for the provider to be able to see and bill for six to eight patients in the time frame generally associated with four individual clinic appointments. Additionally, the long-term savings for the healthcare system was for this appointment model to decrease HF-related hospitalizations. Neither of these cost savings was able to be evaluated in this project.

The expected program budget (see Appendix G) also differed from the actual program budget. A physician was used instead of a nurse practitioner which would increase the cost of the actual budget. However, for this particular project, the project leader was used as the facilitator instead of a registered nurse, which saved cost. Nevertheless, this resource would generally not be available for the transferability of the project to other clinic sites. The actual cost of the program was unable to be determined as the salaries of team members were not disclosed.

Limited data on SMA intervention cost exists. However, the potential for economic sustainability of the intervention is cited by many advocates for SMAs (ASLM, 2016; Centering Healthcare Institute, 2016; Mackey, 2009; Smith et al., 2015). This is due to the efficiency of the provider during patient visits as well as decreased emergency room and hospital use by participants in successful SMA interventions.

Conclusion

As the provider shortage continues to surge, healthcare providers will be required to adapt current practices to meet the needs of patients living with chronic disease. Application of the SMAs could potentially decrease the demands of the provider by allowing a greater number of patients to be seen in a reduced amount of time. Moreover, the unique model helps to improve patient's efficacy of self-care actions and improves patient outcomes.

Literature supports the evidence-based quality initiative and the project can be modified to influence many other chronic disease processes. Further implementation of the appointment model at this clinic exists, with a diabetes self-management group as well as a weight management group. The outcomes of both these interventions are pending.

The project proposal was disseminated at the Advanced Practice Nurses of Ozarks annual conference in the fall of 2019 via poster presentation. Additionally, the new project focus on how to overcome barriers to SMAs will be formatted in a clinical brief and submitted for publication in the Journal of Doctoral Nursing Practice in the Spring of 2020. The positive impact of the DNP project will be rewarding to healthcare providers and patients as the SMA was implemented in a clinic where residents are utilized direct care. Some of these residents may use the knowledge gained to implement successful SMAs in their future practice.

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Appendix A

Evidence Table

First author, year, title, Journal	Research Design& Evidence Level, Methods	Sample & Sampling	Measurement of Outcomes & Reliability (if reported)	Results & Analysis Used	Limitations	Barriers to implementation
Studies Specifically re: Shared Medical Appointments						
Kirsh (2017). A realist review of shared medical appointments: How, for whom, and under what circumstances do they work? BMC Health Sciences Research.	Mixed Methods: Level VI Theory driven approach to synthesize evidence by context-mechanism-outcome configuration.	71 primary research articles were retained to build SMA model.	20 were analyzed in-depth using the realist methodology	Nine mechanisms were configured.	Direct research was limited in the primary literature examining the improvements to clinical encounter. Improved health outcomes in stress reduction and increased self-efficacy.	Could not answer "for whom" question because the literature does not review patients who chose not to participate in SMAs. Authors suspect SMAs do not work for everyone or every cultural group.
Smith. (2015). Nurse-Led Multidisciplinary Heart Failure Group Clinic Appointments. Journal for Cardiovascular Nursing.	Quantitative, Level II, RCT. Pre-post intervention test design included self-management skills, symptom frequency, readmissions, knowledge, and QOL.	198 hospitalized HF patients. Pts assigned randomly to intervention or control group.	Self-Management DVDs were played for patients in a group setting. DVDs were reviewed by cardiologists, RNs, and dieticians. Material was determined to be scientifically-based and at a 5th grade reading level.	Readmissions determined by the zero-inflated Poisson regression. Significant improvement of self-care behaviors at 6 and 12 months. Knowledge scores were significantly improved for the intervention. Not for depression scores.	Total time spent with professionals could not be accurately recorded. Total intervention cost could not be found. No family members were enrolled in the program.	Variations in agenda time schedule due to management of acute symptoms of heart failure or patients' emotional state.

Paul. (2013). Implementing shared medical appointments for heart failure patients in a community cardiology practice: a pilot study. Heart and Lung.	Quantitative, quasi-experimental. Level III, one cohort. Usual clinical appointment was carried out with an additional 20-minute teaching session.	20 clinically stable HF with patients with minimal symptoms. Convenience sample.	Billing charges, cancellations, and missed appointments without cancellation for SMAs. The questionnaire was not named but tested process and flow of the appointment, the educational session, staff satisfaction with SMA, and overall approval. Likert-scale. Not tested for validity or reliability.	High satisfaction from staff and patients. Fewer cancellations in participants. No significant difference in billing. Outcomes measured by a Mann–Whitney *U* test	Limited to one site. Small sample size, over four months. Satisfaction may be biased-participants agreed to attend the SMA. Patients were contacted personally to attend which could have created bias in the appointment cancellations.	Twenty patients were scheduled, only 17 ended up participating. No participants who were involved in the SMAs called when they needed to cancel. This was significantly different from usual appointments.
Sullivan. (2009). The Support, Education, and Research in Chronic Heart Failure Study (SEARCH): A mindfulness-based psycho-educational intervention improves depression and clinical symptoms in patients with chronic heart failure. American Heart Journal.	Quantitative, Quasi Experimental, Level III. Prospective cohort study. Treatment groups were separated into cohorts based on geographical location and met weekly for eight weeks to learn meditation, coping skills, and have a supportive group discussion.	100 participants were assigned to usual care. 108 participants were assigned to the intervention. 13 cohorts completed the education (an average of eight participants per cohort).	CES-D 10-item questionnaire scale measured symptoms of depression. The Cronbach reliability statistic for the is .90. The POMS, a 65-item instrument measuring 6 mood states was utilized. Validity tested. The KCCQ, a 23-item disease-specific health status measure for HF patients. Cronbach coefficient is .95 for the summary score, high validity and sensitivity.	Repeated-measures analysis using mixed models. Depression decrease was statistically significant for the treatment group at 3 and 6 months. The POMS scores not found to have a significant impact after the intervention. KCCQ score showed a statistically significant difference at 12 months.	Geographic control group. Possible bias in medical treatment.	117 participants were enrolled, 9 participants were not analyzed in results because they decided not to attend. Participants only had to attend one session to be included in the results. The intervention went for eight weeks—study does not address participation

