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A Nurse Led Heart Failure Education for Self-Care Symptom Monitoring and Management

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A DNP Project Manuscript Submitted in Partial Fulfillment of the Requirements of the
Doctor of Nursing Practice Degree

**A Nurse Led Heart Failure Education for Self-Care Symptom Monitoring and
Management**

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Title

Nurse-led education heart failure education for symptom monitoring and management

Abstract

Problem Statement: Over six million adults in the United States have heart failure (CDC.gov,2020). According to the Agency for Healthcare Research and Quality (AHRQ), almost 20% of heart failure patients hospitalized are readmitted under 30 days (AHRQ, 2013). The American Heart Association (AHA) (2022) recommends a visual symptom tracking tool for self-care symptom monitoring to increase patient adherence and reduce readmissions. Despite this recommendation, the AHA tool for symptom monitoring is not fully incorporated into the discharge of every heart failure patient often because of nursing management time constraints, and limited resources for designated discharge nurses.

Purpose: The purpose of this DNP Project is to evaluate the feasibility of the utilization of the AHA symptom tracking tool and to determine the effect of nurse-led education for heart failure patients that incorporates the AHA symptom tracking tool into discharge education regarding self-care behaviors and symptom monitoring. Measurements of the effects include patient adherence to self-care behaviors and 30-day readmission rates.

Methods: In this pilot study, patient education was provided to participants by the nurse researcher before discharge incorporating the AHA tool for symptom monitoring and management, daily weight, medication adherence, sodium restriction, and follow-up with primary appointments. A follow-up phone call 7-10 days after discharge was made to participants to determine adherence to self-care behaviors, symptom monitoring, and again at approximately 21 days post discharge.

Analysis: In comparing hospital readmission rates to heart failure patients who received only standard discharge teaching, the analysis revealed a there was not a significant statistical difference in readmission rate between the groups. However, the use of the AHA tool was found to be effective with a small sample when combined with follow up phone calls. Further research is indicated on a larger scale to demonstrate the correlation between the education intervention, adherence to self-care behaviors and readmission rates.

Background

Over six million adults in the United States have been diagnosed with heart failure (CDC.gov,2020). In the United States, it is estimated that heart failure costs over 32 billion dollars per year, when combining treatment, medications, and missed days of work (CDC.gov, 2020). According to the Agency for Healthcare Research and Quality, almost 20% of heart failure patients hospitalized are readmitted in under 30 days (AHRQ, 2013). The Centers for Medicare and Medicaid Services has lowered reimbursements for facilities with excessive readmission rates (AHRQ, 2013). The management of heart failure is complex and requires daily self-care behaviors, monitoring symptoms, medication adherence, and compliance with health care provider follow-up appointments to prevent exacerbations (Awoke et al., 2019; Toback & Hart, 2017; Bidwell et al., 2019). Daily self-care management, with specific instructions from nurses, can reduce hospital readmissions and improve patient outcomes (Rice et al., 2018). Research studies have demonstrated that some readmissions could be avoidable and are related to a lack of patient engagement and patient centered solutions (Shofield et al., 2019). While research is limited on nurse led education specifically, some studies have included the health care provider conducting specific education prior to discharge, pharmacists conducting education, and social workers conducting follow-up calls to improve discharge education and

increase adherence to self-care behaviors. At small rural hospitals, resources are often scarce and current staffing shortages make it unfeasible to incorporate other team members to participate in discharge education. This is another task that is added to the high workload of nurses. While research that evaluates communication to improve self-care with patients at home is limited, at least one study specifically evaluated telephone follow-up and found patients who received a call were less likely to be readmitted (20%) (Chestnut et al., 2021). The purpose of the pilot study is to implement and evaluate a nurse-led education that supports self-care behaviors, symptom monitoring in heart failure patients and reduced 30-day hospital readmissions with phone call follow-up to evaluate adherence.

Review of Literature

The literature search included keywords for project planning: heart failure management, heart failure and self-care behaviors, symptom monitoring, follow-up phone calls, patient education, and readmission rates. The project purpose and intervention are developed from reviewing studies related to education, heart failure management, reducing hospital readmissions, and in the context of the feasible practice and organizational resources, policies, and facilities at the rural hospital site. The literature validated the significance of self-care, elements of self-care and the importance of self-care in heart failure patients with symptom monitoring and follow-up calls to reduce hospital readmissions.

Self-Care Significance

Chronic disease management and daily self-care behaviors are essential, having support from family or a significant other can make a difference in patient adherence. (Martire & Helgeson, 2017). Many research studies demonstrate the importance and relevance of self-care and chronic disease (Bartlett et al., 2019; LeBlanc & Jacelon, 2017; Martire & Helgeson, 2017).

Self-management and chronic disease management are crucial for the quality of life and for improving patient outcomes. A review by LeBlanc and Jacelon (2017) examined self-care, the older adult, and chronic conditions and concluded that a focus on promoting self-care can improve health outcomes such as improved quality of life for older adults living with chronic disease. Similarly, Bartlett et al. (2019) examined varying levels of self-management and vulnerable patients at risk for poor outcomes and found that vulnerable populations had less participation in self-care behaviors than others and these vulnerable populations benefit from individualized self-management education for disease management such as follow-up calls to reinforce education and evaluate adherence to self-care behaviors. The project population is a vulnerable population in a rural community hospital with limited resources.

