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Health Literacy Staff Education for Heart Failure Management

Ifeoma Onyeiwu
Walden University

Walden University

College of Nursing

This is to certify that the doctoral study by

Ifeoma Onyeiwu

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Review Committee
Dr. Deborah Lewis, Committee Chairperson, Nursing Faculty
Dr. Allison Terry, Committee Member, Nursing Faculty
Dr. Jonas Nguh, University Reviewer, Nursing Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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Ifeoma C. Onyeiwu

MSN, FNP Walden University, 2017

MPH, Walden University 2012

BSN, Bowie State University, 2005

AD, School of Midwifery, Ituk Mbang Akwa Ibom, Nigeria 1994

AD, Queen Elizabeth School of Nursing, Umuahia Nigeria 1992

Project Submitted in Partial Fulfillment

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Abstract

Heart failure (HF) is a chronic disease with progressive deterioration that occurs over years or decades. There is a need for individuals affected by HF to be educated regarding this complex disease. Health literacy, an integral part of health and wellness, is one's ability to understand and use health information. Ninety million adults in America have difficulty understanding and using health information, resulting in higher rates of hospitalization and use of emergency services among patients. Limited health literacy may lead to billions of dollars in avoidable healthcare costs. This DNP project addressed health literacy as it relates to medication adherence and lifestyle changes involved with HF management. To address these effects and the burden of HF, there is a need to educate healthcare staff. Evidence supports the value of staff knowledge when managing HF. A HF literacy staff education module was developed using Koh's health literacy care model and Orem's self-care theory. The education module was presented to six registered staff nurses and four medical assistants in a primary care setting in the State of Maryland. Pretest and post-tests were administered to determine if there were changes in staff knowledge regarding HF health literacy. Brigham and Women's Hospital model for pre- and post-testing was used to analyze data. Findings indicated that the average learning gained for the staff nurse and medical assistant participants was 73.68%, showing an increase of knowledge regarding health literacy in terms of HF management. This project will lead to positive social change by enhancing staff knowledge regarding the importance of health literacy and managing HF patients.

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Dedication

This project is dedicated to my parents especially my mother who was my role model, and who taught me the importance of education, hardworking, and perseverance. Mommy, I will always love you. Also, to my loving and supportive husband Chief Sir Edwin Onyeiwu and my four children Emeka, Chinonso, Chinemerem, and Chigorom; as well as my siblings Martin, Charles, George, Pastor Stanley, Uchenna, Buka & Obum.

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Section 1: Nature of the Project

Introduction

Heart failure (HF) is a chronic disease where progressive deterioration occurs over years or decades. HF is a serious public health issue because of the population affected by it and its global cost. According to the Centers for Disease Control and Prevention (2020a), about 6.5 million adults in the United States (U.S.) have HF, and HF was the contributing factor of 1-8 deaths in 2017. In 2012, HF cost $30.2 billion to the nation in terms of healthcare services, medication for HF, and missed days from work. HF is associated with coronary heart diseases (CAD), diabetes, high blood pressure, obesity, valvular heart diseases, and other conditions related to heart disease (CDC, 2019). Also, some unhealthy habits such as smoking, unhealthy diet, lack of physical exercise, and too much alcohol consumption can increase one's risk of heart failure (CDC, 2019).

HF is a complex clinical syndrome caused by myocardium structural and functional defects in which the ventricular filling or ejection of blood is affected (Inamdar & Inamdar, 2016). Inamdar and Inamdar (2016) stated that the most common causes of HF are reduced function of the left ventricle and dysfunction of the pericardium, myocardium, endocardium, great vessels, and valves of the heart. Also, increased hemodynamic overload, ischemia-related dysfunction, ventricular remodeling, excessive neurohormonal stimulation, abnormal myocyte calcium cycling, excessive or inadequate proliferation of the extracellular matrix, accelerated apoptosis, and genetic

mutations are contributory pathogenic factors that can lead to HF (Inamdar & Inamdar, 2016).

According to Savarese and Lund (2017), HF is classified into three categories based on the ejection fraction, natriuretic peptide level, presence of structural heart disease, and diastolic dysfunction. They are HF with reduced ejection fraction (HFrEF), HF with preserved ejection fraction (HFpEF), and HF with mid-range ejection fraction (Savarese & Lund, 2017).

There is a need for individuals affected by HF to be educated regarding this complex disease. According to the U.S. Health Resources and Services Administration (HRSA, 2019), HF is an integral part of health and wellness. It refers to one's ability to understand health information and the use of this information to make good health and healthcare decisions. The HRSA said over one-third of U.S. adults have difficulty with following directions and understanding instructions written on prescription labels and adhering to provider follow-up appointments and instruction, medication schedules, and lifestyle change instructions (HRSA, 2019). Health literacy involves social and cultural factors that influence individual expectations and preferences. As necessary, health literacy can be defined as "the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions" (Ventura & Pina, 2018, p. 1).

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Problem Statement

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While the literature indicates that HF is a complex health issue with multiple treatment modalities, it is not known to what extent implementing health literacy training

for staff will improve their understanding of HF patients in terms of their health. According to the U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion (2019), every individual has the right to health information that helps them make informed decisions. Also, health services should be delivered in ways that are easy to understand and improve health, longevity, and quality of life. Therefore, healthcare providers are obligated to engage in education and efforts that will improve patient's as well as family member's and caretaker's health literacy.

Patients' ability to read, listen, and comprehend health information has become more evident and an essential aspect of health maintenance and improvement in the past decade (since 2011). The Institute of Medicine (IOM, 2014) said health literacy refers to the degree to which an individual can obtain, process, and understand necessary health information and required services needed in making appropriate health decisions. Ventura and Pina (2018) said about 90 million adults in America have difficulty understanding and using health information. Limited health literacy is associated with higher rates of hospitalization and use of emergency services among patients, and limited health literacy causes billions of dollars in avoidable healthcare costs (Ventura & Pina, 2018).

Health literacy relates to reading and comprehension and involves a conglomerate of skills regarding the use of printed and numeric information and verbal literacy. Therefore, patients without these skills cannot provide adequate self-care and thereby predispose themselves to higher mortality risks. Also, patients with good health literacy had a higher general knowledge of HF, self-efficacy, the prevalence of self-care

behaviors (medication adherence and positive lifestyle changes), and quality-of-life scores compared to patients with low literacy. Low health literacy is associated with a lack of knowledge regarding the disease process and difficulties in understanding educational interventions (Ventura & Pina, 2018). Low health literacy is a barrier to achieving knowledge related to self-care and quality of life in HF patients. About 37% of patients with HF have low health literacy (Ventura & Pina, 2018).