						through the eight weeks.
Watts (2009). Nurse practitioner-led multidisciplinary teams to improve chronic illness care: The unique strengths of nurse practitioners applied to shared medical appointments/group visits. Journal of the American Association of Nurse Practitioners.	Qualitative, Non-Experimental. Level VI. Formative evaluation, case analysis. Evaluation of six structural parts of the chronic care model (CCM) by interviewing staff and participants in SMAs.	The authors did not specify a specific number of people interviewed, but got interviews from three different SMA groups for three different chronic diseases. Convenience Sample	CCM elements and roles for the NP within the SMA. Credibility was not addressed.	NPs have multiple roles in development, implementation, and sustainability of SMAs as QI interventions. NPs in these studies had the highest role in self-management, decision support, and delivery system design	Only described the role of NPs in SMA setting. Major limitation is lack of reporting of study methods to determine if trustworthy results.	Qualitative study. No numerical outcome analysis.
Yehle. (2009). The effect of shared medical visits on knowledge and self-care in patients with heart failure: a pilot study. Heart and Lung: The Journal of Acute and Critical Care.	Quantitative, Experimental, Level II RCT. HFKT and SCHFI were completed at baseline and 8 weeks.	52 adults with HF diagnosis. Nonprobability convenience sampling and random assignment to groups.	HFKT and SCHFI. The SCHFI was found to have construct validity and be reliable on 3 individual subscales. Coefficient alpha .76 The HFKT was found to have reliability of .70 by the researcher.	HFKT improved more for the intervention group. No difference in SCHFI. *T* tests for continuous variables, and chi-square and Fisher exact tests to compare group differences in nominal data.	Small sample size. Attrition of study participants (non-compliance with returning questionnaires).	Lead cardiologist left practice which extended recruitment time to 20 months. Patient scheduling constraints did not allow the same participants to be in the same groups throughout the intervention.

Lin (2008). A Pilot Study: Reports of Benefits from a 6-Month, Multidisciplinary, Shared Medical Appointment Approach for Heart Failure Patients. Military Medicine.	Quantitative, quasi-experimental, Level III. One group pre/post-test design. QOL and HF related hospitalizations before and after a SMA program.	39 HF patients with NYHA class III or IV Cohort sample. Consecutive sampling was used—all participants in the clinic agreed to the SMA model.	Heart Failure Clinic Satisfaction Survey, including the LVDQ, the Self-Care Management Index, the Beck Depression Inventory, and the Health Partnership Scale Authors did not address reliability.	Admissions for any cause decreased from 1 1 to 8, number of HF admissions decreased from 4 to2 LVDQ showed statistically significant improvements in HF symptoms. Depression improved. McNemar's test was used for statistical analysis	Sample size may not be large enough. Patients being referred by the certain cardiology group and obtaining care from the certain hospital may not be representative of population.	Attrition due to mortality- six patients died after enrollment.
Yehle (2007). A comparison of standard office visits and shared medical appointments in adults with heart failure. ProQuest Dissertations & Theses Global: The Sciences and Engineering Collection.	Quantitative, Level II, RCT. Compare a semi-structured group education and support intervention in primary care with standard care relative to perceived health-related QOL, self-care, and patient knowledge.	24 patients in the treatment group and 28 patients in the control group. Non-probability convenience sample.	HFKT, CHQ-SAI, and SCHFI. The HFKT was tested for content validity. The SCHFI instrument reliability with an alpha of .76. Reliability of the CHQ was not addressed.	Although the intervention group showed improvement in the HFKT and some subscales in the CHQ-SAI when compared with the control group, the study did not find any statistical differences. Repeated measures ANOVA was used for analyses.	Low number of times the intervention was conducted. Small sample size. Use of convenience sampling. Lack of generalizability to other populations. Potential staff bias.	Attrition due to illness and frailty of chronic HF patients. Only a total of 18 participants (9 intervention/9 control) completed all three measurement tools. Lead cardiologist and biggest supporter of the intervention left the practice during the recruitment process.
Scott (2004). Effectiven	Quantitative. Level II, RCT. Participants in	294 adults (145 intervention and	Functional activities were measured by	CHCCs increased self-efficacy; improved	Subsample of patients from a	459 meetings were held in over two

ess of a Group Outpatient Visit Model for Chronically Ill Older Health Maintenance Organization Members: A 2-Year Randomized Trial of the Cooperative Health Care Clinic. Journal of the American Geriatrics Society.	the intervention group met in groups with their healthcare provider and a nurse every month for 90 minutes. Outcomes were compared with patients who received usual care.	149 usual care), aged 60 and older. Convenience sample with randomization to the intervention or control group.	unidimensional scales (basic, household, and advanced ADLs). Patient satisfaction survey. Scales measured self-efficacy to perform self-management behaviors. Cost data and utilization were collected through administrative databases. The authors did not mention reliability of any tools used.	communication between participants and providers; improved QOL; fewer health plan terminations and switching to non-study providers; and lower ER and hospital utilization. No significant changes in function or health status. ANOVA and GENMOD procedures used for analysis.	larger group created potential loss of adequate power. Generalizability is limited to the population studied (prefrail senior patients). Self-efficacy data was not collected at baseline.	years. Patients attended a mean of 10.6 group meetings. 25.5% of participants attended two or fewer meetings citing reasons such as co-morbidities.
Slyer (2019). The effectiveness of group visits for patients with heart failure on knowledge, quality of life, self-care, and readmissions: a systematic review protocol. JBI Library of Systematic Reviews.	Systematic Review. Level I. Two reviewers assessed papers for methodological validity.	Two articles were appraised and included in the review. An initial total of 121 citations were found.	Joanna Briggs Institute Meta-Analysis if Statistics Assessments and Review Instrument was utilized to standardize reviewal process.	One study showed short-term improvement in HF knowledge and a trend toward improvement in self-care behaviors. The other demonstrated improvements in self-care behaviors and depression with reduction in hospitalizations.	Search limited to English language. Heterogeneity limits the generalizability of the findings of the two small pilot studies.	The two studies had different structure, length/frequency, content and group dynamics. This makes it impossible to determine if specific components of the intervention make it successful.
VA Office of Research and Development	Expected study completion March 2020.					

