Assessing Health Literacy and Self Management in Patients with Heart Failure

by

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A thesis presented to the

FACULTY OF THE SCHOOL OF NURSING

POINT LOMA NAZARENE UNIVERSITY

in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE OF NURSING

August 2013

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ACKNOWLEDGEMENTS

I would like to thank my Lord and Savior Jesus Christ for guiding me and allowing me to attend graduate school at Point Loma Nazarene University. I praise Him for the patience and perseverance to succeed through this challenging program. I thank Him for placing my family, friends, mentors and professors who have supported me along this journey.

To my mom, Samuel, and grandparents, thank you for your prayers, words of encouragement to support my decision and ambitious goals. Thank you for always listening when I felt defeated.

To all of my San Diego friends, thank you for understanding my busy schedule and still continuing to support me the last two years. I will always be grateful for that.

To my advisor and mentor, Dr. Michelle Riingen, thank you for encouraging my writing process. You provided me with guidance and support that I will always reflect back on with gratitude.

Abstract

Heart failure continues to be an increasing health-related problem that profoundly affects the elderly population of the United States. Due to the increasing comorbidities of the elderly, lack of social support and educational needs, healthcare organizations and providers experience increased financial burdens. The complexity of heart failure and exacerbation of symptoms continues with frequent hospital readmissions.

The purpose of this study is to assess health literacy and self-management of heart failure patients. Further investigations are needed to explain heart failure reoccurrence and poor symptom management. Patients' health literacy will be assessed utilizing several screening tools to gain a deeper understanding of patients' educational level and reading ability. Resources will be provided to the patients and their caregivers on self-management of heart failure.

The design of this proposed project is a prospective descriptive study that will assess health literacy and knowledge of self-care and symptom management for patients with heart failure. Data will be collected using a demographic instrument, the Newest Vital Sign, and a health literacy screening instrument. A paired *t*-test will be used to examine any statistically significant findings with heart failure readmission and heart failure symptom tracker instrument. Improving health literacy and symptom management in patients with heart failure could decrease hospital readmissions and help reduce mortality.

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CHAPTER ONE

Introduction

Health literacy is a growing problem for many Americans who struggle with the ability to retain and understand health information provided. Kutner, Greenberg, and Paulsen (2006) found 55% of adults did not have a high school diploma or the equivalent of a GED, and 46% of individuals had one or more disabilities. Macabasco-O'Connell et al. (2011) found 35% of the US population had a below average level of health literacy and suggested that limited health literacy and patient understanding of disease prognosis may cause an increasing rise in mortality.

The advancement of medical technology increases the demand for patients to have more self-management and understanding of disease in order to make informed healthcare decisions (Cutilli &Bennett, 2009). A recent meta-analysis reported lower levels of health literacy are related to "poorer global status of health, increasing patient hospitalizations, with a decreased use of early preventative measures and disease detection medical procedures, improper adherence to medication regimen and poorer disease management" (Rawson et al., 2010, p. 67).

Heart failure (HF) is an excellent disease process for studying the literacy outcome relationship because of the disease complexity and the importance of adherence to proper medical management. Individuals with low health literacy may be at risk for adverse health outcomes in HF (Macabasco-O'Connell et al., 2011).

Significance of the Problem

At least five million people in the US suffer from heart failure, a condition that significantly affects the adult and elderly populations (Hines, Randall, & Yu, 2010). The

National Heart Lung and Blood Institute (NHLBI; 2010) suggests HF contributes to 300,000 deaths each year, leading healthcare providers to make changes to help improve patient outcomes. Increased comorbidity, advancing age, polypharmacy use, and hospital readmissions are associated with poor clinical outcomes that affect the cost to healthcare systems (NHLBI 2010; Ahluwalia, Gross, Chaudhry, Leo-Summers, Van Ness, & Fried, 2011).

The Heart Failure Society of America (HFSA; 2013) and American Heart Association (AHA; 2013a) list heart failure as a serious chronic medical condition in which the heart does not pump efficiently and thus becomes weakened and unable to supply the body's cells with enough oxygenated blood. Exacerbated symptoms of HF make sustaining a healthy patient quality of life difficult. Cognitive impairment and frailty are coexisting factors for elderly patients living with HF and increase the likelihood of poor clinical outcomes (Harkness, Heckman, & McKelvie, 2012).

Patients' 30-day hospital readmission rates significantly increase the cost of healthcare. The American Heart Association (AHA; 2013c) rates an average length of hospital stay as four days, and 25% of patients are readmitted within 30 days nationally. Low health literacy of HF patients contributes up to $73 billion of healthcare cost during hospital readmission (HFSA, 2013). Healthcare organizations bear the burden of absorbing the cost because Medicare no longer reimburses (Bogaev, 2010). Patients on a fixed income and who have low health literacy also have limited resources to help improve quality of life; thus, nursing staff play an essential role in patient education and follow up once patients are discharged. Knowledge of HF is crucial for nursing staff and where outside resources can be obtained should be provided during discharge (Bogaev).

Many nurses overlook a patient's educational background and socioeconomic status when searching for tools to educate the patient at the time of hospital discharge (Kilonzo, Hughes, & O'Connell, 2011). Many patients have limited ability to read and comprehend medical information pertinent to personal health and lack reliable family support and resources.

Eggerston (2011) suggested the specific learning barriers for patients with low health literacy include poor reading and comprehension skills. Nursing staff should be educated on important cues that may determine a patient's low health literacy, including frequent missed appointments, failure to properly fill out health forms, or avoiding references to written health information received. Other times, patients may bring someone to act as a surrogate to receive health information during appointments or claim to have vision problems or to have forgotten their glasses to avoid reading health information. Additionally, patients that ignore medical advice or written discharge instructions should cue the nurse that there may be an underlying issue with patients' level of understanding (Eggerston).