Low health literacy affects millions of Americans, thereby causing poorer health outcomes for affected individuals. About 36% of adult Americans and 59% of adults 65 or older have below basic or basic health literacy (Ventura & Pina, 2018). People with low health literacy may also have trouble processing information regarding disease management, reading appointment slips and medication labels, verbally understanding information from healthcare providers and, understanding educational materials. Also, the complexity of HF self-care can be a massive threat to patient's adherence to medication and self-care behaviors, especially for patients with low health literacy.

HF self-care clinical guidelines can be complicated due to symptom monitoring, dietary and fluid restrictions, structured exercise regimens, and multiple medications management. Therefore, there is a need for the effective implementation of HF self-care to minimize hospitalizations and control increasing healthcare costs. Low health literacy is associated with more inadequate healthcare knowledge, decreased medication adherence, diminished use of preventative services, poorer physical and mental health, and increased hospitalizations.

Low health literacy also can be a barrier to effective disease self-management, especially to the HF population that has complicated self-care regimens (Cajita et al., 2016). "Low health literacy is also associated with decreased adherence to guideline-directed" (Ventura & Pina, 2018, p. 2). HF therapies involving medication adherence and lifestyle change. Furthermore, low health literacy is associated with a 32% higher mortality after adjusting for several comorbidities and predictors of survival following hospitalization in HF patients (Cajita et al., 2016). "Low health literacy can predict morbidity and mortality in HF patients" (Ventura & Pina, 2018, p. 2).

The practice problem addressed in this project was health literacy as it related to medication adherence and lifestyle changes in HF management. To address these effects and the burden of HF, there was a need to educate staff about the disease process and difficulties of how low health literacy plays a huge role in managing HF disease.

Purpose Statement

The purpose of the DNP project is to educate staff in a primary care facility in Maryland, regarding improving health literacy among HF patients through their interactions with patients and patients' education, thereby increasing patients' ability to take responsibility for their health and their families health. This is crucial for positive patient outcomes because limited health literacy is associated with poor disease management, non-adherence to recommended treatment, increased hospitalizations, and patient or caregiver medication errors. Patients' lack of disease understanding, difficulty making health decisions, fear of dying, and poor management symptoms, which lead to

frequent hospitalization, are more frequent when health literacy is not met (Wittenberg et al., 2018).

Input is required from other professionals to develop a staff education program that will help to improve health literacy among HF patients to reduce mortality and morbidity related to HF. This is because HF, like health literacy, is a complex and progressive health issue that requires long-term management. Poor management of HF might occur because of patients not following instructions in terms of medication management or lifestyle changes because of low or limited health literacy.

This DNP staff education project was used to teach staff how to assess patients' health literacy by evaluating their nonverbal and verbal communications, language, culture, and beliefs when working with HF patients. Staff must assume that patients and families have limited health literacy and difficulty understanding proper assessment. Also, staff was made to realize that health literacy interventions could be more successful when they are theory-based, multifaceted, and involve using person-centered operational components such as cultural appropriateness, skills building, goal setting, and active discussion (Stormacq et al., 2020). Additionally, staff was educated on teaching low literacy HF patients by using effective communication skills such as using layman language and avoiding medical jargon and using simple and straightforward words to explain care and management.

Staff education also involved what staff will look out for when patients come in for follow-up appointments such as adherence to medication, diet (which is supposed to be low sodium and low cholesterol), and management involving daily weight checks,

fluid intake and output monitoring, physical activity, smoking cessation, and quitting alcohol. Staff was also educated regarding tracking how often patients were readmitted to the hospital or used the emergency department and thereby knew how to control their symptoms. Also, staff was made to realize that some factors may influence individual health literacy, such as living in poverty, education, race/ethnicity, age, and disability.

Nature of the Doctoral Project

. This DNP staff education project involved developing and implementing an evidence-based education program for staff nurses. This project was developed to address health literacy involving the management of HF patients and input from a team of stakeholders, including healthcare providers, nurses, and medical and office assistants, as well as HF patients. First, a literature search was conducted regarding improving health literacy, HF education, the importance of nursing competencies to improve outcomes, proper education on HF, and improvement of self-efficacy of nurses at outpatient settings as well as acute settings.

An initial draft of an HF education program written in clear and simple language for staff, and an implementation plan was presented to the team of expert stakeholders for their feedback and support. In this initial draft with clear and simple language, third to fifth-grade reading levels with an average of fifth-grade were chosen because it met America Medical Association (AMA) recommendations for these plan types.

Staff were educated regarding the importance of assessing patients' health literacy levels and recommended tools used for the assessment of patients' education levels. Patient educational materials are especially important in terms of improving patients'

comprehension, especially when they are written at appropriate reading levels for patients, thereby influencing health behaviors (Athilingam et al., 2019). Also, staff were educated regarding HF, factors involved in its management (diet, fluid intake, daily weight, physical exercise, smoking, and alcohol cessation), prevalence, incidence, and prognosis. Eventually, the staff's feedback was incorporated into the program.

Significance

According to Gupta et al. (2017), health literacy is an important predictor of healthcare status in the U.S. Health literacy costs the United States $106-$236 billion annually (Gupta et al., 2017). Also, limited patient health literacy and understanding causes increased healthcare expenditures, decreased access to healthcare, and decreased quality of care. Racial disparities are strong predictors of limited health literacy (Gupta et al., 2017). African Americans have demonstrated worse health literacy, thereby suggesting that challenges exist in terms of addressing health disparities of Black patients (Gupta et al., 2017). This also shows that race, as well as ethnicity, are strongly associated with health literacy; high limited health literacy was found more among African Americans and Hispanics.

This DNP project will contribute to the existing body of knowledge regarding how to educate about health literacy, thus improving the quality of patient care and health outcomes and reducing healthcare costs and health disparities. This project will also provide education to staff on how to better care for HF patients. Additionally, this DNP project will lead to social change through staff education, thereby enhancing staff

knowledge regarding the importance of health literacy and its assessment when managing HF patients.

Summary

In Section 1, HF and its causes, prevalence, and incidence were addressed. Health literacy was defined, as well as causes and possible effects on the general population and especially HF patients. Healthcare providers can only empower this population when they know patients' level of understanding through assessments during office visits. Therefore, there is a need for effective implementation of programs that will bring more knowledge to nursing practice which will improve patient satisfaction, enhance the quality of care, and reduce healthcare costs.