(2020). Group Medical Visits in Heart Failure (MEDIC-HF). ClinicalTrials.gov						
Self-Care						
Al-Sutari (2017). Effect of educational program on self-care behaviors and health outcome among patients with heart failure: an experimental study	Quasi-Experimental. Level III.	144 participants randomized to intervention group and the control group.	Individual HF education with follow up phone calls and self-care manual. Intervention group received individualized education, self-care manual, and weekly phone calls.	Significant difference in the self-care maintenance, self-care management, and the frequency of ED visits in intervention group.	Limited follow-up existed to determine if self-care behaviors or improvements in patient related factors were sustained.	
Liou (2015). Effect of educational program on self-care behaviors and health outcome among patients with heart failure: an experimental study. International Journal of Evidence-Based Healthcare	Quasi-Experimental. Level III. A two-group pre- and post-test design was implemented.	131 participants. Pre/post tests to measure pt knowledge, NYHA functional class, and hospital admissions.	Multiple choice and true/false questions were used to assess knowledge. No reliability reported. The SCHFI to assess self-care. Cronbach $\alpha = 0.87$ for self-care maintenance, Cronbach $\alpha = 0.86$ for self-care management, and Cronbach $\alpha = 0.90$ for self-care confidence.	Significantly higher mean score in knowledge. Self-care maintenance, self-care management, and self-care confidence significantly improved after the self-care program. The NYHA functional class showed significant improvement after hospital discharge. No significant difference in hospital readmission or mortality rate between the two groups. Demographic outcome	Participants were recruited from one medical center hospital and included a high number of females—limited generalizability. Potential bias d/t unblinded nature. Did not examine the associations between QOL and self-care.	

				data were analyzed by independent t test or $\chi 2$ test. Paired t test was used to compare differential knowledge about the HF questionnaire.		
Yancy (2013) ACCF/AHA Guideline for the Management of Heart Failure. American Heart Association Journals.	Evidence-based clinical practice guidelines based on systematic reviews of RCTs, Level I.	Reference list includes 942 studies.	Reviewed by 2 reviewers--ACCF and the AHA, as well as 1 to 2 reviewers each from the American Academy of Family Physicians, American College of Chest Physicians, Heart Rhythm Society, and International Society for Heart and Lung Transplantation. 32 individual content reviewers also participated in review.	These guidelines attempt to define practices that meet the needs of most patients in most situations.	N/A	
Barnason (2012). An integrative review of interventions promoting self-care of patients with heart failure. Journal of Clinical Nursing.	Integrative Review. Level VII. A search of MEDLINE, PsychINFO, CINAHL databases using 14 search terms for a period from 2000–2010 to examine the effectiveness of	244 references found, 19 included in the review. Inclusion criteria: nonpharmacological intervention to improve self-care, both control and	Measures of self-care and patient-related factors impacting self-care. Efficacy for improving self-care. Efficacy for improving patient-related factors for self-care. Efficacy for other outcomes.	Interventions using counselling and peer-support improved confidence of patients with HF. Self-care and other patient-related factors were also improved by supplementing standard HF patient education.	Focus was on intervention studies promoting HF self-care. Limited follow-up was present to determine if self-care behaviors or patient related factors were sustained over time.	

	interventions to improve HF self-care.	treatment groups received HF education, English language, published from 2000–2010 and measurement of self-care.				
Caldwell (2005). A simplified education program improves knowledge, self-care behavior, and disease severity in heart failure patients in rural settings. American Heart Journal.	RCT. Level II. Intervention group received a simple education package with a follow-up phone call by a non-cardiac-trained nurse focusing on symptom management.	36 rural HF patients; 16 patients in the control group and 20 in intervention.	Knowledge assessed with written questionnaire with internal consistency of 0.83 and previous predictive validity. Self-care measured with abbreviated European Heart Failure Self-Care Behavior Scale; Cronbach α was established at .81. HF severity was measured with BNP using a triage device. This device has been shown to have high sensitivity and specificity in multiple studies.	Fisher exact test and t tests using SPSS. No differences between groups in knowledge, self-care behaviors and BNP at baseline. Knowledge and self-care behavior including daily weights improved significantly at 3 months in the intervention group. Changes in mean BNP at 3 months were improved but not significant.	Sample size was small and homogeneous. Rural participants, limits generalizability. Study was short in duration.	
Scottish Intercollegiate Guidelines Network. Management of chronic heart failure. A national clinical guideline.	Guidelines were based on SRs. RCTs, diagnostic, and appropriate observational studies from databases:AMED, MEDLINE, EMBASE,	Relevant literature identified included 19 guidelines, 10 HTAs, 3 Cochrane reviews and 19 other high-	Method for Evaluating Research and Guideline Evidence MERGE was used for validity. At least two group members independently reviewed the studies.	The guidelines will help assist in care for patients with HF regarding modifications in lifestyle, pharmacologic and interventional treatments, discharge planning, and palliative care.	N/A	