According to the HFSA (2013), 34-54% of HF patients have limited health literacy and often feel embarrassed while concealing an inability to read. Conversely, 12% of Americans have proficient health literacy (HFSA, 2013). The American Medical Association, the Institute of Medicine, Healthy People 2010, the NIH, and the HFSA are among the healthcare organizations that have recognized the need to address limited literacy.

Statement of Purpose

The purpose of this study is to assess health literacy and self-management knowledge of heart failure patients. Rising admission rates of patients with heart failure are associated with low health literacy, which contributes to recurrent symptoms, lack of proper medication management, and the need for evaluating patient knowledge of heart failure (Devroey & Van Costeren, 2010). Hospital readmission statistics are on the rise and some contributing factors include cost of medications, patient non-compliance, and low socioeconomic status (Macabasco-O'Connell et al., 2011).

Significance to Nursing

Peterson et al. (2011) suggested that the focus of the problem in managing patient suffering from heart failure should be on assessing patients' knowledge and level of understanding. Obtaining insight on patient knowledge deficits will help nurses find ways to improve patient recognition of symptoms and focus on individualized patient teaching based on health literacy level. Further research in assessing patient health literacy may help reduce exacerbations. Health literacy screening instruments may be utilized in a hospital setting or in physician clinics upon admission to a healthcare facility. The main concern is for the healthcare provider to assess patients' health literacy and base needs for education on a level that patient and caregivers will comprehend (Peterson et al.).

CHAPTER TWO

Literature Review

The search strategies performed for literature review included searches of the CINHL, Proquest, and Pubmed databases and literature published by the American Heart Association on health literacy and heart failure. Many articles focusing on heart failure, health promotion, patient education, and health literacy were reviewed. The focus of this chapter is on health literacy, learning modalities, heart failure symptoms, and self-management.

Health Literacy

Deupree's (2011) research indicated nearly half of all Americans have some type of limited health literacy. Patients with a deficit in health literacy may be at risk for a higher incidence of an adverse drug event or of complicating the disease process. Many times a patient's cognitive understanding of the disease process may go unnoticed by healthcare providers. The nurse plays a significant role in patient education and in recognizing low health literacy.

Learning Modalities

The literature states that patients with health literacy needs must be identified and their needs responded to individually (Safeer & Keenan, 2005; Baker, 2006; Haun, 2007; Saver, 2012). Several different methods may be used to screen patients for health literacy; these will be discussed further in this chapter. Patients identified as having low health literacy should be provided with support, verbal explanations, written materials with only the necessary information presented in simple terms and pictures, and alternative resources such as videotapes (Haun, 2007).

Risk Factors

Allen, et al (2012). Indicated several risk factors associated with low health literacy, including advanced age, low income or socioeconomic status, minimal education level, comorbidities, chronic disease, English as a second language, and mental health disorders. Some healthcare providers may be unaware of a patient's level of understanding or reading ability or may even have conflicting personal beliefs about health literacy. These and other perceptions by healthcare providers can contribute to a lack of proper patient education. An unbiased opinion associated with risk factors is crucial when addressing low health literacy.

Reading levels. Scott (2012) literature states that most healthcare materials are written at a 10th grade level, although studies show that the average adult in the US reads at an 8th grade level or lower. Patient education materials should be formatted at a 6th grade level or lower to increase reading comprehension and address the issue of low health literacy (Scott, 2012).

Barriers to learning. Haun's (2007) research showed health literacy screening is one method of identifying patients with a lack of understanding of healthcare needs. One significant barrier is the time constraint for healthcare professionals to assess patient health literacy. During a visit to a medical facility, communication between the patient and healthcare provider may potentially be complicated by misinterpretation. The patient must be given important resources such as support groups for HF and referrals to online resources for proper disease management.

Barriers to communication. Osborn, Cavanaugh, & Kripalani (2010) indicated that potential language barriers must also be considered. Patients are instructed to bring along an interpreter if possible or ensure that there will be a medical certified interpreter onsite during the visit to improve communication between patients and providers. Additionally, the researchers argue that providers should understand the difference between print (reading or writing) health literacy, oral (speaking and listening) health literacy, and quantitative or numeracy literacy, which is patients' ability to apply numbers when needed to adhere to medical teaching. Studies have shown that some patients may have adequate health literacy but lack quantitative numeracy (Osborn, Cavanaugh, & Kripalani).

Low health literacy is directly associated with poorer health outcomes. One step to address low print literacy is for healthcare providers to speak directly to patients in plain language and avoid or replace commonly used medical jargon with words a patient is familiar with. Avoiding medical jargon can be useful when involving properly formatted print material about heart failure by having the material in a well-organized, specific category. Patients with a health literacy deficit about heart failure may not easily or fully comprehend the terminology (Osborn, Cavanaugh, & Kripalani, 2010).

Health literacy involves understanding, communicating, assessing, and evaluating health information given to the patient. While patients may be literate in other aspects, they may have difficulty understanding personal healthcare needs (Rootman & Ronson, 2005). Patients with a low literacy may be at risk of safety, quality of care and outcomes. It is essential for the health care provider to recognize consequences regarding low literacy and implements specific interventions to survey patients' level of understanding

about heart failure in a timely manner (Evangelista et al., 2010). The Joint Commission emphasizes the importance of health literacy and has included it in the patient-centered communication standards that were effective July 2012. By taking a step to understand the importance of patients' health literacy, healthcare providers can aim at improving patient outcomes (Saver, 2012).