Essential Elements of Self-Care

The concept of self-care is determined by many factors, personal perception, physical ability, support or lack of support, and responsiveness (LeBlanc & Jacelon, 2017). Each component of self-care, medication adherence, symptom monitoring, keeping appointments, sodium restriction and increasing physical activity are equal in importance to chronic disease management and further support incorporating self-care education prior to hospital discharge. The study by Awoke et al. (2019) demonstrated the importance of patient education and knowledge of specific self-care behaviors. Through the study it was determined the need for developing a patient education program to focus on self-care for heart failure patients and nurses were uniquely qualified to implement the education (Awoke et al., 2019). Self-care behaviors included regular exercise, low-sodium diet, medication adherence, fluid restriction and regular exercise associated with improved function (Kessing et al., 2019). These self-care behaviors are consistent with the American Cardiology of Cardiologists (ACC) and the American Heart

Association (AHA) recommended guidelines for heart failure management discussed below. Research supports a correlation in symptoms with adherence to medication management, diet, and sodium restriction (Bidwell et al., 2019). Self-care behaviors must include symptom monitoring to prevent exacerbations and readmission.

Many studies represent the significance of self-care and symptom monitoring and follow-up phone calls post discharge. (Chestnut et al., 2021; Inouye et al., 2015; Schofield et al., 2019; Yancey et al., 2017). Patients who received follow-up phone calls were less likely to be readmitted (20%) than patients who did not receive a call (28%) (Chestnut et al., 2021). These results support using follow-up phone calls to evaluate self-care and symptom monitoring. Research by Inouye et al. (2015) used follow-up phone calls to determine the risk of readmission, results showed the control group was at a statistically significant ($p < 0.0001$) risk of readmission. Follow-up phone calls were used to evaluate self-care adherence to discharge instructions and presented an opportunity to reinforce discharge education (Shofield et al., 2019). The recommended time frame for follow-up appointment post discharge from the hospital is 7-10 days (Yancey et al. 2017). A follow-up call from a nurse can evaluate adherence to self-care behaviors, symptom monitoring and present an opportunity for reeducation.

Readmissions

A review of literature concludes that improved self-care has a positive correlation with outcomes including, improved quality of life and a reduction in readmission rates for patients with heart failure (Toback & Clark, 2017). Toback & Clark (2017) reported that “improvement in self-care management skills can decrease the chance of readmission by 40% in one year” (p. 107). A systematic review revealed that one on one nurse led education of self-care and symptom management for heart failure patients can reduce the risk of readmission (Rice et al.,

2018). A reduction in readmission is good for the patient and the acute care facilities by reducing cost and meeting patient care standards.

Guidelines

Self-care adherence is a key component of the effective management of heart failure. The heart failure guidelines are comprehensive management guidelines for providers determined by a collaboration with experts in the field of cardiology. The (AHA) guidelines were used to frame the educational intervention, AHA symptom tracking tool used in this DNP project, and follow-up phone calls for the study (AHA, 2022). The AHA guidelines indicate that the education should be provided by a qualified heart failure educator; this education can be provided by a nurse (Yancey et al., 2017). The education of nurses while obtaining their degree includes learning the importance of self-care and health promotion. Guidelines from the experts at ACC and the AHA note the need for education for symptom monitoring, keeping follow-up appointments and follow-up phone calls post discharge as part of heart failure management (Yancey et al., 2017). The heart failure management guidelines from the American College of Cardiology Foundation (ACCF) and (AHA) Task Force Practice Guidelines, with the AHA symptom tracking tool support patient education prior to discharge on symptom monitoring and management. (AHA, 2018; Yancy et al., 2013 and 2017). The focus of the AHA (2018) Target: HF program guides the care of patients before and after discharge from the hospital with a focus on patient education to improve outcomes and reduce heart failure readmissions. The HF program recommended enhanced patient education of at least 60 minutes regarding weight changes, sodium restriction, medication adherence, and physical activity (AHA, 2018; Yancy et al., 2017). With limited resources in many inpatient acute care settings, particularly those in rural areas, a large amount of time for nurses for discharge education is not feasible, however, a

designated nurse can spend more time with patients on education if workloads are adapted to meet this need.

A consensus in the literature indicates the importance of self-care, adherence to disease management, and consistent follow-up with providers to adequately manage chronic disease such as heart failure. Guidelines from the experts at ACC and the AHA note the need for education for symptom monitoring, keeping follow-up appointments and follow-up phone calls post discharge as part of heart failure management (Yancey et al., 2017). Literature is limited on combining all aspects in one study and the impact on the reduction in readmission rates post discharge. Little is known on how to increase adherence to self-care behaviors. It is known that follow-up calls can reduce the risk of readmission, however it is also not known if follow-up phone calls can increase adherence to self-behaviors (Chestnut et al., 2021). The nurse patient relationship is one of trust and can create opportunities to educate in a non-threatening way and reinforce education for symptom monitoring. The implementation of nurse led education in a vulnerable population with a symptom monitoring tool and follow-up call should be incorporated together to evaluate an impact on reduction in under 30-day hospital readmissions. By adding self-care behaviors, symptom monitoring and follow-up calls the project can add to current literature.

Problem Statement

Over six million adults in the United States have heart failure (CDC.gov,2020). According to the AHRQ (2013), almost 20% of heart failure patients hospitalized are readmitted in under 30 days. Current standard education readmission rates continue to rise nationally with about 25% of heart failure patients readmitted in under 30 days (Schofield et al., 2019). Despite current discharge education and instructions heart failure readmission continue to rise, placing a financial burden on acute facilities and placing patients at risk for negative outcomes such as

readmission and exacerbation of heart failure and associated complications. The current ACC and AHA guidelines recommend self-care education, follow-up appointments, and symptom monitoring (Yancey et al., 2017). Even with this AHA recommendation, the self-check tracking tool for symptom monitoring is not fully incorporated into the discharge of every heart failure patient often because of nursing management time constraints, and limited resources for designated discharge nurse.

Clinical Question: In addition to implementing and evaluating a nurse led educational intervention incorporating the AHA tool, this project will explore the following questions: What is the readmission outcome of providing a nurse led education intervention to heart failure patients that includes the AHA symptom monitoring tool and follow-up post-discharge phone calls on patient adherence to self-care behaviors? How do the readmission rates of patients receiving this intervention compare to other discharged patients with heart failure?