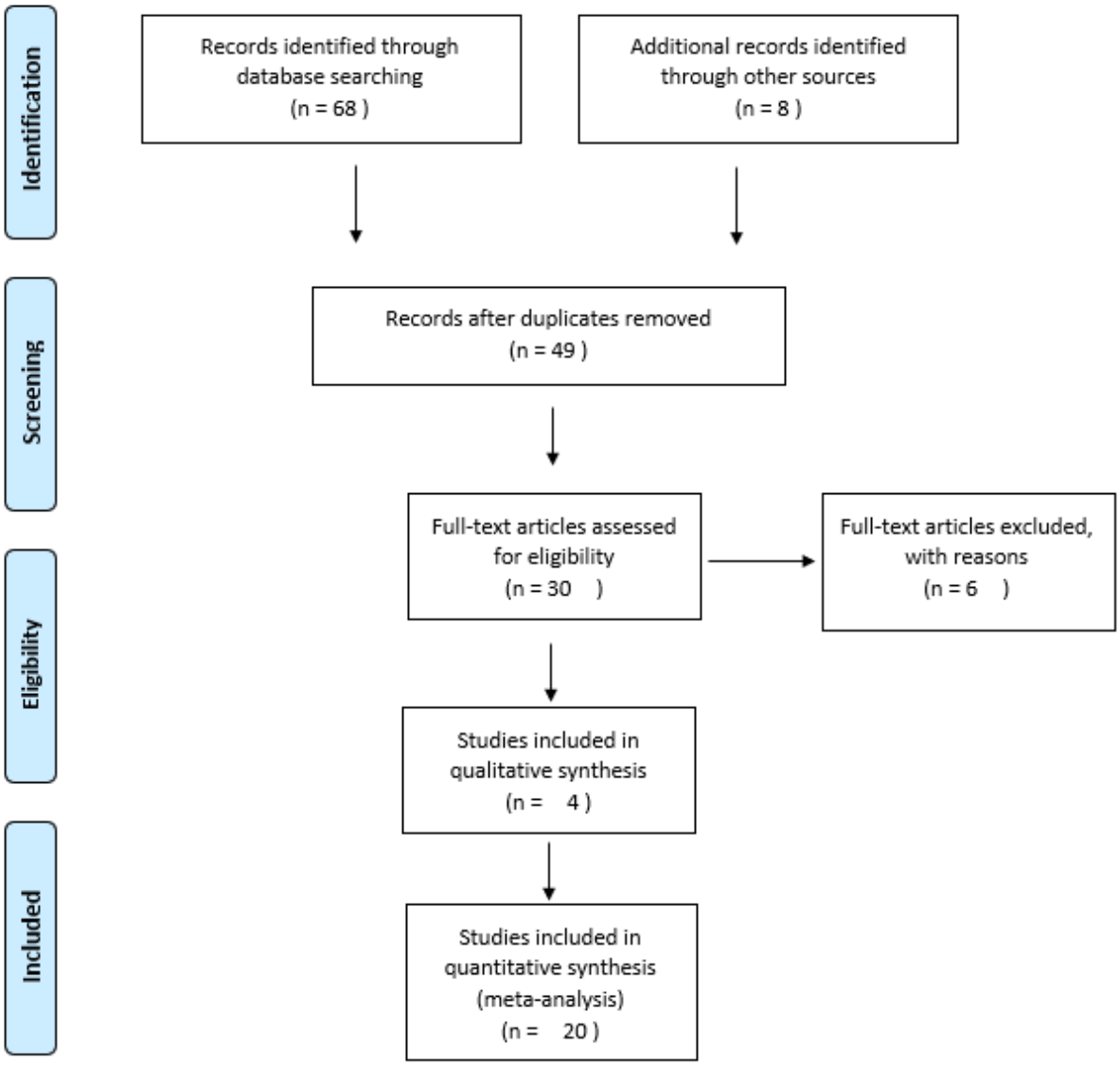
	CINAHL, PsychINFO, and Cochrane library.	quality systematic reviews.				
Education						
Abbasi (2018). Effect of the self-management education program on the quality of life in people with chronic heart failure: a randomized controlled trial. Electronic Physician.	RCT. Level II. The control group received the routine education presented to participants at discharge. The intervention group received the self-management education program consisting of three sessions followed for a 3-month period.	60 people with CHF. Convenience sampling.	Iranian heart failure QOL questionnaire Cronbach's alpha coefficient, which was 0.922. Content validity was confirmed by an expert panel.	A statistically significant difference in QOL including symptoms, social interference, psychological condition, and self-efficacy and knowledge. Independent-samples and paired-samples t-tests, Chi-square and Fisher exact tests were used for data analysis via the SPSS.	Depression and social support were not investigated. Small sample size.	
Powell (2010). Self-management Counseling in Patients With Heart Failure The Heart Failure Adherence and Retention Randomized Behavioral Trial. JAMA.	RCT. Level II. Partially blinded behavioral efficacy randomized controlled trial. Randomized in either an education group or a self-management skills group.	902 patients with mild to moderate heart failure and reduced or preserved systolic function.	The Self-Efficacy at Self-Management Scale, developed specifically for HART. Multiple tools used for both QOL and psychosocial function.	There were no significant differences on any secondary end points, including death, heart failure hospitalization, all-cause hospitalization, or quality of life X2 tests for categorical variables. Continuous variables compared using t tests, skewed distributions used Wilcoxon rank-sum test.	Education control more active treatment than expected. Assumption that self-management counseling would produce a 25% reduction in the primary end point was too optimistic. A type II error attributable to small sample size.	
Boren (2009). Heart failure self-	Systematic Review of RCTs. Level I.	A total of 7413 patients		Sixty (53%) of the outcomes showed		

management education: A systematic review of the evidence. International Journal of Evidence-Based Healthcare	MEDLINE, CINAHL and the Cochrane Central Register of Controlled Trials, as well as reference lists of included studies and relevant reviews, were searched.	participated in the 35 eligible congestive heart failure self-management education studies.		significant improvement in at least one study. The education topic list developed in this review can be used by patients and clinicians to prioritize and personalize education.		
Hospitalizations						
Heisler (2013). A Randomized Controlled Effectiveness Trial of Reciprocal Peer Support in Heart Failure. Circulation Heart Failure.	RCT. Level II. Following randomization, intervention subjects were placed in pairs to talk with weekly in addition to nurse-led support group.	259 subjects. 124 participants in the RPS (peer support). 135 participants in NCM. Randomized with web-based application with a random number generator.	The primary outcomes were time to death or first re-hospitalization regardless of cause death within 365 days of randomization. Minnesota Living with Heart Failure Questionnaire and in HF-specific social support, using a validated Diabetes social support scale adapted to reference HF.	The RPS and NCM groups did not differ in time to first all-cause rehospitalization or death or in mean numbers of rehospitalizations or deaths. There were no differences in improvements in 6-month measures of HF-specific quality of life or social support.	Carried out at one community hospital health system- limited generalizability. There is evidence that more similar peers are more likely to have mutually supportive peer relationships.	
Social Support						
Fivecoat (2018). Social support predicts self-care confidence in patients with heart failure. Sage Journals.	Observational study. Cohort Level IV. Secondary analysis of data from a larger study examining cognitive impairment and sleep dysfunction in heart failure patients.	n = 280 Using data from an observational study, examined the role of three types of support – instrumental support, emotional support and	Social support was measured using the Multidimensional Scale of Perceived Social Support. Self-Care of Heart Failure Index (SCHFI) to measure self-care outcomes. New	Instrumental and emotional support predicted better self-care confidence on average and that self-care confidence improved at a faster rate for those with less instrumental support. Emotional support was positively associated with self-care management	As this study did not involve any particular intervention or experimental manipulation, the design is inherently correlational and causality cannot be inferred. The	

		assistance with self-care – in the longitudinal course of self-care maintenance, management and confidence.	York Heart Association (NYHA) functional class	and self-care confidence, and assistance with self-care was positively associated with self-care maintenance.	measures administered were not specifically designed for the purpose of testing associations between social support and self-care.	
Lockhart (2015). Heart failure patients' experiences of a self-management peer support program: a qualitative study. Elsevier.	Qualitative Study. Level VI. Qualitative semi-structured interviews	Purposive sample of 28 patients. Taken from the trial with first author Heisler.	N/A	Key themes that emerged included the importance of heart failure specific-social support, sharing information, comparing self to others, depression, and functional status.	Participants who engaged in the program were also more likely to engage in the qualitative interviews. There is some evidence that more similar peers are more likely to have mutually supportive peer relationships.	