Cost to Healthcare

Saver (2012) showed that poor patient health literacy is a primary indicator of a poor lifestyle. Rising hospital readmission rates and higher instances of mortality and medication errors have produced $50 to $73 million per year in hospital cost (Saver). Saver indicated that for the 2012 fiscal year, "Medicare will base a portion of hospitals DRG reimbursement on performance of quality metrics" (p. 6). Patients' understanding of healthcare needs, communication with physicians regarding medications, discharge instructions will be measured by the Hospital Consumer Assessment of Healthcare Providers and Systems survey. Low reimbursement could be expected unless health literacy improvements are made in healthcare (Saver).

Baker et al. (2004) conducted a study on health literacy in relation to newly enrolled Medicare patients and outpatient physician clinics to determine whether low health literacy affected care. The participants were 65-year old patients in four US cities. Many patients were reluctant to seek medical care and feared potential unfair treatment by providers if providers were aware of their low reading levels. The researchers used the Short Test of Functional Health survey to compare newly enrolled Medicare patients in outpatient services with those making Emergency visits. They found that patients with low health literacy were more likely to delay seeking care and consequently visit the

Emergency Department than to regularly visit a physician in an outpatient clinic. Further, low health literacy was not associated with first-time visits and was not a barrier to accessing outpatient clinics.

Albert, Eastwood, and Edwards (2004) studied the evidenced-based practice of acute decompensate heart failure to provide management goals and actions associated with fluid retention and dyspnea, heart failure's most common symptoms. The sample or the study was 14,716 patients hospitalized for heart failure with other comorbidities most commonly affecting the elderly female population. Data collected consisted of specific patient characteristics, presentation of symptoms, insurance, patients' past medical history, and the pharmacological methods of use. Quantitative data was retrieved from the National Heart Failure Registry. The study indicated HF is the most common medical diagnosis and has a poor survival rate. Medicare pays out millions of dollars each year for patients with this diagnosis and the trend is still on the rise because of poor patient outcomes and compliance.

Somers & Roopa (2010) suggest with the new upcoming Affortable Care Act (ACA), more attention is needed to address health literacy. New changes in legislation will address how to effectively communicate health information, maintaining cultural awareness, and for healthcare providers to deliver high quality care. Some of the new provisions in health care will address health literacy needs by having patient information at the appropriate reading level, educating healthcare providers on cultural competency and establishing quality improvement on specific models of health care needs that will address patients' with low literacy.

Screening

Peterson et al. (2011) suggested an association between low health literacy and mortality for patients with heart failure. The researchers conducted a study of patients at a Kaiser Permanente outpatient HF clinic in Colorado from 2001 through 2008. Of the 1,547 participants that responded (72% response rate), 17.5% had a lower literacy level and were part of the older population with low socioeconomic status and other comorbidities (Peterson et al.). These findings indicated a correlation between patients' low health literacy and high mortality.

Gaglio's (2010) study showed the importance of assessing health literacy and health information of patients at risk of cardiovascular disease. The purpose of the study was to investigate the experiences and preferences of patients with differing health literacy needs and numeracy abilities when receiving health information. The data collected was quantitative and qualitative for adults aged 40 years and older with two or more risk factors for cardiovascular disease. The study was conducted at Kaiser Permanente of Denver. Of the 493 patients sampled, 75 completed the study and provided data on health literacy ability, numeracy, socio-demographic health status, illness perception, and personal experiences. In-depth interviews were conducted with other healthcare educators to help patients understand how their health information was shared.

In Gaglio's (2010) study a majority of patients had adequate functional health literacy while 65% had low numerical skills. Among those patients the preference was to receive information on health issues via face-to-face interaction with the healthcare provider. Patients with lower, limited health literacy did not prefer impersonal methods

such as the Internet or pamphlets. The study stressed the importance of having several methods available to provide health information in a clear, simple language.

Morrow (2006) conducted a study aimed at improving adherence to HF medications for middle-aged and older adults, considering the relationship of health literacy to cognitive and sensory abilities. Factors that may significantly affect patient adherence to a medication regimen are mental processing speed, the working memory, and cognitive ability. Healthcare providers should be aware of the importance of medication instructions that are designed to decrease comprehension demands on a patient's cognitive ability to understanding instructions provided. The Short Test of Functional Health Literacy in Adults (STOFHLA) was used to measure patients' demographic area, gender, age, race and education.

Another study showed one simple approach to assessing a patient's health literacy: healthcare providers were encouraged to incorporate teach-back methods. These methods were to be culturally sensitive to patient needs by asking open-ended questions. Patients were asked to rephrase or demonstrate what was interpreted in their own language. The healthcare provider then evaluated patient responses. Researchers indicated that providers should not evaluate by asking, "Do you understand?" because the patients' responses may report a false misunderstanding to the question (Osborn, Cavanaugh, & Kripalani, 2010).

Heart Failure Symptom Management

Akosah, Schaper, Haus, Mathiason, Barnhart, and McHugh (2005) proposed a disease management model associated with long-term survival benefits. The researchers suggested the short-term benefits outweighed the long-term benefits of various heart failure disease management programs and that the proper medication use of angiotensin converting enzyme inhibitors for patients with heart failure is the most significant in treatment.

HF is a significant cause of disability and death in developed and developing countries with healthcare (Birks, Tansley, Hardy & Al, 2006). Along with the typical medication regimen for treating the clinical manifestations of this disease process there is new compelling evidence for potential reversal by an uploading of the left ventricle with the implant of a left ventricular assist device (LVAD).

Over the last 40 years pharmacological therapy for heart failure has evolved from the use of digoxin and diuretics. In addition, drugs such as ace inhibitors, hydralazine, isosorbide, beta blockers, and angiotension-receptors blockers have been included. Newer data and clinical trials have helped reduce and preserve the ejection fraction (Krum & Teerlink, 2011).