Significance

Americans ≥ 40 years of age are at a 20% risk of developing heart failure (Yancey et al., 2013). The rising number of patients living with heart disease increases the burden on health care providers and the health management system. Many improvements in the treatment of cardiac disease have increased the lifespan of patients and led to a growing number of patients with heart failure (Toback & Clark, 2017). Multiple studies show heart failure patients are at risk for hospital readmission resulting in poor outcomes and increased mortality. It was reported that the Centers for Medicare and Medicaid Services (CMS) penalized over two thousand U.S. hospitals \$280 million dollars in 2013 for all cause readmissions (Inouye et al., 2015). Awoke et al. (2019) reported that 30% of heart failure patients are readmitted within 60-90 days and 27% of Medicare patients with heart failure are readmitted within 30-days. The lack of payment, or

penalty can place a significant burden on hospitals, especially rural acute care facilities. Causes of hospital readmission have been linked to lack of knowledge, symptom recognition, inappropriate symptom management, and the absence of follow-up care (Awoke et al., 2019; Toback & Hart, 2017; Bidwell et al., 2019). To prevent exacerbations and readmissions, patients must be consistent daily with their treatment plan and self-care behaviors (Bidwell et al., 2019). Because of the increasing number of readmissions hospitals need to make changes to educate patients prior to discharge on self-care management and symptom monitoring.

The AHA statement on heart failure treatment says, “successful treatment relies on both you and your loved ones playing an active role in your health” (AHA, 2022). The AHA (2018) also states “patient education is a critical success factor in helping patients manage their heart failure”. Implementation of specific instructions for the management of heart failure symptoms and self-care behaviors can improve outcomes. Nurses have a unique opportunity to educate, reinforce education, and follow-up with patients because of the amount of time with access to patients and care givers while admitted to the hospital. By providing a tool and reinforcing education, there is the potential to increase patient adherence to self-care behaviors and symptom monitoring.

Purpose

The project seeks to implement and evaluate the use of incorporating the AHA symptom monitoring tool regarding self-care behaviors and symptom management for heart failure patients before hospital discharge and to explore the relationship of this intervention with 30-day in reducing hospital readmissions. Objectives for the project to meet outcomes include 1. Provide specific education related to home self-care behaviors and symptom monitoring and management of heart failure incorporating the AHA symptom tracking tool. 2. Evaluate self-care adherence

and symptom monitoring with a follow-up phone call at 7-10 days post discharge and again at 21 days. Standard questions in the follow-up phone calls are included in the methods section and appendix A. 3. Determine the level of self-care adherence, symptom monitoring, and management and the associated 30-day readmission rates of those receiving the intervention and compare 30-day readmission rates with patients receiving standard discharge heart failure education. Through focused, patient centered nurse led education the project interventions support the patient's understanding of disease management, self-care behaviors, symptom monitoring, management, and adherence. The project aims to explore the relationship of nurse led educational intervention on adherence to assigned self-care behaviors, symptom monitoring, and a reduction in hospital readmission rates for heart failure patients. The AHA statement on heart failure treatment states, "successful treatment relies on both you and your loved ones playing an active role in your health" (AHA, 2022). The AHA (2018) also states "patient education is a critical success factor in helping patients manage their heart failure". The addition of nurse led education for symptom monitoring, a visual tool and follow-up phone evaluations could lead to a reduction in readmission by encouraging and supporting increased adherence to self-care behaviors. Lastly, an evaluation of the clinical feasibility and utility of incorporating the AHA tool into the discharge education of patients with heart failure at the DNP project site is accomplished.

Theoretic Framework

"Self-management is what people physically or mentally do for themselves, their families or others to help them stay healthy and to perform their daily social and physical activities" (Toback & Clark, 2017, p.106). The Model of Self-Care Nursing is based on Dorothea Orem's theory which identified three nursing systems; wholly compensatory, partially compensatory,

and supportive-educative systems (Khademian et al., 2019). The supportive education system will be used, to identify when a patient is ready to learn, and provide guidance (Khademian et al., 2019). Orem's theory of self-care also states, "human beings are recognized as active agents who are capable of taking deliberate actions to maintain self-care" (Younas, 2017, p.15). Orem's theory identifies the importance of the relationship between nurses and patients, this theory supported the importance of nurse-led education for change in self-care behaviors (Younas, 2017). Orem's theory of self-care has been investigated with many chronic illnesses (Bartlett et al., 2019; Khademian et al., 2019; LeBlanc & Jacelon, 2017; Martire & Helgeson, 2017). Self-Care as a concept has been well established in nursing. The knowledge gained from the research has improved patient care and nursing care. The management of chronic illness and improvement of quality of life with interventions and adherence to a specified treatment plan is evident in the literature. Orem's self-care theory is used as a framework for educational interventions to promote self-care behaviors to improve outcomes. The AHA guidelines and symptom monitoring tool use self-care behaviors as a foundation for disease management for heart failure (AHA, 2022). Improved adherence to self-care behaviors demonstrated a reduction in hospital readmissions (Toback & Clark, 2017).

Orem's nursing theory of self-care states patients with chronic illness need motivation and must perform daily self-care behaviors to maintain and improve their health (Khademian et al., 2019). This theory of self-care by Orem focusing on self-management, and symptom monitoring is incorporated in the nurse-led education through the implementation of the AHA symptom tracking tool. By focusing on daily self-care behaviors and reinforcing education through follow-up calls the theory of Orem's self-care guided the heart failure education and symptom monitoring.

Project Design and Method

The research design selected was a quality improvement pilot study to implement the addition of the AHA symptom monitoring and management tool and follow-up phone calls to current discharge teaching evaluating patient adherence and exploring the influence on reducing 30-day readmissions. The participants in the pilot study received educational intervention including the AHA symptom tracking tool and follow-up calls. A comparison control group of heart failure patients from the facility was identified who received only standard hospital discharge education included in Appendix D.