Section 2: Background and Context

Introduction

This evidence-based project involved ensuring HF patients' adherence to medication and lifestyle changes, improving their health and reducing morbidity and mortality related to HF. Knowing the health literacy of patients, especially HF populations, helps staff tailor their education in the language they understand, which ensures safety, positive outcomes, and culturally sensitive care. The purpose of this project is to improve staff education regarding health literacy, especially among the HF population, which will increase their ability to take responsibility for themselves and their families' health. A comprehensive literature review was performed to address health literacy in disease management, its effects, and interventions needed for those with low health literacy. In Section 2, a scholarly literature review of health literacy, HF, identifying evidence-based interventions and evaluating HF education program patient perspectives and caregivers' effectiveness was presented.

Concepts, Models, and Theories

The health literacy care model and Orem's care theory served as the theoretical frameworks for this project. Using these models helped in terms of addressing staff education to improve health literacy among HF patients. The health literacy care model, which grew out of the chronic care model and was widely adopted in the 2000s, in which patients are fully engaged in prevention, decision making, and self-management activities during their care, was useful in this project. This is a model for healthcare providers and involves supporting team-based approaches that integrate medical practices across a team

of providers and other sources of support for patients. Healthcare providers need to approach all patients assuming they are at risk of not understanding relevant health information that helps maintain and improve their health (Opel, 2018).

This model involves understanding health and wellness beyond the biomedical model of health, or framing health through the testing, diagnosis, and treatment patients receive in clinical settings (Opel, 2018). According to Orem (Hartweg, 1991), self-care is a regulatory function that emphasizes the importance of patient's responsibility in terms of taking care of themselves. Orem's self-care theory involves the nurse as a facilitator and agent of change who helps patients maintain their health, life, and wellbeing. This staff education helped staff communicate effectively with patients, break down health goals into manageable steps so they can manage daily tasks to prevent and reduce symptoms, and connect patients with resources they need to be successful in managing their health.

However, when patients are unable or unwilling to perform self-care tasks, there are self-care deficits (e.g., unable to perform certain daily functions related to health and well-being, like dressing or bathing). Self-care maintenance involves daily tasks for preventing symptoms such as adhering to sodium restrictions and monitoring fluid intake. Also, self-care management involves activities to prevent these deficits, improve or maintain their functioning (Chen et al., 2014). Most HF patients do not adhere well to self-care recommendations such as medications and lifestyle changes. Therefore, improving patients' health literacy is an initial step to increase their knowledge about health issues, improve their ability to perform self-care activities adequately, and

communicate effectively and collaborate with healthcare providers during the management of their disease (Chen et al., 2014).

The project involved using the may not have universal meanings in other contexts:

Ejection fraction (EF): Measurement and percentage of how much blood from the left ventricle pumps out with each contraction. A normal EF may be between 50% and 70%. However, when EF is higher than 75%, it may indicate a heart condition known as hypertrophic cardiomyopathy. For example, an EF of 60% means that 60% of the total amount of blood in the left ventricle is pushed out with each heartbeat (American Heart Association [AHA], 2017a).

Health education: Teaching and learning processes involving promoting healthy lifestyles as well as improving quality of life (Fereidouni et al., 2019).

Health literacy: Refers to "the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions" (Ventura & Pina, 2018, p. 1). Health literacy is not just individual capacities but also related to being capable of handling the demands and complexities of the healthcare system (Centers for Disease Control and Prevention, 2020b).

Heart Failure (HF): A complex clinical syndrome caused by myocardium structural and functional defects in which the ventricular filling or blood ejection is affected. This means the heart is not pumping as well as it should be (Inamdar & Inamdar, 2016).

Heart failure with mid-range ejection fraction (HFmrEF): The term HFmrEF was first proposed to describe patients with HF and LVEF in the range of 40–49%. HFmrEF is also known as mild systolic dysfunction (Lopatin, 2018).

Heart failure with preserved ejection fraction (HFpEF): Also referred to as diastolic heart failure. The heart muscle contracts normally during this type of HF; however, the ventricles do not relax as they should during ventricular filling, with EF greater or equal to 50% (AHA, 2017a). HFpEF is seen more in older patients and women and results from abnormalities involved with active ventricular relaxation and passive ventricular compliance, leading to low stroke volume and cardiac output (Gazewood & Turner, 2017).

Heart failure with reduced ejection fraction (HFrEF): Also referred to as systolic heart failure. The heart muscle does not contract effectively, thereby causing less oxygenated blood to be pumped out to the body. The EF in this type is less than 40% (AHA, 2017a).

Lifestyle changes: Every positive and healthy change patient are required to make for better health outcomes involving diet, exercise, quitting smoking, maintaining weight, avoiding and limiting alcohol intake, maintaining blood pressure, and managing stress (American Heart Association, 2017b).

Medication adherence: Patients being able to take their medications correctly as prescribed by healthcare providers (American Heart Association, 2020).

Non-compliance and Non-adherence: Noncompliance refers to a situation where patients deliberately refuse to follow a treatment plan. Non-adherence involves situations where patients unintentionally fail to follow a treatment plan (Sweeney, 2019).

Patient education: Process by which health professionals impart knowledge to patients and their caregivers to improve health status and encourage involvement in decision-making related to ongoing care and treatment (Fereidouni et al., 2019).

Self-care: Activities that patients, families, and communities undertake to enhance health, prevent disease, limit illness, and restore health (Paterick et al., 2017).

Self-efficacy: Patients' beliefs in their ability to succeed in specific situations and accomplish certain tasks (Paterick et al., 2017).

Relevance to Nursing Practice

Health literacy is crucial for the management of HF patients in terms of medication adherence and lifestyle changes. Adequate health literacy is one's ability to read and understand necessary health-related materials such as prescription containers and directions, appointment information, and health issues. It may also increase a person's capacity to take responsibility for their and their family's health. Health literacy is also related to being capable of handling the healthcare system's demands and complexities (Centers for Disease Control and Prevention, 2020b). Health literacy is critical in healthcare because about 90 million adults in the U.S. have difficulty understanding and using health information. Also, limited health literacy is associated with higher rates of re-hospitalization and inappropriate use of emergency services

among HF patients, leading to increased avoidable healthcare costs (Ventura & Pina, 2018).

Identifying evidence-based interventions and evaluating the importance of HF educational programs, emphasizing self-care behaviors concerning medication adherence and lifestyle changes, is very important. Staff was taught scientific and proven ways of intervention to manage HF populations effectively. Also, staff was taught to encourage HF patients to make small changes to live healthier physically and emotionally and share those changes to inspire others.

As part of this program, staff was also educated regarding the Rise Above Heart Failure Initiative, which the AHA developed to empower patients to take an active role in their healthcare by encouraging small changes that lead to better disease management. Basically, The Rise Above Heart Failure Initiative is a nationwide awareness initiative that aims to change HF in America through awareness, education, and support. This initiative convenes an alliance of thought leaders to assess current HF burdens and develop strategies that address the issue through policy changes, healthcare system improvements, and patient empowerment.