For primary care providers to correctly diagnose and treat acute HF symptoms, studies suggest it is essential to have Plasma B-Type Cardiac Natriuretic Peptide (BNP) levels drawn. Patients should be instructed to follow up with routine lab visits to reflect the cardiac status and heart function (Richards & Troughton, 2012).

One less invasive treatment for chronic HF is the automatic implantable cardioverter defibrillator (AICD), which can improve patients' ejection fraction and thus

decrease the risk of sudden cardiac death. The only concern was that although AICD may improve patients' longevity, the literature is inconclusive on the effect on patients' quality of life (Anstrom et al., 2008).

Many healthcare institutions play a role in aggressive medical therapy for patients with heart failure who have other comorbities. Improving health literacy and symptom management for these patients could greatly improve patients' overall health conditions. Thus, hospitals must adhere to some type of program specifically designed for heart failure patients that includes knowledgeable nurses educating patients about proper self-management.

Self-Management of Heart Failure

McAlister (2004) studied multidisciplinary strategies for patients admitted with heart failure. The goal for self-management of patients with heart failure is to improve long-term patient outcomes. Different intervention strategies including patient education were evaluated to determine the best practice to help reduce patient readmission. The findings suggested that pharmacologic treatment has been most noted to improve patients' quality of life.

One of the primary reasons for exacerbation of heart failure is a patient's non-compliance with dietary restrictions. Lennie et al., (2008) discuss the importance of patients adhering to a strict low-sodium diet to reduce heart failure symptoms despite factors such as patients' perceptions and learning barriers that may affect sodium intake. The study was conducted at four medical centers in the United States and Australia and had specific inclusion criteria. Two factors studied were patients' socio-demographic and clinical characteristics. Patients must learn to adhere to a reduced-sodium diet and

healthcare providers can improve patients' understanding of their disease and perceptions of the educational material provided by administering a health literacy screening tool upon admission.

Dewalt et al. (2006) suggested that incorporating programs specifically for heart failure patients may help improve self-management and reduce hospitalization and mortality. The sample size of this study was 123 patients, 41% of whom had inadequate literacy. The study used a primary care-based heart failure self-management program designed for patients with low literacy to reduce the risk of hospitalization or death. Patients were taught ways to identify symptoms of heart failure exacerbation (e.g., monitoring daily weight, use of diuretics). The teaching method utilized in this study was the teach-back approach for patients to demonstrate understanding. Follow-up phone calls were conducted to help patients monitor their self-management.

In 2009 the American College of Cardiology Foundation and the AHA introduced a new set of specific guidelines for self-management of adults with HF (Packard, Lenz, & Destache, 2010). There was also a new set of guidelines discussed in literature for medication reconciliation upon admission and discharge. An extensive set of written discharge instructions was given to patients and their primary caregivers at home. Also, the six aspects of care were discussed regarding strict diet management, activity level, monitoring of daily weight, and who to report to if symptoms worsen. The literature emphasized the importance of specific patient adherence, persistence, and dose titration of beta blockers and angiotension converting enzyme inhibitors.

Lainscak et al. (2011) study indicates new guidelines of heart failure stress the importance of lifestyle changes among patients diagnosed. Patients' may experience a

variety of symptoms, it is important that self care management is instructed properly by healthcare providers. Awareness of the cultural differences of interpretation of symptoms plays a significant role in how a person responds. It is important that cultural beliefs be known to healthcare providers to ensure that the patients learning needs and goals of self care are being met. Several methods should be introduced in how to manage self care, such as, routine screening for learning barriers, structured education, using a variety of educational materials to incorporate into learning, and teaching the patient specific skills to manage symptoms. Patients that are at risk for poor self care should be a priority among healthcare providers to engage into multiple strategies of self care management.

Core Measures

According to the Joint Commission on Accreditation of Healthcare Organizations, there are three core measures that are significant to heart failure. Since January 2012, the Center for Medicaid and Medicare services has excluded smoking cessation from HF measures because smoking should be a global measure in healthcare (JCAHO, 2012).

The core measures of heart failure are discharge instructions, evaluation of left ventricular systolic function, and the use of angiotension converting enzyme inhibitor (ACEI) or angiotension receptor blockers (ARB) for left ventricular systolic dysfunction (JCAHO, 2012). The sooner heart failure is diagnosed and treated, the better the life expectancy for patients. Over the last several decades physicians and other healthcare providers have researched and made significant changes with the best practice of improving HF management (Stella, 2013).

Stella's (2013) research indicates that BNP type and N terminal Prohormone of brain natriuretic peptide (NT-pro BNP) are lab specimens that are drawn via blood sample to diagnosis heart failure. Although the Joint Commission has not yet included this specific measurement into core measures, the BNP test result is commonly used in hospitals and physician clinics nationwide to diagnose acute exacerbation of heart failure.

Discharge instructions. Specific instructions are provided to patients about the progressive symptoms of heart failure. The symptoms patients are instructed to report are shortness of breath, a weight gain of two to three pounds overnight or five pounds in one week, fluid retention in the lower extremities, fatigue that makes routine daily activities impossible, cough with pink frothy-colored sputum, anorexia, abdominal tenderness with swelling, and orthopnea (Stella, 2013; JCAHO, 2012).

Angiotension converting enzyme inhibitor. Stella (2013) and JCAHO (2012) indicated the second core measure for HF is the use of angiotension converting enzyme inhibitor (ACEI), the first line of treatment commonly prescribed by physicians. ACEI reduces the workload on the heart by blocking stress hormones that allow the heart to work overtime. Over a period of several weeks to months ACEI improves heart function therefore increasing the quality of life while decreasing the risk of sudden cardiac death by 15-25% annually (Stella).