Participants: Participants eligible for inclusion to receive the educational intervention include English speaking adults at least 18 years of age, with no hospitalizations within 30 days before intervention, admitted to the DNP project site with a diagnosis of heart failure or heart failure related diagnosis, ability to read and write, and ability to participate in activities of daily living (ADLs). Exclusions included patients discharged to a long-term care facility, patients who are terminally ill or in hospice care and non-English speaking patients. To include a non-English speaking participant is not feasible as the researcher would be required to have access to 24-hour, 7 day per week certified foreign language translation via phone and video remote interpreting. For patients with cognitive impairment, education was provided to the care giver available who resides with the patient. Otherwise, patients with cognitive impairment were excluded. Non-identifying demographic data collected from participants included age, gender, health insurance provider, comorbid diagnosis, and discharge location.

The case management director identified potential participants by ICD-10 codes and informed the researcher. Potential participants were approached by the researcher and informed

of the study purpose, procedure, potential benefits, any risks, and voluntary participation. The researcher allowed the participant private time to consider the information. The researcher returned after 30 minutes to 1 hour and offered to answer any questions prior to asking the patient to consent or decline participation. Twenty-one participants signed an informed consent, located in Appendix B, and agreed to tracking of all-cause readmissions within 30 days.

Participants also provided contact information for two follow-up phone calls within 30 days after discharge, questions are in Appendix A. All participants were patients admitted to the medical-surgical unit with a current or past diagnosis of heart failure at a local, rural hospital. A comparison control group was used comprised of 21 patients with heart failure or a heart failure related illness, such as atrial fibrillation or cardiomyopathy, who did not participate in the educational intervention. The control group received standard discharge instructions, located in appendix D, without educational intervention or follow-up phone calls. The control group was identified retrospectively by reviewing ICD 10 codes for admissions during the study period and previous 6 months by the case management director. The researcher received access only to non-identifying data for the control group including admission date, admitting diagnosis and additional current diagnosis, health insurance provider, admission from home or long-term care facility, and readmission date with admitting diagnosis. The control group did not include patients admitted from long-term care, or hospice care, to be consistent with the intervention group.

Human Subject Protection: A letter of support was obtained from the facility with approval from the Chief Nursing Officer. The hospital IRB committee conceded review to the university IRB board, exemption was obtained prior to study implementation. Participants were identified initially by record review, with case manager to identify admitting diagnosis or diagnosis related

to heart failure. The principal researcher approached participants and obtained consent for participation, consent included in appendix B. Participants were informed participation was voluntary and may withdraw or decline at any time and their participation or lack thereof will not affect their care. All identifying data remained confidential and accessed by the researcher only. Phone numbers were obtained by the researcher with the consent form from the participant and maintained on a secure document, password protected on a computer only accessed by the researcher with password protection.

Setting: The project was conducted in a small rural medical facility located in East Tennessee along the Appalachian Ridge and Powell Valley. The population estimate for this rural community in 2021 according to the United States Census Bureau (2021) was recorded as 7,300 with a median income of 36 thousand dollars. The Medical Center is a 56-bed facility, the medical surgical unit can house 30-33 inpatients, however due to low staffing is currently utilizing only 21 beds. The hospital website noted 1,600 inpatient admissions last year. A letter of support from the Chief Nursing Officer is located in appendix E.

Intervention: This researcher provided one on one patient discharge education in the intervention group of participants. This education included self-care behaviors including; daily weight, symptom identification and management, medication adherence, low sodium diet, and follow-up appointment post discharge. The standard hospital discharge instructions were used and are located in appendix D. The education regarding daily weight, sodium restriction, medication adherence, and symptom monitoring is based on the ACC and AHA guidelines. The AHA symptom tracking tool was provided to patients laminated and with a magnet and instructed to place on the refrigerator as a daily reminder for symptom monitoring. The researcher discussed each symptom on the tracker and how to proceed if changes in symptoms

were noted. The tool is discussed more in detail in the next section below. The principal researcher conducted follow-up phone calls during the time frame of 7-10 days to ensure follow-up appointments are kept according to AHA recommendations and at 21 days post discharge to evaluate adherence to self-care behaviors and risk of readmission (Yancey et al., 2017). Follow-up calls are discussed in detail separately below and in appendix A.

Tool: The AHA has been a leader in advancing research and care for heart disease since its creation in 1924 (2018). The ACC and AHA work together to develop and publish guidelines for the diagnosis, treatment, and management of congestive heart failure (Yancey, 2017). Following the published guidelines, the AHA has developed a tool for patients to use at home for symptom monitoring and management. The principal researcher will educate participants on symptom recognition and management and provide the symptom tracking tool from the AHA (2022), it is included in appendix C. The AHA (2018) developed a program to improve heart failure management called Target: HF (Heart Failure). The program includes a readmission checklist, discharge checklist, telephone follow-up form and 30-day readmission risk calculator. In the Target: HF program the AHA provides a toolkit for providers to use for patient education prior to discharge. The AHA (2018) states “patient education is a critical success factor in helping patients manage their heart failure”. Symptoms to monitor according to the AHA self-check tracker include new or worsening shortness of breath, weight gain of more than 3 pounds in one day, swelling of feet, ankles, legs, or abdomen, change in physical activity, trouble sleeping, dry, hacking cough, and chest pain. The visual aid titled “Self-Check Plan for Heart Failure” is published for patient use on the AHA (2022) website and was used in the project with color copy given to patients at discharge. Permission to use the symptom tracking form has been granted from AHA is included as Appendix F. A copy of the tool is included in Appendix C. The

symptom monitoring tool was selected because of the ease of use with images and a one-page format that is comprehensive of symptoms that indicate exacerbations. The symptom tracker uses zones that are green, yellow, and red, compared to a traffic light. Green means excellent, keep up the good work, go on with daily activities, yellow signifies pay attention, use caution like a traffic light, slow down, or call your provider, and finally, the red zone is the medical alert zone, patients should stop and be evaluated right away, call your physician, call 911, or report to the emergency department (AHA, 2022). The researcher reviewed the tool with the participant, all symptoms to monitor and guidance for management. The current education provided by the facility was also given to patients at discharge. The current education used at the hospital is provided in appendix D.