Appendix B

PRIMSA Flow Diagram



From Moher D, Liberati A, Tetzlaff J, Althman DG, The PRIMSA Group (2009). *Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRIMSA Statement. PLos Med 6(7):e1000097. Doi:101371/journal.pmed100097*

Appendix C

Theory to Application Model

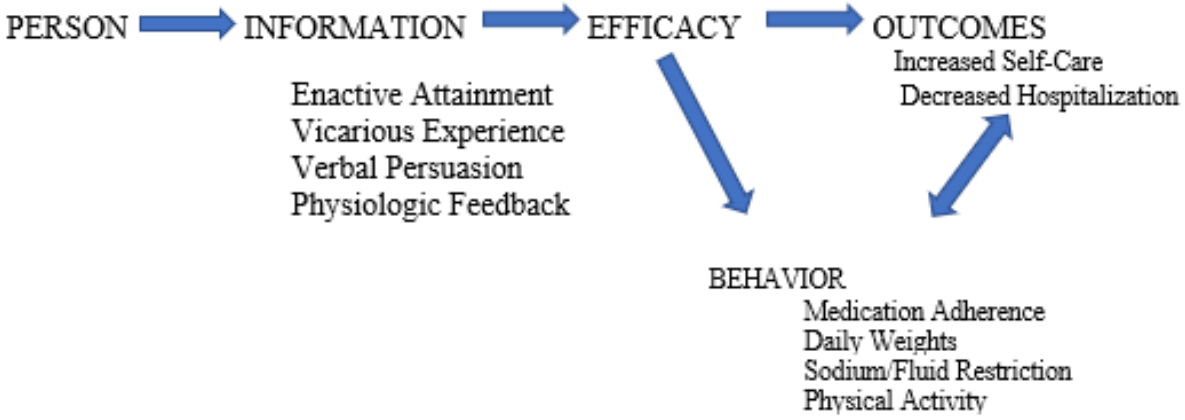


Figure 1: Self-Efficacy Model related to HF inquiry

Appendix D

IRB Approval Letter

Thank you for submitting your Quality Improvement Determination request.

The [redacted] Human Research Protection Program (HRPP) has conducted a review of the above referenced project. The request meets the criteria for QI project and is approved. In the attachment please find the signed approval.

Any presentation or publication resulting from this project should explicitly state that it was undertaken as quality improvement.

At this time, IRB review is not required. If a quality improvement protocol is revised to undertake a systematic investigation designed to answer a research question or produce knowledge that would be generalizable beyond the local setting, the HRPP will reevaluate your project's regulatory status.

More information about distinguishing quality improvement from research is available on the OHRP website at: http://www.hhs.gov/ohrp/policy/faq/quality-improvement-activities/index.html
Best of luck and continued success in this worthwhile endeavor.

FOR OFFICE USE ONLY

Quality Improvement Determination Acknowledged. IRB review is not required.

Sr. Compliance Specialist
HRPP Official

Signature

7.30.19
Date

Appendix E

Faculty DNP Project Approval Letter

UMKC School of Nursing and Health Studies

July 17, 2019

DNP Project Proposal Approval
UMKC DNP Student

This letter serves to provide documentation regarding Paige Harvey's Doctor of Nursing Practice (DNP) project proposal. Ms. Harvey obtained approval for her proposal, *Shared Medical Appointments to Improve Self-Care Actions in the Adult Heart Failure Patient,* from the School of Nursing and Health Studies DNP faculty on July 17, 2019.

If we can provide further information, please feel free to contact us.

Sincerely,

Cheri Barber, DNP, RN, PPCNP-BC, FAANP
Clinical Assistant Professor
DNP Program Director
UMKC School of Nursing and Health Studies
barberch@umkc.edu

Lyla Lindholm, DNP, ACNS-BC
UMKC MSN-DNP Program Coordinator
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Appendix F

Privacy and Confidentiality Statement

Privacy of health information is of utmost important at the Interprofessional Teaching Clinic at the University of Kansas Health System and is mandated by law. Privacy and confidentiality are natural concerns shared by everyone who decides to participate in a shared medical visit. Every participant has the right to expect what they say during the visit to remain private.

The confidentiality privilege of the patient-physician relationship will change when discussing health information in a group setting. All participants, including family members or support persons, must agree to respect the privacy and confidentiality of all participants.

By signing this statement, you agree to:

- Respect and protect the privacy of others participating in the shared medical appointment
- NOT share any personal, medical, or social information of any participant to any party outside this group

In addition, by signing this statement, you understand:

- It is possible that information used or disclosed in a group visit may be redisclosed by other group visit participants.
- The risks of potential disclosure, and voluntarily wish to participate in the group visits.

Print Name:_____ Date:_____

Participant Signature_____

Appendix G

Program Budget

Expenses	
Personnel	
Physician (10 productive work hours)	10hrs @ 101.82/hr=$516.80
Registered Nurse (10 hrs)	10hrs @ 35.36/hr=$353.60
Medical Assistant (4hr)	4hrs @ 15.01/hr=$60.04
Pharmacist (3 total hours)	3hrs @ 56.96/hr=$170.88
Nutritionist (3 total hours)	3hrs @ 27.62/hr=$82.86
Social Worker (6 total hours)	6hrs @ 28.08/hr=$168.48
Non-Personnel	
HF educational material	$50
Recruiting materials	$25
Technology Expenses	$300
Total	**$1,727.66**

Salaries cited from the Bureau of Labor Statistics

Appendix H

Shared Medical Appointment Invitation Letter

Date

Dear *patient name,*

The Interprofessional Teaching Clinic is excited to offer a new approach to managing heart failure. We would like to invite you to attend a new group visit program. The group visit, also known as a shared medical appointment, will give you extended time with a healthcare provider, other medical professionals, as well as other patients who have also been diagnosed with heart failure. The goal of the program is to give you tools to manage and improve heart failure symptoms to decrease the risk of hospitalization as well as improve your quality of life.

Most of the time, office visits are scheduled when an illness or a specific problem is present. The purpose of the shared medical appointment is to provide you with more time for questions and concerns regarding your health maintenance in a relaxed and supportive setting. The time limits of a traditional individual office visit limit the amount of time you are able to talk about improving your health. This appointment is not a counselling session or support group. It is a new way to treat heart failure in which may increase your understanding of heart failure as well as well as help you grow in your active role for health maintenance.

The group visit will take place on *day and date* from *time* to *time*. Please arrive 15 minutes before the start of the shared medical appointment to check in. Your regular co-pay will be collected as you will be receiving an individualized assessment as well as any needed medication management or refills. Please feel free to bring an adult family member or other support person with you. We hope they will find the discussions just as helpful as you will. It is a pleasure to recommend this new program to you. Please call *phone number* if you have any questions.