Angiotension receptor blockers. The next drugs of choice for heart failure are angiotension receptor blockers (ARBs), which block the same chemical angiontension II inside the heart as ACEI. For patients that may not be able to tolerate the side effects of ACEI physicians will prescribe an ARB or concurrent treatment of both medications. Proper knowledge of medications and side effects is important for healthcare providers

when giving discharge instructions. Specific written handouts of medications need to be simple and easy to read for patients with low health literacy (Stella, 2013; JCAHO, 2012).

Left ventricular systolic function. Research indicates the last core measure is the evaluation of left ventricular systolic function. The results must be documented in the patient's medical record upon first hospital admission with proper follow up evaluations to assess if there is improvement of the *ejection fraction* (EF), or the percentage of blood that the heart pumps with every beat. The normal EF for an adult is 50-75%. The EF results will help physicians determine the severity of HF as well as risk of mortality (Stella, 2013; JCAHO, 2012).

Diagnosing HF can be problematic because many other underlying medical conditions contribute to similar symptoms that a patient can experience. Diseases that lead up to HF are coronary artery disease, hypertension, and diabetes. The echocardiogram is the primary tool used in measuring a patient's EF for diagnosing heart failure along with the common symptoms reported (Stella, 2013; AHA, 2013e).

The American Heart Association indicates other commonly used tests for diagnosing heart failure that are not part of the core measures are blood and urine tests to check BNP and kidney function. Chest radiography, EKG, angiogram to rule out any coronary artery disease, and MRI to capture perfected images of the heart are the most utilized tests for heart failure (AHA, 2013e).

Conceptual Framework

The conceptual framework of this study is based on nursing theorist Dorothea Orem's self-care model. The framework addresses self-care deficits in patients with low

health literacy in the disease process and management of heart failure. In this model the nurse acts as patient advocate by helping the patient meet self-care needs. The nurse should be able to recognize a patient's specific learning need in order to utilize the proper tools for patient education. Factors include age, comorbidities, learning needs, and depression. Patient quality of life with heart failure may be decreased because of such deficits (Polit & Beck 2012). It is imperative that researchers establish an easy, economical, easy, valid, and time-efficient assessment to provide health professionals with a viable means of screening and intervening with patients (Haun, 2007).

In summary, patients suffering from exacerbations of heart failure need their health literacy level screened upon hospital admission. Patients' socioeconomic status, education level, financial resources, and cognitive impairments greatly affect this disease prognosis.

CHAPTER THREE

Program Evaluation

The purpose of this study is to assess health literacy and self-management knowledge of patients with heart failure to reduce hospital readmissions. The first step is to assess patients' knowledge and level of understanding. The nurse should determine patients' level of understanding to effectively educate patients to reduce heart failure symptoms and improve overall quality of life.

Reiteration of Problem

Heart failure continues to be an increasing health-related problem that profoundly affects the elderly population in the United States. At least five million people in the US have HF (AHA 2013c). The National Heart Lung and Blood Institute (2010) suggest HF contributes to 300,000 deaths each year, leading healthcare providers to make changes to help improve patient outcomes. The increase of comorbidity, advancing age, polypharmacy use, and hospital readmissions are associated with poor clinical outcomes affecting the cost of HF for healthcare systems (NHLBI 2010; Ahluwalia et al., 2013).

Design

The design of this proposed project is a prospective descriptive study that will assess health literacy, self-care, and symptom management knowledge of patients with heart failure. This can be assessed by the primary nurse upon hospital discharge with patients having a diagnosis of heart failure. The project outcomes will be evaluated utilizing Health Literacy Screening Instruments (Appendices A, B), Demographic Instrument (Appendix C), Heart Failure Readmission Assessment Instrument (Appendix D), and an HF Symptom Tracker (Appendix E).

Setting and Sample

The setting is a southern California acute care hospital. Participants will be patients admitted through the Emergency Department with diagnosis of heart failure. The participants of study will be followed throughout hospital stay for further evaluation of health literacy and self management needs.

Inclusion/Exclusion Criteria

The inclusion criterion will be patients having a medical diagnosis of heart failure upon admission to the hospital through the Emergency Department. Patients with known mental health disorder, progressive cognitive or congenital learning disabilities (e.g., dementia or Alzheimer) will be excluded from the study but may be useful for future research.

CHAPTER FOUR

Procedures

Patient privacy rights will be maintained for all participants in the study. Patient confidentiality will be ensured by adherence to all Health Insurance Portability and Accountability Act (HIPAA) rules and regulations. Each patient will be asked to sign an informed consent after given verbal and written invitation to participate. (Appendix F).

Instruments

The participants in this planned project will complete five instruments that may be used for data collection and patient education. The facility will utilize an instrument for trending data on HF readmission assessment, health literacy screening, HF symptom tracker and a demographic form.

Demographic Instrument. A demographic form (Appendix C) will be utilized to help identify participants' similarities and differences. The form will collect information on participants' ages, gender, ethnic backgrounds, educational levels and current living arrangements. Screening will be in the form of multiple choice and open ended questions.

Health Literacy Screening Instrument. Planned interventions of screening health literacy will be utilized in a correlation study by a survey method. The health literacy instrument will consist of three basic questions to assess a patient's level of understanding. The goal is to evaluate the correlations between patients' low health literacy, level of understanding of the medication regimen, reducing heart failure symptoms and recurrent admissions.

This instrument will establish validity to help identify patients with a decreased learning curve in managing HF symptoms. The health literacy instrument was obtained from literature about health literacy and outcomes for patients with heart failure (Peterson et al., 2011).