Follow-up Calls: A follow-up phone was conducted 7-10 days post-discharge to inquire about symptom management and hospital readmission and again around day 21 post discharge. A standard question list was developed with questions using support from AHA (2018) for consistency and data collection and is included in Appendix A. Phone calls were made by the researcher using the list provided Likert scale yes or no answers. Questions were designed to evaluate adherence to self-care behaviors, symptom monitoring and follow-up appointments. Responses were self-reported by participant or caregiver. A telephone follow-up form is located on the AHA (2018) website as part of the TARGET: HF program. The form is 8 pages long and includes questions about medication adherence, weight gain, breathing, swelling, and follow-up appointments, these questions were utilized in the development of the questions for the project follow-up calls. The AHA heart failure guidelines include recommendations for follow-up visits within 7-10 days and telephone follow-up within 3 days (Yancey et al., 2017). By conducting follow-up calls within 7-10 days the project assessed adherence to keeping follow-up

appointments. Reinforcement of heart failure education, self-care, and symptom monitoring was evaluated by collecting data from phone calls and is supported by AHA guidelines as well. The second call was conducted on or around day 21 as recommended by the case managers to identify the risk for readmission.

Results

Statistical Methods: Fisher's Exact test was performed to compare the intervention and control groups on their respective rates of readmission. Frequency and percentage statistics were reported for the chi-square analysis. The Wilcoxon Signed Ranks test was used to test for significant change in the intervention group for a survey item rated along a Likert scale. Medians (*Mdn*) and interquartile ranges (IQR) were reported for the Wilcoxon analysis. Finally, McNemar's test was used to test for change across time for binary/categorical variables. The cross-tabulation tables for the McNemar's tests were presented in tabular format. All analyses were performed using SPSS Version 29 (Armonk, NY: IBM Corp.) and statistical significance was assumed at an alpha value of 0.05.

Statistical Results: The project intervention and data collection occurred over a four-month period during the fall of 2022. The total number of participants for each group was 21. The age range of the intervention group was 47-89 years old; all participants had a current diagnosis of heart failure or history of heart failure and at least one secondary diagnosis. Additional diagnoses important to note include but not limited to COPD, pulmonary edema, renal failure, diabetes, and cirrhosis. All participants did not respond to follow-up call questions due to no response to repeated calls. Six participants responded to follow-up calls at 7 days and 21 days. All participants were evaluated for readmission by the case management director for the intervention and control groups. There was not a significant statistical difference in readmission rate between

the intervention group ($n = 2$; 9.5%) and the control group ($n = 4$; 20.0%), $X^2(1) = 0.90$, $p = 0.41$. The intervention group had 2 readmissions out of 21 participants for 9.5% which is lower than the AHRQ (2013) reported readmission rate for heart failure patients of 20%. The control group readmission rate was consistent with current data from AHRQ at 20%. There were six participants in the intervention group that responded to both follow-up phone calls and had no readmissions, 0%. There was not a significant change in the Likert-type ratings across time from pre-intervention ($Mdn = 3.0$, IQR 3.0 – 4.0) to post-intervention ($Mdn = 3.5$, IQR 3.0 – 4.0), $Z = -1.41$, $p = 0.16$. Finally, for the McNemar’s tests, questions 2, 4, 5, and 5b could not be analyzed due to constant findings across time with no variance for any participants. For questions 3a ($p = 0.13$), 5a ($p = 1.0$), and 5c ($p = 1.0$), no significant changes were detected across time. Question 4 regarding medication compliance, all responding participants reported yes to follow plan medication regimen. Question 5b specifically inquired about use of the AHA symptom monitoring tool, all six responding participants reported yes. The researcher was able to offer reeducation on self-care and symptom monitoring on follow-up phone calls. One participant required additional education regarding a low sodium diet. In Table 1 the answers to select questions were analyzed for statistical significance, because low response rate from participants and significance was not demonstrated. See Table 1 below for the statistical findings associated with the McNemar’s tests also included as appendix G.

Table 1.

McNemar’s Test Findings

Questions (pre)	No (post)	Yes (post)	<i>p</i> -value
Question 2			

No	6	0	
Yes	0	0	-
Question 3a			
No	0	4	
Yes	0	2	0.13
Question 4			
No	0	0	
Yes	0	5	-
Question 5a			
No	3	0	
Yes	0	3	1.0
Question 5b			
No	0	0	
Yes	0	6	-
Question 5c			
No	1	5	
Yes	0	0	1.0

Discussion

Congestive heart failure management as a chronic illness requires daily self-care behaviors and symptom monitoring for the management of disease and to prevent exacerbations (Bartlett et al., 2019; LeBlanc & Jacelon, 2017; Martire & Helgeson, 2017). The DNP project pilot study sought to implement and evaluate an evidenced-based and nurse led patient discharge

education for heart failure patients incorporating the use of the AHA symptom monitoring tool and to explore the relationship of providing this nurse led education intervention, combined with follow-up post-discharge phone calls, with the variables of patient adherence to self-care behaviors and reduced hospital readmissions. The results of this pilot study are limited because of the small sample size and the poor number of responses to follow-up phone calls. However, there are some research and practice implications.