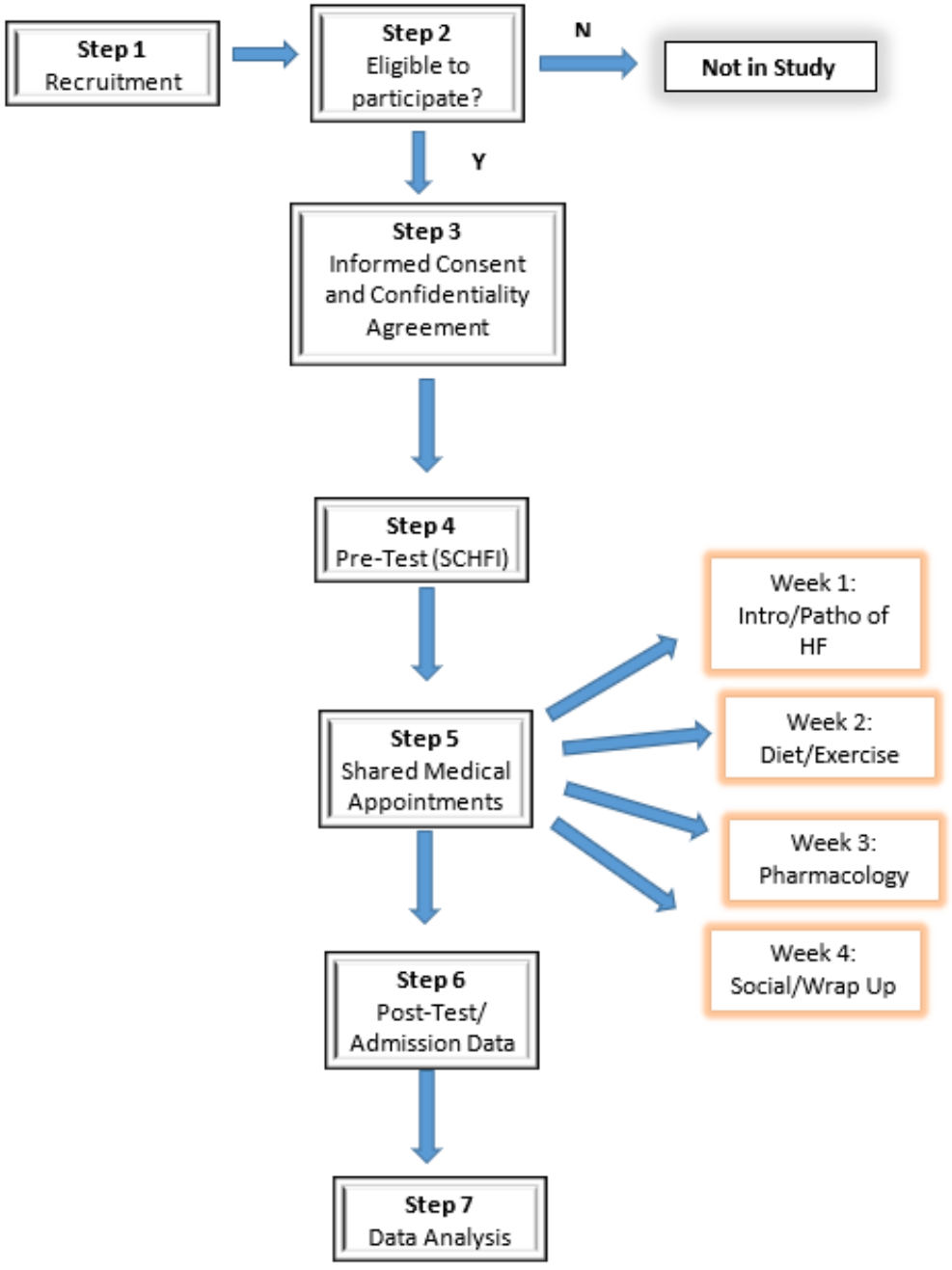
Sincerely,

Provider's Signature

Provider's Name

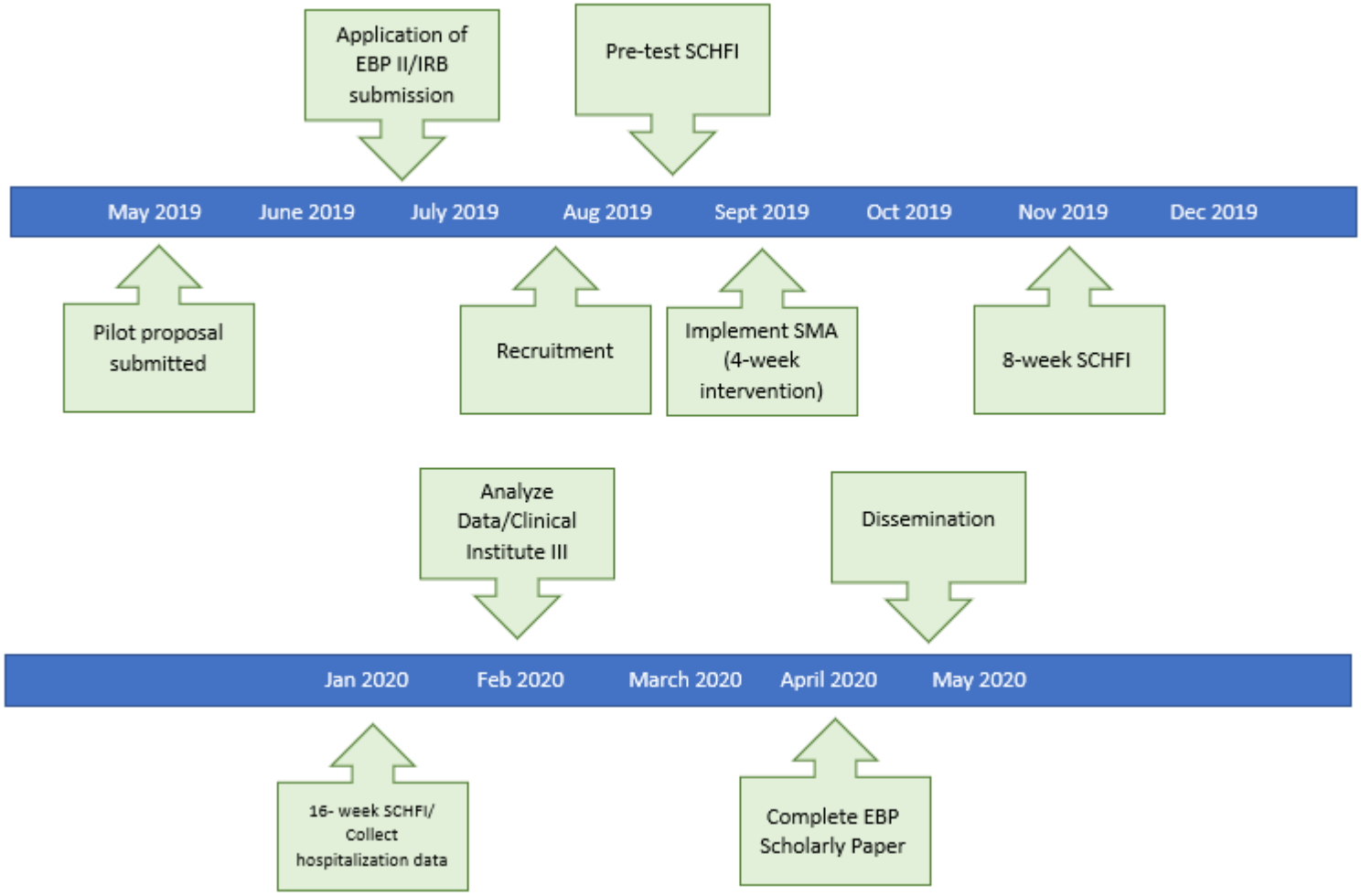
Appendix I

Intervention Flow Diagram



Appendix J

Project Timeline Flow Graphic



EBP-Evidence-Based Practice; IRB- Institutional Review Board; SMA- Shared Medical Appointment; SCHFI- Self-care of Heart Failure Index

Appendix K

Logic Model for DNP Project

Student: Paige Harvey

Inquiry, PICOTS: In adult heart failure patients, will shared medical appointments in the Interprofessional Teaching Clinic at Kansas University Medical Center compared to standard individual office visits improve self-care behaviors and reduce heart failure readmissions over a five-month period of time?

Inputs	Intervention(s) *Activities*	Outputs *Participation*	Outcomes -- Impact *Short*	*Medium*	*Long*
Evidence themes **1.**Self-care **2**. Education **3**. Hospitalization **4.** Social Support **Major Facilitators or Contributors** **1.** Interprofessional Teaching Clinic **2.** Support from management **3.** Access to paid multidisciplinary team **Major Barriers or Challenges** **1.** Buy-in from personnel **2.** Provider knowledge of SMAs **3.** Efficiency of appointments **4.** Willing participants	**EBP intervention** Four, weekly, 90-minute SMAs. Multidisciplinary team including healthcare provider, pharmacist, nutritionist, and social worker. **Major steps of the intervention** **1.** Recruitment **2.** Informed Consent and Confidentiality Agreement **3.** Pre-test **4.** Four Shared Medical Appointments **5.** Post-test, hospitalization data collection **6**. Data analysis	**The participants** 6-8 HF patients and their families/caregivers. **Site** Interprofessional Teaching Clinic at Kansas University Medical Center **Time Frame** Intervention starting in September 2019. Data collection 5 months following. **Consent** Informed Consent and Confidentiality Agreement required **Other persons collecting data** Yes **Others directly involved in consent or data collection** Yes	**Outcomes to be measured** *Primary:* Increase in self-care actions *Secondary*: Decrease in HF-related hospitalizations **Measurement tool** 1. Self-care of Heart Failure Index 2. EMAR for hospitalization data **Statistical analysis** **1.** Dependent t-test **2.** RANOVA	**Outcomes to be measured** Sustainability of self-care actions. Self-Care of Heart Failure Index measured 5 months post-intervention.	**Outcomes that are potentials** Effect on patient and provider satisfaction. Financial benefits compared with standard office visits.

Rev. 7/09, 1/2015 http://www.uwex.edu/ces/lmcourse/interface/coop_M1_Overview.htm Logic-Model Worksheet content revisions by Lyla Lindholm for DNP Project. Not to be placed on web for public use. For UMKC DNP coursework only.

Appendix L

Definition of Terms

Self-care maintenance: a naturalistic decision-making process involving the choice of behaviors that maintain physiologic stability (Riegel, Lee, Dickson, & Carlson, 2009).