As important in this program, staff was educated regarding the importance of using existing scholarship and research on patient education, thereby enhancing patients' understanding of the purpose of their medication regimen and lifestyle changes and collaborating with them to achieve desired outcomes. Patient education is also crucial among those diagnosed with HF since lifestyle changes and self-care behaviors help to prolong life and decrease symptom burden. Therefore, initiating a staff *heart failure*

education program, with one-on-one counseling sessions, during regularly scheduled

office visits with the nursing staff and providing a take-home toolkit, will improve HF

hospital admission/readmission, self-care management, HF knowledge, quality of life,

and provider consultation (Bryant, 2017).

Chung et al., (2015) conducted a similar HF management program that included

patient education. The results of this program showed improved follow-up care, with tele-

management and significant improvements in cardiovascular function and mortality rates.

Likewise, Oyanguren et al., (2016) create a HF management program that found a

reduction in morbidity and mortality in the HF population, with effective patient

education.

This doctoral project involved using staff education to improve health literacy as

an intervention when addressing medication adherence and lifestyle changes within the

HF population. This doctoral project may advance the nursing practice through staff

implementation of the Rise Above Heart Failure initiative, which involves using

strategies to improve medication adherence. This strategy would be performed by

providing patient educational encounters (meetings) to address HF patients and

understand the importance of taking medications as prescribed.

Local Background and Context

The current practice problem focuses on health literacy. This DNP staff education

project was performed to improve health literacy in the primary care setting and to

improve HF patient's health literacy. Local (State of Maryland) evidence justifies

addressing health literacy in the outpatient setting to increase their knowledge regarding

HF, signs and symptoms, pharmacological and non-pharmacological management, importance of medication adherence, and available supporting programs that help to improve their health status. This doctoral project's practice setting is a primary care clinic located in Maryland, U.S. The clinic's mission is to provide comprehensive, compassionate, primary, and preventive healthcare to people of all ages. The organization's strategic vision is to treat each person as an integrative whole, nourishing the body, mind, and spirit.

The practice environment includes physicians, nurse practitioners, registered nurses, a licensed practical nurse, and medical assistants. Most of the patient population seen in this setting are people from underserved areas located in this region. This clinic provides care to patients who are insured, underinsured, and noninsured, as well as private payers. Participants in this primary care setting population were African American, Caucasian, and Hispanic. About one-third of patients seen in this setting have HF, while remaining patients have diabetes or hypertension. Additional services from case management to support challenges of living and coping with lifelong diseases are offered to patients in this setting. This primary care setting provides healthcare services five days a week, closes on weekends and holidays, and has 24hour emergency services. Healthcare services were provided to patients five days per week using collaborative patient-centered team approaches.

Presently, the Affordable Care Act (ACA), which includes provisions regarding patient-centered care, health literacy, and engagement within healthcare systems to maintain health, save lives, or improve quality of life, is controversial. Healthcare costs to

patients and the health system continues to outpace inflation and growth in wages;

however, proportionate improvements in value in terms of individual or population health

outcomes have not been observed. Provisions within the ACA support the

implementation of health literacy within the healthcare system to increase medication

adherence and lifestyle changes through preventive care (Warner et al., 2020).

Role of the DNP Student

This DNP project aimed to educate the staff on how to improve health literacy

related to the management of HF patients. Thereby increasing their ability to take

responsibility for their health and their families' health. At the practicum experience, a

gap in health literacy among HF patients concerning medication adherence and lifestyle

change was identified. As a DNP student, a health literacy project using a staff education

program to close this gap implemented and evaluated. This DNP staff education project

allowed for the viewing of staff improvement in health literacy in their patient education,

especially on the HF patients, thereby contributing to staff health literacy improvement.

The researcher was aware that there might be some resistance with staff about and how

patient education was performed, but the researched improved their understanding

through certain teaching methods. In addition, the researcher's role in this project was

used to assess this program's ability to improve staff education on health literacy related

to HF patient's adherence to management through the staff reports.

A Microsoft Excel spreadsheet was used to record and organize the data collected

from the change in the pretest and post-test scores percentages in this DNP project. The

timeline was used in this project to keep the project on target and for clarity. The first two

weeks of this project were used to brief the staff on the DNP staff education project, develop the pretest and post-test used, and administer the pretest. After administering the pretest, the same staff education sessions were held three times to accommodate shift workers. The teaching focus on health literacy, the impact of health literacy on patient outcomes, the screening tools, the importance of improving health literacy in HF patients' staff, how to assess health literacy in HF patients, patient education on lifestyle change, staff competencies, and self-efficacy via PowerPoint presentations and the use of posters and pamphlets. After the educational sessions, the post-test was administered. Aggregate data were analyzed to assess changes in knowledge.

Summary

The rationale for the project, the concepts, and the theories used in the project were addressed in Section 2. In this section also the terms and how they are used in the project were defined, the project's relevance to nursing defined, and why it was important in the local area. The DNP student role, and the role of the project team, were also addressed in this section. Finally, in section 3, I discussed collecting and analyzing of the evidence and why the staff education project is appropriate for the DNP project's problem.

Section 3: Collection and Analysis of Evidence

Introduction

Health literacy is a challenge in medication adherence and lifestyle changes in the HF population . Low health literacy contributes to poor health outcomes due to inadequate knowledge of diseases and their management. This has led to non-adherence to medication and lifestyle changes. The purpose of this DNP project was to improve health literacy concerning medication adherence and lifestyle changes among HF patients. This project took place in a primary care setting environment that provides care to patients in Maryland. In Section 3, the collection and analysis of evidence to answer the practice-focused question is addressed.

Practice-Focused Question

Health literacy concerning adherence to medical management and lifestyle change among HF patients is the local practice problem. Therefore, the practice-focused question is: Can staff education regarding health literacy improve staff knowledge of HF management concerning health literacy? The purpose of the DNP staff education project is to develop a staff educational program to improve staff knowledge regarding HF management and health literacy. Implementing this evidence-based project using approved clinical guidelines and tools through staff education can improve staff knowledge of health literacy.

Sources of Evidence

Lack of evidence-based interventions to address lack of knowledge regarding health literacy were seen at the project site. Therefore, I used Walden library databases

such as CINAHL, ProQuest, Cochrane Library, PubMed, Ovid, Joanna Briggs Institute

Evidence Based Practice (EBP) Resources, and Google Scholar.