Ways to examine the reliability of the instrument include first taking into consideration the patient's cognitive level, educational background, and demographic variables before handing out the screening tool upon hospital admission. One proposed idea to consider is how healthcare providers can improve patients' health literacy. Unless there is an underlying cognitive disease process such as dementia, the only means to improve health literacy is to improve patients' reading skills and level of understanding. Asking patients to read prescription containers is a good measure for assessing health literacy (Chew, Bradley, & Boyko, 2004). The following three questions are reported to be a useful screening tool for patients with below-basic health literacy skills (5^{th} grade level or lower):

1. How often do you have somebody help you read hospital materials?
2. How confident are you filling out medical forms by yourself?
3. How often do you have problems learning about your medical condition because of difficulty understanding written information?

These questions, given to screen patients upon admission, will be clearly legible, easy for the average person to understand (Peterson et al., 2011), and call for responses using the five-point Likert scale. Higher scores will indicate lower health literacy levels (Chew et al., 2004).

Chew et al (2008) followed up with a study used in a large VA outpatient facility on validating screening questions for limited health literacy. The results under the Area of Receiver Operating Characteristic Curve (AUROC) scored 0.74 (95% CI: 0.69-0.79) revealing inadequate health literacy (Chew et al.). The study suggested more effectiveness in a busy clinical setting to utilize only one screening question, "How confident are you filling out medical forms by yourself?" The participants were more likely to be shameful of admitting difficulty understanding about a medical condition or requiring someone to help read medical materials (Chew et al.).

Peterson et al., (2011) study indicated the association of low health literacy and heart failure by performing a retrospective cohort study at Kaiser Permanente Hospital in Colorado. 3 brief screening questions were performed to establish validity, resulting Cronbach *a* summoned score of 0.75 that was used for analysis (Peterson et al.).

Heart Failure Readmission Assessment Instrument. This instrument, used by the AHA (2013b), is an example to gain insight into patients' level of understanding and adherence to self-management. The questions require "yes", "no" or fill-in-the-blank responses explaining patients' rationale for self-care and performing ADL at home. The questionnaire also inquires about the family's level of understanding and looks into discharge instructions with the appropriate follow-up with home healthcare or the physician's office. This instrument originates from Reading Hospital Medical Center in Pennsylvania, developed in 2008-2009 for process improvement project to determine educational or process gaps causing HF readmissions (Institute of healthcare improvement, 2013).

A multidisciplinary approach was used to analyze the percentage of heart failure readmissions within 30 days of discharge at Reading Health Systems. Results of the data analyzed for HF readmission from 30 days of discharge at Reading Health during 2008-2010 ranged from 7.3% to 9.4%, while compared to average of 17.9% to 19.7% for other diagnosis (Institute of healthcare improvement, 2013). Reading hospital was awarded the gold plus performance achievement from AHA in 2013 for high compliance with meeting heart failure core measures to improve patient outcomes and quality of care (Reading Health Systems, 2013).

Newest Vital Sign screening instrument. This instrument assesses patients' ability to read and correctly interpret a food label to provide insight into patients' health literacy. The screening test measures health literacy, numeracy, and comprehension skills related to health issues. Scores of fewer than four correct answers suggest possible low health literacy (Weiss et al., 2005). Results of the NVS assessment performed implied the Cronbach $a > 0.76$ in English and 0.69 in Spanish (Weiss et al., 2005).

Rowlands et al. (2013) conducted a study on the development and validation of health literacy in the UK using the NVS. Results from the study indicated a Cronbach *a* score 0.74 out of 337 participants that were English speaking. Future research in public health on literacy was suggested by methods of randomized control trials or epidemiological surveys (Rowlands et al.).

More recently, Pfizer (2013), states that the NVS screening instrument is a valid and reliable method in the health literacy movement and has been researched thoroughly by knowledgeable health care individuals. Pfizer indicates the NVS research has

appeared in more than 25 peer reviewed studies, with recent systematic reviews performing moderately well to identify limited health literacy.

Welch, VanGeest & Caskey (2011) conducted a case study on NVS quality process improvement outcomes in a primary care clinic. Time constraints, cost and clinical utilization were measured. Implementation of the NVS screening tool indicated a reliable measure of health literacy, small time constraints and cost. Clinical utilization of NVS data collected may require additional training among health care providers, and improvement of best practice process in a clinic setting.

Heart Failure Symptom Tracker. This instrument used from AHA (2013d) is utilized as educational material for patients' HF symptoms. Patients are instructed to watch for and report symptoms of fluid retention for one week and daily record blood pressure and pulse, blood sugar if patient is diabetic, weight changes, and any missed medications. There is additional space for patients to detail any symptoms or record comments. This instrument has been primarily used for patient education purposes and may be helpful when discharged from the hospital. Patients are instructed to complete and return it to the same hospital if readmitted within 30 days (AHA, 2013d). The AHA *Get with the Guidelines on Heart Failure* provided insight on increasing the effectiveness of continuing quality improvement at St. Anthony Hospital Centura Health regarding patient education on HF. (AHA).

Data Collection

This prospective, descriptive pilot study of patients admitted with diagnosis of heart failure will assess health literacy and self-care management knowledge. Each instrument used for collecting data will be assessed upon admission through hospital discharge (Appendices A-C) and again if patients are readmitted within 30 days to examine self-care management (Appendices D-E).

Data Analysis

The demographic instrument, Newest Vital Sign, and Health literacy Screening instrument will be analyzed using descriptive statistics calculating medians, means, standard deviations, and percentages, and results will be displayed on graphics and tables. A paired *t*-test will be used to examine any statistically significant findings with the heart failure readmission assessment instrument and heart failure symptom tracker upon readmission to the facility within 30 days. Analyses will be performed using SPSS version 18.0.