Self-care management: the patient's decision to respond to symptoms when they occur (Riegel et al., 2009).

Shared Medical Appointments: outpatient office visits conducted in a group setting designed to provide personal and interprofessional team care, support, and education on a particular health problem (Kirsh et al., 2017; Mackey, 2009).

Appendix M

SELF-CARE OF HEART FAILURE INDEX

All answers are confidential.

Think about how you have been feeling in the last month as you complete this survey.

SECTION A:

Listed below are behaviors that people with heart failure use to help themselves. How often or routinely do you do the following?

	Never		Sometimes		Always
1. Try to avoid getting sick (e.g., wash your hands)?	1	2	3	4	5
2. Get some exercise (e.g., take a brisk walk, use the stairs)?	1	2	3	4	5
3. Eat a low salt diet?	1	2	3	4	5
4. See your health care provider for routine health care?	1	2	3	4	5
5. Take prescribed medicines without missing a dose?	1	2	3	4	5
6. Order low salt items when eating out?	1	2	3	4	5
7. Make sure to get a flu shot annually?	1	2	3	4	5
8. Ask for low salt foods when visiting family and friends?	1	2	3	4	5
9. Use a system or method to help you remember to take your medicines?	1	2	3	4	5
10. Ask your healthcare provider about your medicines?	1	2	3	4	5

SECTION B:

Listed below are changes that people with heart failure commonly monitor. How often do you do the following?

	Never		Sometimes		Always
11. Monitor your weight daily?	1	2	3	4	5
12. Pay attention to changes in how you feel?	1	2	3	4	5
13. Look for medication side-effects?	1	2	3	4	5
14. Notice whether you tire more than usual doing normal activities?	1	2	3	4	5
15. Ask your healthcare provider how you're doing?	1	2	3	4	5
16. Monitor closely for symptoms?	1	2	3	4	5
17. Check your ankles for swelling?	1	2	3	4	5
18. Check for shortness of breath with activity such as bathing and dressing?	1	2	3	4	5
19. Keep a record of symptoms?	1	2	3	4	5

The last time you had symptoms…

(circle **one** number)

	Have not had symptoms	I did not recognize the symptom	Not Quickly		Somewhat Quickly		Very Quickly
20. How quickly did you recognize that you had symptoms?	N/A	0	1	2	3	4	5
21. How quickly did you know that the symptom was due to heart failure?	N/A	0	1	2	3	4	5

SECTION C:

Listed below are behaviors that people with heart failure use to control their symptoms. **When you have symptoms, how likely are you to use one of these?**

(circle **one** number for each treatment)

	Not Likely		**Somewhat Likely**		**Very Likely**
22. Further limit the salt you eat that day?	1	2	3	4	5
23. Reduce your fluid intake?	1	2	3	4	5
24. Take a medicine?	1	2	3	4	5
25. Call your healthcare provider for guidance?	1	2	3	4	5
26. Ask a family member or friend for advice?	1	2	3	4	5
27. Try to figure out why you have symptoms?	1	2	3	4	5
28. Limit your activity until you feel better?	1	2	3	4	5