Keywords used in the literature search were: *health literacy*, *heart failure*, *heart*

failure education and management program, American Heart Association, *Healthy*

People 2020, *outpatient heart failure education*, *heart failure literacy*, *social*

determinants of low health literacy, *heart failure self-care management*, *heart failure*

readmissions, and *symptom monitoring*. Sources were published between 2012 and 2020

to ensure that information was relevant to the current healthcare climate. Articles were

limited to those that had full text. The search results in approximately 48 articles with the

eventual use of approximately 40 of those articles.The topics of the articles found related

to HF management and factors related to poor management outcomes, medication

adherence among HF patients, and lifestyle changes.

<div align="center">**Evidence Generated for the Doctoral Project**</div>

Participants

Participants are staff at the primary care setting. This included six registered

nurses and four medical assistants. These staff were asked to volunteer to be part of the

project to have about 10 participants. The purpose of the DNP staff education project was

to develop a staff educational program to improve staff knowledge of HF management

and health literacy.

Procedures

Once participants were selected for the DNP staff education project, they were

given a pretest on health literacy related to HF management. Participants attended three

to four hours of class every week for five weeks, regarding the subject such as health

literacy, how to assess patients' health literacy levels, assessment tools needed for health

literacy, HF, signs and symptoms, prognosis, prevalence, incidence, pharmacological and

non-pharmacological management of HF, causes of treatment failure, and how to

improve HF health literacy to achieve positive patient outcomes. Participants were also

given pre and post-tests to assess their previous knowledge after education sessions. The

test administrator de-identified data to maintain anonymity. The literature review showed

the effects of low or limited health literacy on HF patients. The purpose of the project is

to develop a staff educational program to improve staff knowledge regarding HF

management and health literacy, and improvements should be reflected by measuring

increases from pretest to post-test scores.

Tools

Educational materials from health literacy screening tools were used for this

project. These tools highlighted the risks associated with low health literacy as shown in

Figure 1.

Figure 1

Health Literacy
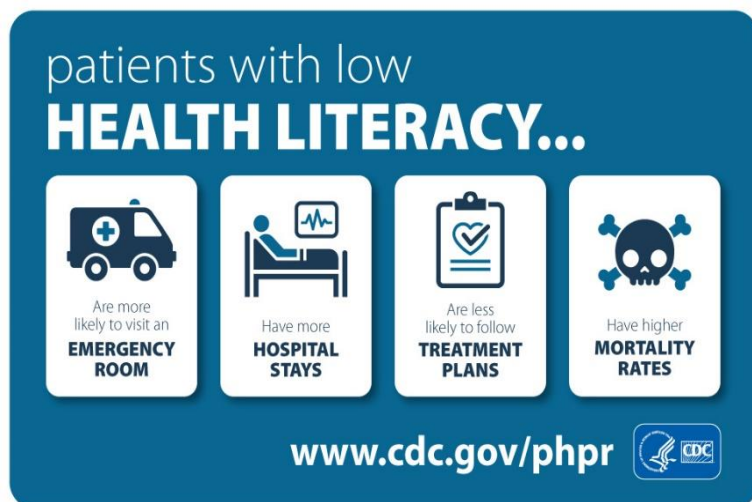
The Newest Vital Sign (NVS) is a health literacy screening tool developed in 2005 (see Figure 2). It is used in clinics to detect limited health literacy. The NVS measures reading, comprehension, and numeracy by using nutritional labels. It is made up of six-item questionnaires. Some versions have an additional three questions regarding the level of understanding, reading, and reporting medical information. The NVS is short and easy to use, making it more appropriate for routine use in a busy clinic setting. The NVS involves using simplified ice cream nutritional labels. Patients are categorized based on a number of correct responses.

Figure 2

Newest Vital Sign (NVS) Nutritional Label

Nutrition Facts

| Serving Size | | ½ 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%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Note. From *The newest vital sign.* Pfizer, (2011). *The newest vital sign.* https://www.pfizer.com/health/literacy/public-policy-researchers/nvs-toolkit.

The Test of Functional Health Literacy in Adults (TOFHLA) is a more complex health literacy tool (see Figure 3). It is available in English and Spanish and takes 20 minutes or more to administer. However, this test also has a short version (S-TOFHLA), which takes about 12 minutes to complete. The short version has two sections: 1) first section has 17 multiple choice questions that assess a patients' ability to interpret documents and numbers; and 2) second section assesses reading and comprehension. Additionally, the S-TOFHLA has four multiple-choice numeracy questions and two reading passages.

The Rapid Estimate of Adult Literacy in Medicine (REALM) is one of the oldest and most used health literacy tools. It takes about 3 minutes to apply, like the NVS. This tool involves using a word recognition test in which patients are given a list of 60 medical words starting from easy to hard. The patient is asked to pronounce each word aloud and is scored based on words the patient pronounces correctly. Scores of 0 through 44 show that the patient is below a sixth-grade reading level. Scores of 45-60 demonstrate a seventh to eighth-grade reading level, and 60 and above is at the high school level. Patients with less than 60 are at risk of misunderstanding written information (Zheng & Yu, 2019). Both the REALM and TOFHLA only measure reading and pronunciation skills and maybe culturally insensitive and inappropriate for non-English speaking patients (Ylitalo et al., 2018).

Also, the following educational materials from Rise Above Heart Failure toolkits for healthcare professionals were used in this project:

1. HF Go-To-Guide: This is an easy-to-use and interactive tool designed to empower healthcare providers to engage HF patients by delivering effective patient education and the latest AHA patient engagement tools.

2. The HF education checklist is a checklist that helps healthcare providers deliver consistent and effective patient education by making sure HF patients obtain needed information before leaving the clinic.

3. HF signs and symptoms infographic is a tool that reminds healthcare providers to educate HF patients about the signs and symptoms of HF via pictures.

Figure 3

Example Screens from the Rise Above Heart Failure Toolkits

Note. Rise Above Heart Failure Toolkit for Healthcare Professionals by American Heart Association, 2020, www.heart.org.

The use of the NVS, TOFHLA, REALM, and Rise Above Heart Failure toolkits allowed me to improve staff knowledge regarding health literacy, help staff identify HF patients with limited health literacy and educate those patients appropriately.

Protections of Participants

The DNP staff education project provided staff education to improve staff knowledge on health literacy. I will discuss this DNP project's purpose and improve their health literacy knowledge in managing HF patients. Ethical protection will occur by maintaining the established rules and regulations at the clinic, using de-identified data, maintaining data privacy and security. Collected data will only be handled only by the DNP student and stored at the clinic site on a password-protected computer to which I have access. All the paper and electronic data for this project will only be held during the doctoral project and destroyed at the end.