CHAPTER FIVE

Discussion

Heart failure is an excellent model for studying the literacy outcome relationship because of the disease complexity and the importance of adherence to proper medical management. Meanwhile, patients possessing low health literacy may be at potential risk for adverse health outcome in heart failure (Macabasco-O'Connell et al., 2011).

Health literacy and self-management of heart failure have been increasingly problematic for patients. Methods for evaluating low health literacy have become more prevalent in healthcare organizations, although additional screening should be completed for patients with HF due to the progressive nature of the disease.

Many healthcare institutions do play a role in aggressive medical therapy with patients suffering from heart failure who have other comorbidities. Improving health literacy and symptom management for patients with HF could greatly improve their overall health conditions. It is imperative that hospitals adhere to some type of program specifically designed for heart failure patients and have knowledgeable nurses to educate patients on proper self-management.

Deupree's (2011) research indicates nearly half of all Americans have some type of limited health literacy. Patients who have a deficit in health literacy may be at risk for a higher incidence of an adverse drug event or complicated disease process. Many times a patient's cognitive understanding of the disease process may go unnoticed by healthcare providers. The nurse plays a significant role in patient education along with recognizing low health literacy.

Data analysis for the demographic, Newest Vital Sign, health literacy screening, heart failure readmission assessment, and symptom tracker tools would be suggestive of how effective these tools are for patients participating in the study. One important factor to consider is that 30-day readmission with heart failure may indicate a high self-care management deficit.

Implications

Patient education has been considered extremely significant for HF. Specific educational instructions that should be provided include the proper use of diuretics, the importance of decreasing salt intake and monitoring activity level and daily weight while reporting any significant changes to a healthcare provider, and the use of a special selected medication regiment for heart failure.

Nursing staff overseeing patients admitted with HF should be performing basic teach back methods or asking patients to explain their understanding of the importance of medications prescribed. The medications commonly prescribed to treat HF are incorporated to meet core measures. Nursing staff should use best practices for evaluating patients' health literacy and self-management knowledge. Patients should be encouraged to become more involved with daily monitoring for heart failure and to report worsening symptoms promptly.

Project Limitations

Several limitations exist in assessing health literacy and self-management for patients with heart failure. The sample size may not show enough relevant evidence to support the project. Additionally, patients may be admitted elsewhere other than through the Emergency Department. Direct admits from a physician office, skilled nursing

facilities, or transfers from other hospital facilities have not been included into project. Other areas of limitations may involve a lack of knowledge of staff nurses who are providing care for patients, patient anxiety, and the timing of HF teaching during hospitalization. Patients may often exhibit compensating behaviors for lack of understanding medical information. Additional assessments of such behaviors could help the health care provider to promote patient understanding of health information. Educating hospital nurses to increase awareness of low health literacy plays a vital role in heart failure.

Future Research

Further research in assessing patient health literacy could help reduce exacerbation of the problem. Health literacy screening instruments could be utilized in a hospital setting or in a physician clinic upon patient admission. The main concern is for the healthcare provider to assess a patient's health literacy level and base needs for education on a level the patient and caregivers will comprehend (Peterson et al., 2011).

Correlation studies on mental health. Progressive cognitive learning disabilities, dementia, Alzheimer's disease, and schizophrenia may be incorporated with methods to assess health literacy and self-management of heart failure. More correlation studies on mental health addressing limited health literacy should be emphasized and further researched.

Case-control studies. The comparison of patients admitted with heart failure with a population of patients admitted without heart failure can be investigated further to reduce the problem of recall bias. The methodological research may include questionnaires or personal interviews that contribute to error of classification. This

method of research would have an advantage because of the cost effectiveness, easy to perform and not as time consuming as compared to other methods of research.

Multi-center cross-sectional study. Ongoing studies are on the risk of a specific population of patients. A specific timeframe is warranted on the prevalence of heart failure in hospital organizations. Utilizing a larger sample size will produce trends in methods of assessing health literacy and self-management leading to statistically significant findings.

Conclusion

Health literacy and self-management play a significant role in heart failure. Healthcare providers and patients admitted with heart failure should be encouraged and educated on the importance of medication adherence and self-management knowledge. Patient compliance with medications and reporting symptoms of recurring heart failure will reduce the progressive nature of the disease and prevent increased in mortality rates. Evidence-based interventions of nursing practice will help healthcare providers assess for low health literacy and self-management in these patients.

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APPENDIX A

Health Literacy Screening Questionnaire

(Peterson et al., 2011)

1. How often do you have somebody help you read hospital materials?

1	2	3	4	5
Never	Rarely	Sometimes	Almost Always	Always

2. How confident are you filling out medical forms by yourself?

1	2	3	4	5
Never	Rarely	Sometimes	Almost Always	Always

3. How often do you have problems learning about your medical condition because of difficulty reading hospital material?

1	2	3	4	5
Never	Rarely	Sometimes	Almost Always	Always

APPENDIX B

Newest Vital Sign Screening Instrument

Patients will read a food label and interpret. Below is a questionnaire to assess patients' level of understanding of food labels.