While not statistically significant, it is notable that the completed intervention group 30-day readmission rate was 9.5% ($n=21$), 2 readmissions. This is less than AHRQ (2013) reported average readmission rate in less than 30 days for heart failure patients is 20%. This compared to the control group 20% ($n=21$), 4 patients, readmission rate which is consistent with AHRQ readmission data for heart failure patients (2013). More research is needed with a larger sample to explore the relationship of the intervention, combined with follow-up call on self-care adherence and a reduced readmission rate.

Patients expressed interest in heart failure education, self-care, and positively responded to the AHA tool for symptom monitoring during the visit with the researcher. Many participants thanked the researcher for the laminated visual tool and verbalized the need for improved self-monitoring. Patients who responded to follow-up calls expressed appreciation for education. Their positive responses, while not numerically measured, could indicate that patients hold this type of patient education as valuable. This type of interaction with heart failure patients should be explored in the context of patient-perceived support or with metrics such as patient satisfaction.

Participant responses to the questions during follow-up phone calls may provide some insight into future study on self-care behaviors. Follow-up calls provided an opportunity to

reinforce education about self-care and symptom monitoring. Questions in the follow-up call significant to determine an increase in self-care behaviors and symptom monitoring were 5a and 5b regarding daily weight measurement and use of the AHA symptom tracking tool. Question 5 states are you following your plan of care, all respondents answered yes when self-reporting. In question 5a regarding monitoring daily weight, only half of the respondents answered yes. Measuring daily weight for fluid retention is a significant clinical symptom for monitoring heart failure exacerbations (AHA, 2018). Participants who did not weigh themselves reported the lack of a scale for daily weight monitoring. Patients positively received the use of the AHA symptom tracking monitoring tool as reported in Question 5b when asked about the use of the tool, and all respondents answered yes (100%) to use of the tool. The results of the project are similar to research reviewed in the literature by the AHA (2018) target heart failure program, guidelines posted by the ACC (2022) and studies by Chestnut et al., 2021; Inouye et al., 2015; Schofield et al., 2019; Yancey et al., 2017 that demonstrate self-care behaviors and symptom monitoring reduce the risk of less than 30-day readmission. Further research is needed with a larger sample size to demonstrate the relationship of the intervention combined with follow-up calls and a reduction in readmission rates.

The data collected from follow-up calls demonstrated an adherence to self-care behaviors and can be further used to monitor patients on an outpatient basis. However, as this pilot study demonstrated that it can be difficult and time-consuming in attempting to reach patients by phone. Further research using a larger sample size is needed to demonstrate statistical significance. Additional modalities of communicating with patients such as phone text instead of call, incorporating into home health or primary care visits to take advantage of when the patient

is present, or evaluating the information in combination with patient satisfaction surveys should also be explored.

Not only was attempting to contact patients challenging and time consuming but providing the discharge education on the use of the tool and to allow for discussion and participants' questions required about 10 minutes minimum, some discussions lasted 15- 20 minutes. Heart failure self-care management is complex and adequate nursing resources are needed to provide comprehensive education on self-care behaviors and symptom monitoring which takes time. Current nurse staffing shortages and increased workload affect the feasibility of implementing the intervention and follow-up calls. Administration support through evaluating the evidence on a reduction in readmissions for heart failure patients is needed to increase the nurse led education intervention.

Strengths and Weaknesses: Implementation of nurse led education to improve self-care behaviors and symptom monitoring and maintenance is supported by the American College of Cardiologists and the American Heart Association. The practice site is currently monitoring heart failure readmission rates and supported an intervention to reduce under 30-day readmissions. The study results were limited by adherence of patients at home with monitoring symptoms and actively participating in self-care behaviors to improve heart failure management. An anticipated limitation was the additional amount of time needed for nurses to complete the education. The researcher completed all of the project education, hospital units would need to designate an education nurse or utilize a nurse manager, case manager or other clinical faculty to assist with adequate education. Additional anticipated weaknesses were patient response and ability to contact patients post discharge by phone. Perhaps a different mode of communication through

text or contact with participants at office follow-up appointment would yield improved participation.

Conclusion

Heart failure is a significant chronic disease worldwide. Disease management requires daily self-care behaviors and symptom management. According to the AHRQ (2013), almost 20% of heart failure patients hospitalized are readmitted in under 30 days. The relationship between the patient and the nurse allows for a unique opportunity to provide education before discharge. The project implemented nurse-led education in a medical/surgical unit for consenting participants regarding self-care behaviors and symptom monitoring and a follow-up phone call regarding management to reduce the 30-day hospital readmission rate. The project will add to the current knowledge and support nurse led education for self-care behaviors, symptom monitoring and the use of the AHA symptom monitoring tool because all responding participants answered yes to using the tool and a reduction in readmission rate was demonstrated with the intervention group. The intervention group had a 9.5% readmission rate compared to the control group with a 20% readmission rate. Daily self-care management, with specific instructions from nurses, can reduce hospital readmission and improve patient outcomes (Rice et al., 2018). More research is needed on a larger scale to demonstrate a reduction in readmissions to support designating additional resources, specifically nurses to provide additional one on one education.

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Appendix A

Discharge phone call questions between Day 7-10

1. Do you feel better than when you were in the hospital? Yes, better, no, worse
2. Any new or worsening symptoms? Yes, no
3. Did you go to your follow-up appointment with your primary care provider? When is your appointment? Or when is your next appointment?
4. Are you taking your medications as prescribed? Yes, no
5. Are you following your plan of care? Yes, no
 - a. Weigh daily? And record yes, no
 - b. Monitoring symptoms with AHA symptom tracker tool? Yes, no
 - c. Low sodium diet? yes, no
6. Do you have any questions for me?
7. Thank you for allowing me to call, can I call back to check on you in about 10 days?