Informed consent was obtained from six registered nurses (RNs) and four medical assistants (MAs) before the project implementation at the clinic before data collection of any de-identified demographical information of potential participants for this project. The RNs and the MAs were chosen because they work directly with the HF patients even though the RNs work at a higher capacity than the MAs and will have different educational material. The objectives of this project were made known to the participants (see Appendix A). The participants were informed that all the data collected will be only retained for this doctoral project. The participants were also made aware that they have the right to withdraw from the project at any time. The Walden University Institutional Review Board was also used to ensure that this doctoral project meets the ethical

standards. The University Research Review Board will oversee that quality assurance is present within the doctoral project.

Analysis and Synthesis

Testing on the relevant topics on health literacy related to HF management were evaluated by performing a pretest and post-test for the proposed staff education project. The pre and post-test were the same test and was developed during the development of the educational materials. The pretest and post-test measured the staff's knowledge about health literacy as it relate to HF management and was administered prior to, and after the education, sessions using a Likert Scale (Brigham and Women's Hospital, 2013) approach was used in analyzing the project thereby knowing how successful the project.

The Microsoft Office Excel spreadsheet was used to record and organize the data collected from the change in the pretest and post-test scores percentages in this DNP project. Also, Microsoft PowerPoint presentation (see Appendix B) was used to condense all the obtained information and conclusions, which was presented to the DNP project site and included in their staff educational guide.

Summary

This section provides the collection and analysis of evidence for this DNP project. The team analyzed the practice focus question of whether staff education improved staff health literacy in the management of HF patients through the Newest Vital Signs tools and application of the Rise Above Heart Failure Initiative (2021) at the end of the project. The project team utilized evidence and operational data sources to explore the topic with evidence and validity tools. The plan is to present the staff educational package to the

organization after receiving approval from the Walden University's IRB. Section 4 will help discuss the project findings, implications, and recommendations to support quality improvements within the nursing practice while delivering positive social change.

Section 4: Findings and Recommendations

Introduction

Health literacy's impact on patients' and healthcare providers' relationships is evident. Health literacy is crucial to patients as well as healthcare providers. Health literacy affects patients' ability to follow recommended treatments and adhering to provider instructions regarding medications and lifestyle changes, which leads to worsening HF symptoms and increased readmission, morbidity, and mortality rates (Alsubaie & Salem, 2019). This project took place in a primary care setting in the state of Maryland. I sought to improve staff knowledge regarding health literacy concerning HF patients' management. Staff lack of knowledge regarding health literacy may prevent them from providing evidence-based care to HF patients. Staff knowledge regarding health literacy and HF management is important to support evidence-based practice regarding HF management, which might seriously affect positive patient outcomes. The practice-focused question is: Can staff education regarding health literacy improve their knowledge of HF management in terms of health literacy? This DNP staff education project aimed to develop a staff educational program to enhance their knowledge of HF management concerning health literacy by using evidence-based staff education guides. This DNP project was guided by the Walden University Staff Education Manual, the health literacy care model, and Orem's self-care theory.

Pretests and post-tests, based on health literacy and related to heart failure, were administered and used during data collection for this project. The same questions were then reassigned to participants after the completion of the staff educational module

which consisted of health literacy definitions and its importance for patient care, especially those patients in HF populations. The participant's responses to the post-test helped to determine teaching effectiveness and whether learning took place. Essentially, the use of pretest and post-test questionnaires was essential for measuring participants' knowledge acquisition. Additionally, the responses to the post-test were used to determine the effectiveness of participants' knowledge gained. This approach is rated the best in discovering presumed effects and research outcomes (Liu & Maxwell, 2020). Participants also completed an exit survey at the end of both the pretest and post-test to evaluate teaching, education material, the researcher, and the overall program's effectiveness. A Microsoft Excel spreadsheet was then used to collect scores and organize response data.

Findings and Implications

Participants were selected after Walden University Institutional Review Board (IRB) approval. I distributed invitation materials and phone numbers for contacting the primary care setting's break room, educational board, and nurse's station. Participants confirmed their willingness to participate in this project through phone calls and emails. Meeting times and dates were sent to participants through emails one week after demonstrating their willingness to participate in the project. I used the convenience sampling approach to the participants, allowing them to participate based on their availability. Consent forms were given to participants containing all necessary information regarding the project.

Pretests and post-tests consisting of the same ten questions were given to ten participants before and after educational sessions (See Appendix C). Introductions, pretest, staff educational teaching sessions, and post-test took about 120 minutes to complete. Pretest and post-test scores for each participant were calculated and converted to percentages (see Table 1). In this project, the participant sample was 10, and the pretest results showed a 65.88% average before the educational sessions, indicating that staff had some knowledge regarding the importance of health literacy in HF management. As important, post-tests given after the educational session showed an average knowledge of 90.67%. Additionally, the average learning gained for the staff nurse participants, specifically, was 73.68%, showing increasing knowledge regarding health literacy and HF management. To obtain this analysis, the Brigham and Women's Hospital (2013) model for pre-and post-testing was used .

Table 1

Pretest Results

	Pre-Test Questions	Percentage correct responses ($n = 10$)
1.	What is health literacy?	90%
2.	Which of these tools are used in the health literacy assessment? Select all that apply.	0%
3.	When is the best time to assess for patient's health literacy?	40%
4.	Which of the health literacy screening tool uses ice cream nutritional label in assessing patient's literacy level?	10%
5.	Is it crucial to assess every patient as if they are at risk of low health literacy?	100%
6.	Can adequate health literacy improve HF patient's adherence to management?	100 %
7	Limited health literacy is associated with	70%
8.	What is the average reading level of U.S. adults?	10%
9.	You can tell how health literate person is by knowing what grade he or she completed in school.	100%
10.	What reading level is appropriate for patient's information supposed to be written?	100%

Table 2

Post-test Results

	Post-test Questions	Percentage correct responses ($n = 10$)
1.	What is health literacy?	90%
2.	Which of these tools are used in the health literacy assessment? Select all that apply.	80%
3.	When is the best time to assess for patient's health literacy?	80%
4.	Which of the health literacy screening tool uses ice cream nutritional label in assessing patient's literacy level?	80%
5.	Is it crucial to assess every patient as if they are at risk of low health literacy?	100%
6.	Can adequate health literacy improve HF patient's adherence to management?	100 %
7	Limited health literacy is associated with	90%
8.	What is the average reading level of U.S. adults?	80%
9.	You can tell how health literate person is by knowing what grade he or she completed in school.	100%
10.	What reading level is appropriate for patient's information supposed to be written?	100%

The exit survey conducted at the end of the pretest and post-test was used to evaluate teaching, education materials, and presentation. Participants unanimously agreed that the program was helpful and informative (see Table 3).