Nutrition Facts
Serving Size 1/2 cup
Servings per container 4
Amount per serving
Calories 250 Fat Cal 120
%DV
Total Fat 13g 20%
Sat Fat 9g 40%
Cholesterol 28mg 12%
Sodium 55mg 2%
Total Carbohydrate 30g 12%
Dietary Fiber 2g
Sugars 23g
Protein 4g 8%
* Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

	ANSWER CORRECT? YES	NO
READ TO SUBJECT: This information is on the back of a container of a pint of ice cream.		
QUESTIONS		
1. If you eat the entire container, how many calories will you eat? **Answer** ❑ 1,000 is the only correct answer	_____	_____
2. If you are allowed to eat 60 g of carbohydrates as a snack, how much ice cream could you have? **Answer** Any of the following is correct: ❑ 1 cup (or any amount up to 1 cup) ❑ Half the container Note: If patient answers "2 servings," ask "How much ice cream would that be if you were to measure it into a bowl?"	_____	_____
3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day? **Answer** 33 is the only correct answer	_____	_____
4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving? **Answer** 10% is the only correct answer	_____	_____
Pretend that you are allergic to the following substances: Penicillin, peanuts, latex gloves, and bee stings.		
5. Is it safe for you to eat this ice cream? **Answer** ❑ No	_____	_____
6. (Ask only if the patient responds "no" to question 5): Why not? **Answer** Because it has peanut oil.	_____	_____
Total Correct	_____	

APPENDIX C

Demographic Form

Directions: These questions are related to the background of those responding to this evaluation.
As with all the information gathered with this evaluation, all of your responses will be kept confidential. Please circle the appropriate letter that best describes you.

1. What is your age? _____

2. What is your gender?

    a. Male
    b. Female

3. What best describes your Ethnic Group?

    a. Caucasian (non-Hispanic)
    b. African American
    c. Asian
    d. Pacific Islander
    e. Multi-Ethnic
    f. Other

4. What is your highest educational level?

    a. Masters or Doctorate degree
    b. Bachelors degree
    c. Associate degree
    d. High school diploma or equivalent
    e. Other _____

5. What is your current living situation?

    a. Married
    b. Divorced
    c. Widowed
    d. Single
    e. Domestic Partnership

APPENDIX D

Heart Failure Readmission Assessment Instrument

Reading Hospital and Medical Center,
Sixth Avenue and Spruce Street
West Reading, PA 19611

Patient Name:_____ Date of Last Discharge:_____

Account Number:_____ Date of Current Admit:___ ____ __

1. Are you following a special diet at home?

□ No □ Yes; Kind:

_____

2. Are you weighing yourself at home EACH day at the same time with similar clothes on?

□ No □ Yes_____

3. Do you know what to do if you gain 3 pounds in 2 days? (write answer)

_____□ Don't Know

4. Do you have trouble getting around at home? How so?

_____

_____

5. Are you having trouble completing everyday tasks? Which ones?

□ No □ Yes; _____

6. Where do you live? □ At Home □ SNF_____ □ AL_____

a. Who helps you at home? □ Spouse □ Adult Child □ Other _____

_____

7. What do you think is the reason for your readmission?

□ Too much salt □ Not weighing yourself

□ Not following your diet □ Not taking medications

□ Not addressing symptoms: (Check below if applicable)

□ Shortness of Breath □ Abdominal bloating

□ Increased Weight □ Irregular heart beat

□ Unable to lie flat

8. What do family members think is cause for readmission?

_____

9. Did a Home Health nurse come to your house after discharge? □ No □ Yes

If Yes:

a. Which agency? (If patient does not know, ask what color folder they have)

_____

b. For how long? _____

c. Were they helpful? _____

10. How many days/weeks from discharge to first doctor appointment?

_____

a. How do you get to your doctor's appointment? ___ _____

11. Did you call your physician/home health before coming to the hospital?

□ No □ Yes; Called which physician/ What time of day _____

a. What were you told to do? _____

_____

12. General Comments/Outcomes/Recommendations:

_____

_____

_____

Assessment completed by_____ _____ _____

APPENDIX E

Heart Failure Symptom Tracker

- **Every day**, watch for signs and symptoms that you are retaining water/fluid
- **CALL your doctor for**:

  -Weight gain of 3 pounds overnight OR 5 pounds over 5 days

  -Worsening symptoms (swelling, breathing, fatigue, lightheadedness, heart racing)

Date	Missed Medicines	Weight	Blood Pressure & Pulse	Blood Sugar (if diabetic)	Symptoms OR Comments
Su					
M					
T					
W					
Th					
F					
Sa					

APPENDIX F

Invitation to Participants

Dear Participant,

I am a Master of Science in Nursing student at Point Loma Nazarene University, and will be conducting a study on assessing health literacy and self-management among heart failure patients.

The purpose of this study is to assess health literacy and self-management knowledge among heart failure patients admitted through the emergency department. Results of the study will help improve patient education and symptom management of heart failure by reducing hospital readmissions.

Procedures: Each questionnaire form will consist of a demographic tool that will be used to identify and compare participants' similarities or differences. The demographic form consists of five questions that take approximately 10 minutes to complete. The second form is a health literacy screening tool that is utilized by a survey method of three questions to assess a patient's level of understanding. The goal is to evaluate correlations between patients' low health literacy and level of understanding. The third questionnaire is the Newest Vital Sign tool that consists of six "yes or no" questions regarding how to correctly read a food label. It will take approximately 10 minutes to complete.

The last two questionnaires are provided at discharge to keep track at home of heart failure symptoms and patients' level of understanding discharge instructions and follow up care.

Risks: No risk will be involved in this study. The only burden to you is the time required to fill out the forms.

Benefits: Possible benefits will be to help improve a patient's level of understand heart failure and symptoms to report to health care provider.

Confidentiality: Your participation in this study will remain anonymous. You may refuse to participate or withdrawal at anytime. The data collected will be stored in a secure computer program database that only the researcher may access.

Debriefing: You will have the right to any and all questions regarding the study answered by healthcare provider. If after completion of the surveys you have additional questions about the study or your involvement, email or call the researcher directly at 000-000-0000.

Thank you for your consideration of this study.

(Primary Researcher)

(Secondary Researcher/advisor)