Think of a treatment you used the last time you had symptoms… (circle **one** number)

	I did not do anything		**Not Sure**		**Somewhat Sure**		**Very Sure**
29. Did the treatment you used make you feel better?	0	1	2	3	4	5	

SECTION D:

In general, how confident are you that you can:

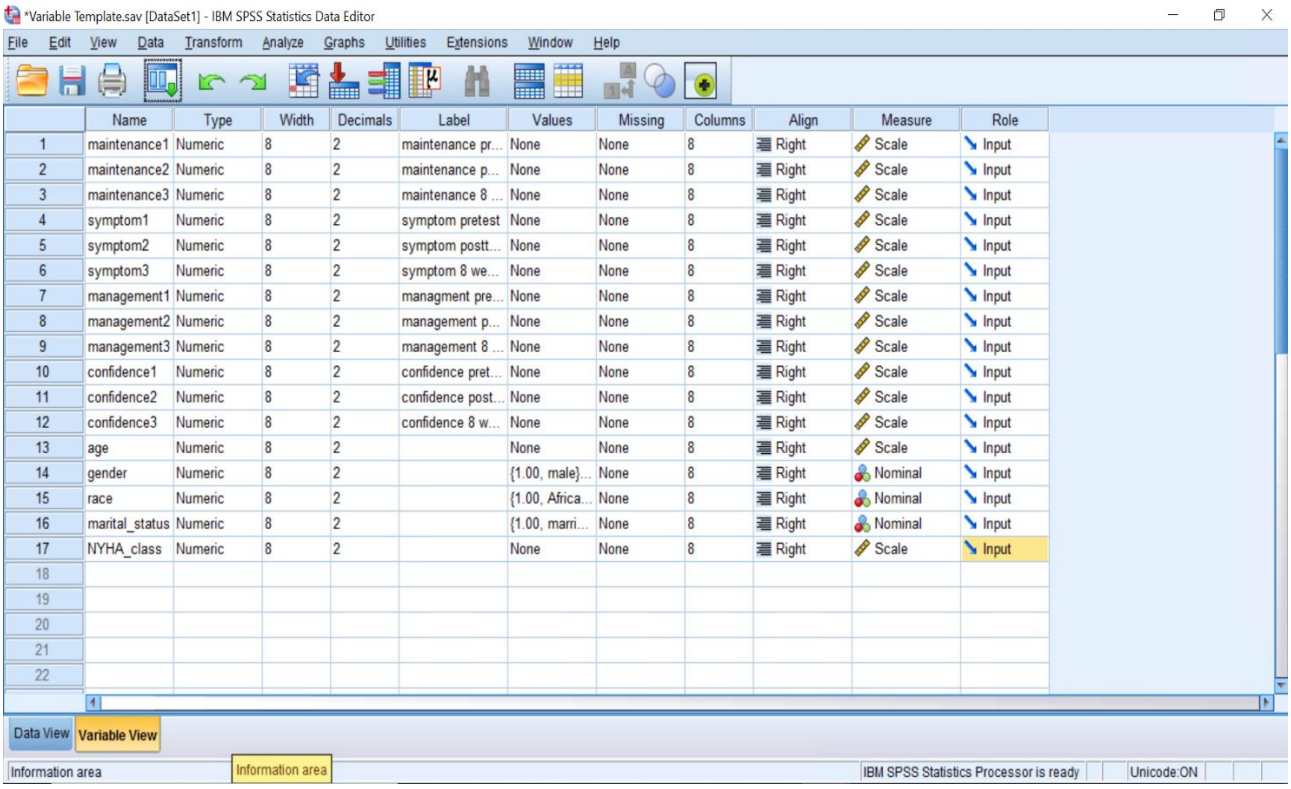
(Circle **one** number for each statement)

	Not Confident		**Somewhat Confident**		**Extreme Confide**
30. Keep yourself stable and free of symptoms?	1	2	3	4	5
31. Follow the treatment plan you have been given?	1	2	3	4	5
32. Persist in following the treatment plan even when difficult?	1	2	3	4	5
33. Monitor your condition routinely?	1	2	3	4	5
34. Persist in routinely monitoring your condition even when difficult?	1	2	3	4	5
35. Recognize changes in your health if they occur?	1	2	3	4	5
36. Evaluate the importance of your symptoms?	1	2	3	4	5
37. Do something to relieve your symptoms?	1	2	3	4	5
38. Persist in finding a remedy for your symptoms even when difficult?	1	2	3	4	5
39. Evaluate how well a remedy works?	1	2	3	4	5

THANK YOU FOR COMPLETING THIS SURVEY!

Appendix N

SPSS Variable Data Entry



	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	maintenance1	Numeric	8	2	maintenance pr...	None	None	8	Right	Scale	Input
2	maintenance2	Numeric	8	2	maintenance p...	None	None	8	Right	Scale	Input
3	maintenance3	Numeric	8	2	maintenance 8 ...	None	None	8	Right	Scale	Input
4	symptom1	Numeric	8	2	symptom pretest	None	None	8	Right	Scale	Input
5	symptom2	Numeric	8	2	symptom postt...	None	None	8	Right	Scale	Input
6	symptom3	Numeric	8	2	symptom 8 we...	None	None	8	Right	Scale	Input
7	management1	Numeric	8	2	managment pre...	None	None	8	Right	Scale	Input
8	management2	Numeric	8	2	management p...	None	None	8	Right	Scale	Input
9	management3	Numeric	8	2	management 8 ...	None	None	8	Right	Scale	Input
10	confidence1	Numeric	8	2	confidence pret...	None	None	8	Right	Scale	Input
11	confidence2	Numeric	8	2	confidence post...	None	None	8	Right	Scale	Input
12	confidence3	Numeric	8	2	confidence 8 w...	None	None	8	Right	Scale	Input
13	age	Numeric	8	2		None	None	8	Right	Scale	Input
14	gender	Numeric	8	2		{1.00, male}...	None	8	Right	Nominal	Input
15	race	Numeric	8	2		{1.00, Africa...	None	8	Right	Nominal	Input
16	marital_status	Numeric	8	2		{1.00, marri...	None	8	Right	Nominal	Input
17	NYHA_class	Numeric	8	2		None	None	8	Right	Scale	Input
18											
19											
20											
21											
22											

Appendix O

Results Table

Self-Care of Heart Failure Index score changes over time						
	n	M			*P*	*df*
Maintenance Subscale						
Pretest						
Posttest						
8week follow up						
Symptom Subscale						
Pretest						
Posttest						
8week follow up						
Management Subscale						
Pretest						
Posttest						
8week follow up						
Confidence Subscale						
Pretest						
Posttest						
8week follow up						