Table 3

Exit Survey Results

Exit Survey Questions	(1-5 scale, 5 = Strongly Agree)
1. Did you find the educational material helpful?	5
2. Will the material help you as a staff to provide a well-rounded patient education to the HF patients?	5
3. Please evaluate the presenter and the flow of information	5
4. Would you implement the information in clinical care?	5

Unanticipated Limitations

Some unexpected limitations arose during the study, which affected this DNP project's findings. An initial limitation noted in this project is its setting due to the COVID-19 pandemic; this affects staff who volunteered to participate and the duration of the project. Fear of contracting COVID-19 from the project site was seen among participants; therefore, staff members were scheduled for teaching and testing at different times to maintain social distancing. Consequently, this prolonged the amount of time spent at the project site, amounted to a total of five and one-half weeks. Moreover, recruiting participants, limited space, wearing masks, and social distancing made this project tedious. Although the DNP project findings showed that the education module increased staff's knowledge of health literacy in terms of management of HF patients, limitations such as the shortened duration of the project, the lack of space, the reduced testing time, and the lower number of participants may have affected results.

Recommendations

Use of an evidence-based staff education manual to improve staff knowledge regarding health literacy regarding the management of HF patients involves health literacy guidelines, and HF guidelines effectively lead to better staff understanding of the importance of health literacy for HF patients. This is important since adequate staff knowledge of health literacy will improve HF patients' adherence to medication and lifestyle changes.

Staff health literacy knowledge is essential in terms of the management of the HF population. Lack of staff knowledge during the disease process and difficulties in understanding educational interventions resulting from low health literacy plays a huge role in managing HF. Also, since HF is one of the chronic diseases that significantly reduces patients' quality and duration of life, there is a need for appropriate staff education involving health literacy to manage HF patients.

The pretest showed that staff who have general knowledge of health literacy and heart failure scored 90% to 100% for questions one, five, six, and ten (see Table 1). In addition, questions five, six, and nine were somewhat easy; questions two, three, four, eight, and ten seemed most challenging for participants. Therefore, it is recommended that staff teach a regular obligation, especially regarding more complex and unknown concepts, every four to six months to ensure that staff retains new knowledge and skills. This will help in closing the knowledge gap and improving staff knowledge. This is crucial because staff can help in improving health literacy among HF patients by understanding health literacy requirements HF patients face during their daily lives,

making sure this population understands health instructions given to them, building HF patients' health literacy over time, participating in health literacy professional development programs, and encouraging organizations to develop and implement a health literacy action plan.

Implications

This DNP project involved developing a staff education module regarding health literacy and its importance in managing HF patients. HF is a progressive chronic disease that requires patients to have self-care skills. Therefore, having good knowledge of the disease process using standardized staff educational materials will empower them to take care of themselves confidently. Using appropriate reading-level educational materials and proper health literacy assessment tools will reduce HF exacerbation, frequent readmission, unnecessary emergency facility use, and healthcare costs among HF patients. Consequently, this DNP project positively impacts, directly and indirectly, on staff, patients, communities, and the U.S. as well.

Implications for Positive Social Change

The staff education module regarding health literacy for HF patients will be used to continue to empower staff during health literacy assessment, leading to effective patient education for HF patients through appropriate reading-level educational materials. This helps HF patients to understand the disease process and its management, thereby increasing their adherence to medication requirements and lifestyle changes.

Positive social change resulting from this DNP project involves activities meant to improve staff knowledge regarding health literacy, and staff teaching, PowerPoint, and

use of posters. This evidence-based project will lead to positive change for staff, patients, communities, and society. Also, it will lead to improved patient outcomes, decreased non-adherence to medication and lifestyle changes, reduced readmissions, increased awareness of HF exacerbation, and reduced healthcare costs.

Strengths and Limitations of the Project

This staff education DNP project involved identifying some strengths and limitations. This project's main strength is the data provides a model for developing an effective educational program. Overall, this study strengthens the idea that this educational program can assist with providing staff with the tools needed to effectively assist HF patients.

Limitations in this project are related to the COVID-19 pandemic and involve restrictions on the number of participants that were allowed in the break room at the same time, social distancing, fear of participants regarding contracting the virus, having different times for the educational module, and different test-taking time/schedules. This is because the project was implemented during the COVID-19 pandemic, and the project site was restricted to certain number of people. Also, the small sample size of 10 participants could affect the result because it may not be a standard for research and also affect the validity of the results and the potential application across a broader spectrum of participants. Although the current study is based on a small sample of participants, the findings suggest that the results could be effectively used to assess the effectiveness of the program.

Summary

The following conclusions can be drawn from the present study. The findings indicated that the average learning gained for the staff nurse and medical assistant participants was 73.68%, showing an increase of knowledge regarding health literacy in terms of HF management. This project will lead to positive social change by enhancing staff knowledge regarding the importance of health literacy and managing HF patients.

Section 5: Dissemination Plan

The dissemination of the project is an essential part of the project. A staff education program was presented to the project site, the project's preceptor, the medical director, and the advanced practice NP. Their feedback will be incorporated in this program report. The purpose of the report was to communicate the project's results and positive outcomes to staff, for the best clinical outcomes. Additionally, responses to stakeholders' questions were addressed, the outcomes summarized, and results incorporated evidence into practice. Essentially, completing the project will lead to positive outcomes that will be beneficial for other agencies.

The staff education module was developed using an evidence-based education module to improve staff knowledge. This was performed by addressing the practice gap seen at the project site. In addition, the project involved a staff educational module, regarding the importance of staff health literacy when managing HF patients. Educational materials developed for this project served as a foundation for implementing the staff education module. Additionally, participants had access to a PowerPoint presentation and posters during the review of the education module. The presentation included information regarding the practice gap in the project site, essential websites for health literacy and HF toolkits and recent studies for providers, and the pre and post-test education module.

The desired outcome of the project was for the staff to apply the knowledge gained when taking care of HF patients and incorporate health literacy and Rise Above Heart Failure tools for better patient outcomes. Staff's adequate knowledge of health literacy will help maintain their confidence in HF management, reducing morbidity and

mortality rates related to HF patients by supporting annual health literacy and HF education reviews. At the completion of this project, the final dissertation report will be submitted to ProQuest for publication.