Phone call around day 21

1. Do you feel better than when you were in the hospital? Yes, better, no, worse
2. Any new or worsening symptoms? Yes, no
3. Did you go to your follow-up appointment with your primary care provider? Or when is your next appointment?
4. Are you taking your medications as prescribed? Yes, no
5. Are you following your plan of care? Yes, no
 - a. Weigh daily? And record yes, no
 - b. Monitoring symptoms with AHA symptom tracker tool? Yes, no
 - c. Low sodium diet? yes, no
6. Do you have any questions for me?
7. Thank you for allowing me to call. Please contact your provider if you have any questions regarding your care.

Appendix B

TITLE OF STUDY

Nurse Led Heart Failure Education for Symptom Monitoring and Management

PRINCIPAL INVESTIGATOR

Lynda L. Browning MSN, APRN-BC

Lincoln Memorial University, Caylor School of Nursing, DNP student

859-699-1324 cell

Lynda.browning@lmunet.edu

PURPOSE OF STUDY

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The purpose of this study is to determine the effect of nurse-led education regarding self-care behaviors and symptom monitoring for heart failure patients to improve adherence and reduce 30-day hospital readmissions.

STUDY PROCEDURES

Education will be provided to participants before discharge including a tool for symptom monitoring and management, for daily weight, medication adherence, sodium restriction, and follow-up with primary appointments. A follow-up phone call 7-10 days after discharge will be made to participants to determine adherence to self-care behaviors, symptom monitoring, and again at approximately 21 days post discharge. Participants will answer 7 short questions regarding self-care, symptom monitoring and follow-up appointments. Phone calls may last between 5 and 10 minutes based on participant responses.

RISKS: You may decline to answer any or all questions and you may terminate your involvement at any time if you choose. Your decision to participate or not participate will not influence your care. Risk is low for participating in this study. In the unlikely event that a participant becomes upset while discussing symptoms, emotional support will be provided and if the participant is having symptoms while completing the 7 questions that the nurse researcher deems urgent or warrant intervention, appropriate nursing intervention including emergency medical services referrals will be made.

BENEFITS: We hope that the information obtained from this study will increase participant understanding of heart failure symptom monitoring and management to prevent hospitalization.

CONFIDENTIALITY

For the purposes of this research study, your participation will be confidential and your information from the phone calls will only be known to the researcher. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents
- Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

CONTACT INFORMATION

If you have questions at any time about this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the ORGSP at Lincoln Memorial University at 423-869-6834.

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Researcher: Lynda L. Browning MSN office at LMU 423-869-6069 ORGSP at Lincoln Memorial University at 423-869-6834.

Appendix C



American Heart Association

Self-Check Plan for HF Management



Excellent – Keep Up the Good Work!



No new or worsening shortness of breath



Physical activity level is normal for you



No new swelling, feet, ankles and legs look normal for you



Weight check stable
Weight:



No chest pain

**GREAT!
CONTINUE:**



Daily Weight Check



Meds as Directed



Low-Sodium Eating



Follow-up Visits



Pay Attention – Use Caution!



Dry, hacking cough



Worsening shortness of breath with activity



Increased swelling of legs, ankles and feet



Sudden weight gain of more than 2–3 lbs in a 24-hour period (or 5 lbs in a week)



Discomfort or swelling in the abdomen



Trouble sleeping

CHECK IN!

Your symptoms may indicate:



A need to contact your doctor or health care team



A need for a change in medications



Medical Alert - Warning!



Frequent dry, hacking cough



Shortness of breath at rest



Increased discomfort or swelling in the lower body



Sudden weight gain of more than 2-3 lbs in a 24-hour period (or 5lbs in a week)



New or worsening dizziness, confusion, sadness or depression



Loss of appetite



Increased trouble sleeping; cannot lie flat

WARNING! You need to be evaluated right away.



Call your physician or call 911

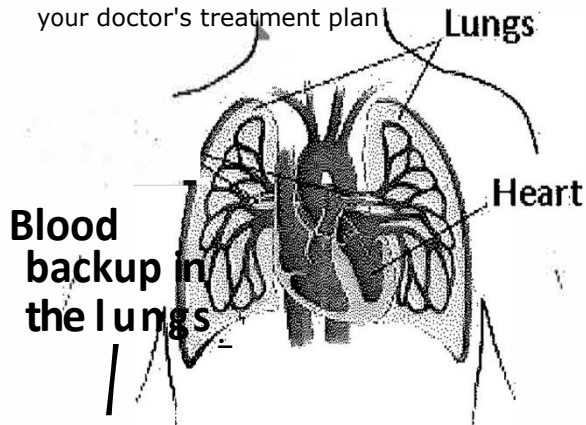
heart.org/HF

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Heart Failure

Heart : failure means your heart has trouble pumping blood. This makes it hard for your body to work well.

Heart : failure is usually a long-term (*chronic*) condition You must take good care of yourself and follow your doctor's treatment plan



HOME CARE

- Take your heart medicine as told by your doctor.
 - **Do not** stop taking medicine unless your doctor tells you to.
 - **Do not** skip any dose of medicine.
 - Refill your medicines before they run out.
 - Take other medicines only as told by your doctor or pharmacist.
- Stay active if told by your doctor. The elderly and people with severe heart failure should talk with a doctor about physical activity.
- Eat heart-healthy foods. Choose foods that are without *trans* fat and are low in saturated fat, cholesterol, and salt (*sodium*). This includes fresh or frozen fruits and vegetables, fish, lean meats, fat-free or low-fat dairy foods, whole grains, and high-fiber foods. Lentils and dried peas and beans (*legumes*) are also good choices.
- Limit salt if told by your doctor.
- Cook in a healthy way. Roast, grill, broil, bake, poach, steam, or stir-fry foods.
- Limit fluids as told by your doctor.
- Weigh yourself every morning. Do this after you pee (*urinate*) and before you eat breakfast. Write down your weight to give to your doctor.
- Take your blood pressure and write it down if your doctor tells you to.
- Ask your doctor how to check your pulse. Check your pulse as told.
- Lose weight if told by your doctor.
- Stop smoking or chewing tobacco. **Do not** use gum or patches that help you quit without your doctor's approval.

- Schedule and go to doctor visits as told.
- Nonpregnant women should have no more than 1 drink a day. Men should have no more than 2 drinks a day. Talk to your doctor about drinking alcohol
- Stop illegal drug use.
- Stay current with shots (*immunizations*).
- Manage your health conditions as told by your doctor.

- Learn to manage your stress.
- Rest when you are tired.
- If it is really hot outside:
 - Avoid intense activities.
 - Use air conditioning or fans or get in a cooler place.
 - Avoid caffeine and alcohol
 - Wear loose-fitting, lightweight, and light-colored clothing.
- If it is really cold outside:
 - Avoid intense activities.
 - Layer your clothing.
 - Wear mittens or gloves, a hat, and a scarf when going outside.
 - Avoid alcohol
- Learn about heart failure and get support as needed.
- Get help to maintain or improve your quality of life and your ability to care for yourself as needed.

GET HELP IF:

- You gain weight quickly.
- You are more short of breath than usual
- You cannot do your normal activities.
- You tire easily.
- You cough more than normal, especially with activity.
- You have any or more puffiness (*swelling*) in areas such as your hands, feet, ankles, or belly (*abdomen*).
- You cannot sleep because it is hard to breathe.
- You feel like your heart is beating fast (*palpitations*).
- You get dizzy or light-headed when you stand up.

GET HELP RIGHT AWAY IF:

- You have trouble breathing.
- There is a change in mental status, such as becoming less alert or not being able to focus.
- You have chest pain or discomfort. You faint.

MAKE SURE YOU:

- Understand these instructions.
- Will watch your condition
- Will get help right away if you are not doing well or get worse.

This information is not intended to replace advice given to you by your health care provider. Make sure you discuss any questions you have with your health care provider.

Document Released: 09/26/2009 Document Revised: 01/08/2016 Document Reviewed: 02/03/2014 Elsevier Interactive Patient Education ©2017 Elsevier Inc.

Appendix E

Dear LMU IRB Board,

On behalf of Lafollette Medical Center; Tennova, I am writing this letter of support and to grant permission for Lynda Browning MSN, APRN a DNP student of Lincoln Memorial University to conduct her DNP Project "Nurse Led Heart Failure Education for Symptom Monitoring and Management" at this facility, I understand Mrs. Browning will educate heart failure patients on the medical/surgical unit prior to discharge, provide a symptom monitoring tool from the American Heart Association, and conduct a follow-up phone call with the educated participants. The hospital IRB committee will review Mrs.

Browning's application and approval must be granted prior to implementation. Mrs. Browning will present the results to nursing administration and case managers after project completion and review potential impact on readmission rates.

I authorize and agree that this DNP Project may be conducted at this facility after IRB approval.

A handwritten signature in black ink that reads "Jessica Muse, MSN, RN". The signature is written in a cursive style with a large initial 'J'.

Jessica Muse MSN, RN

Chief Nursing Officer, Lafollette Medical Center



Inv #18181-LBROWNING

Includes Req #18214
Fees waived for student

July 6, 2022

PRINT COPYRIGHT USE AGREEMENT

Lynda Browning
For: Lincoln Memorial University
162 Nicholas Court
Harrogate, Tn. 37752

Dear Mrs. Browning:

Amount Due: **\$0.00 U.S. FUNDS** This is a fee for service and not a charitable contribution). Our tax id number is 13-5613797. **Please consider this letter an invoice.**

Approval of this request is contingent upon receipt of a \$0.00 U.S Funds processing fee and a signed copy of this Agreement (including Exhibit A.) Please send a check (drawn on a U.S. Bank or an international money order) payable to the American Heart Association with a copy of this Agreement to PO Box 841750, Dallas, Texas, 75284- 1750. Bank transfer or credit card payment information will be provided upon request.

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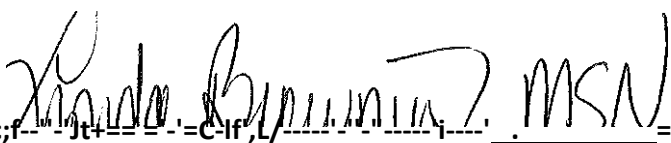
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6. This permission is not valid until we receive payment, verifying email if paid electronically and a signed copy of this agreement. If the payment and the signed agreement are not received within 30 days, the request will be considered withdrawn and no longer in effect. No reminder notices will be sent.

Upon receipt of payment and the signed agreement, permission will be granted on your original request. **Your cancelled check or credit card statement will be your receipt.**

Signature of Requestor  MSN

Printed Name LYNDA BROWNING

Date

EXHIBIT A

Publication Name- www.heart.org

Specifically:

Self-Check Plan for HF Management - infographic located @
<https://www.heart.org/-/media/Files/Health-Topics/Heart-Failure/HF-Symptom-Tracker.pdf>

Citation/Credit Line:

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For Use In:

a print only version of the above referenced material will be distributed to study participants, for educational purposes only, as part of this student's DNP project on heart failure education to improve symptom monitoring.

Note: If the student decides at a later date to publish the paper/AHA material, the request **must** be submitted to the AHA for review/approval **before** the AHA material is published.

Appendix G

Table 1.

McNemar's Test Findings

Questions (pre)	No (post)	Yes (post)	<i>p</i> -value
Question 2			
No	6	0	
Yes	0	0	-
Question 3a			
No	0	4	
Yes	0	2	0.13
Question 4			
No	0	0	
Yes	0	5	-
Question 5a			
No	3	0	
Yes	0	3	1.0
Question 5b			
No	0	0	
Yes	0	6	-
Question 5c			
No	5	1	
Yes	0	0	1.0