Analysis of Self

For many years, being an advanced heart failure nurse in one of the best cardiovascular hospitals in the DC metropolitan area, influenced my knowledge of taking care of this population. As a result, a need for an evidence-based staff educational module was realized to create awareness and educate staff working with HF patients regarding health literacy for proper management and reducing frequent readmission. This is crucial in managing the HF population since most staff believe that most of these patients are non-compliant. Still, they are more non-adherent than non-compliant because most do not understand HF teaching and management. Therefore, staff needs to assess their health literacy when taking care of patients and find out what prevents them from adhering to care and addressing these factors before becoming an issue.

This DNP project allowed me to incorporate EBP knowledge from standardized health practices obtained through doctoral studies and nursing practice. As a DNP scholar, I have learned how to develop and apply relevant models and plan, implement, and evaluate evidence-based interventions. I was able to analyze and understand how to assess the clinical barriers that affect the delivery of EBP quality at a lower cost. As a result, this project motivated me to search and read evidence-based research articles, systemic reviews, and journals to gain additional knowledge regarding this topic, subsequently enhancing the development of staff education materials.

My educational experience and expertise in nursing practice, prepared me to enhance patient care through EBP. I believe that this project has adequately equipped me to convey information to staff, which will help create innovative approaches that involve integrating evidence into practice to improve outcomes. As a DNP nurse scholar, I am a positive change agent who can address institutional changes, required to improve healthcare delivery and outcomes, through policy development. More importantly, this project was developed and successfully executed, despite its occurrence during the COVID-19 pandemic.

Summary

Providing adequate staff education on health literacy positively affects HF patients regarding their medication adherence and lifestyle changes. The staff education module also will address staff confidence when assessing HF patients' health literacy levels and taking appropriate care of them. This project has helped staff recognize their responsibilities regarding proper health literacy and patient assessments, especially among HF populations. Intervention outcomes were presented to stakeholders and the practice site. The purpose of using the staff education module was to educate staff regarding the importance of health literacy assessments for HF patients during office visits and educate them to improve disease management and care outcomes.

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Appendix A: Objectives of this Project

By the end of the staff education project:

(a) The staff will learn how to assess their patient's health literacy.

(b) The staff will understand the importance of health literacy assessment in management of HF patients.

(c) The staff will be able to know the health literacy assessment tools and how to use them in assessing the patients.

(d) The staff will be able to develop and use effective communication skills in patient education thereby minimizing patient's non-adherent among HF patients.

(e) The staff will be able to educate the patients using appropriate teaching methods.

Appendix B: PowerPoint Presentation

Title: Heart Failure: Evaluating Health Literacy in Medication Adherence & Lifestyle Change in Primary Care Setting Presented By

Ifeoma C. Onyeiwu

DNP Student, MSN-FNPC, MPH, RN BSN

- Goals
- To develop and disseminate accurate, accessible, and actionable health information that will be easily understandable by the patients thereby improving medication and lifestyle change in HF patients.
- To help integrate clear communication that will help in policy development, research and evaluation in health literacy

The Learning Objectives

To improve the staff knowledge on the importance of health literacy in the care of HF patients

To improve the staff knowledge on health literacy assessment in their contact with every patient especially HF patients.

To impact the staff's overall performance and decisions when taking care of HF patients.

What is Health Literacy & Its Effect?

Health literacy can be defined as "the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions" (Ventura & Pina, 2018).

About 90 million adults in America have difficulty understanding and using health information.
Health literacy costs the USA $106-$236 billion annually (Ventura & Pina, 2018)
- Low health literacy affects millions of Americans, thereby causing poorer health outcomes to the affected individuals. About 36% of adult Americans and 59% of adults 65 or older have below basic or basic health literacy. The average reading level of U.S adults is 10th-11th grade (Ventura & Pina, 2018).

- Low health literacy is also associated with decreased adherence to guideline-directed heart failure therapy, such as medication adherence and lifestyle change (Ventura & Pina, 2018).
- Low health literacy is a barrier in achieving knowledge related to self-care and quality of life in HF patients.

Brief Information on HF

▶ Heart Failure (HF) is one of the chronic diseases seen in the community with progressive deterioration that occurs over years.

▶ About 6.5 million adults in United States of America (USA) are living with HF.

▶ HF was the contributing factor of 1out of 8 deaths in 2017

▶ In 2012, HF costs about 30.2 billion to the nation in healthcare services, medication and missed days from work (CDC, 2019).

How do you Assess Patient Health Literacy?

- By using the assessment tools such as
- (a) Newest vital signs-this is one of the health literacy screening tools developed in 2005. It is use in clinic to detect limited health literacy. NVS measures one reading, comprehension, and numeracy by using the nutritional label. It is made up of 6 item questionnaires (Ylitalo, Meyer, Lanning, During, Laschober & Griggs 2018).
- (b) Test of Functional Health Literacy in Adults (TOFHLA): is a more complex health literacy tool but considered a tool of choice. It assesses reading and comprehension, takes 20 minutes, available in English and Spanish. It has a shorter version (S-TOFHLA) that takes 12 minutes to administer (Zheng & Yu, 2019).

   (c) Rapid Estimate of Adult Literacy in Medicine (REALM): is one of the oldest and   most used health literacy tools. It is simple and easy to use, takes about 3 minutes to apply like the NVS. Uses a word recognition test.

 Both REALM and TOFHLA are considered the gold standard in measuring health literacy

Additional Tools use in Health Literacy

Use of educational material from Rise Above Heart Failure Toolkits for Healthcare

Professionals (2021) such as:

(1) Heart Failure Go-To-Guide: easy to use and interactive tool designed to empower the healthcare providers in engaging HF patients by delivering effective patient education as well as the latest American Heart Association patients engagement tools.

(2) Heart Failure education checklist- this help the healthcare providers in delivering consistent and effective patient education

(3) Heart Failure signs and symptoms infographic- this tool remind the healthcare providers to educate the HF patients about the signs and symptoms of HF by uses pictures.

(4) Use of current and reliable important website of health literacy and heart failure

The use of educational materials from NVS, TOFHLA, REALM and Rise Above Heart Failure Toolkits will improve staff knowledge on health literacy, help the staff in identifying the HF patients with limited health literacy and in educating the patients appropriately.

Factors that may Influence Individual's Health Literacy

- The factors may influence an individual's health literacy are as follows-
- Living in poverty
- Education
- Race/ethnicity
- Age
- Disability (Centers for Disease Control and Prevention, 2020b).

How to Teach Low Literacy HF patients

(A) By using effective communication skills such as using layman language by avoiding medical jargon, using simple and straightforward words to explain any care or management, and coming to the patient's level of understanding.

(B) Using teach-back method, speaking slowly, repeating essential points, encouraging patients to ask questions, and allowing adequate time to determine the patient's level of understanding, and at the same time considering the patient's emotional reaction to information thereby meeting patient's health literacy need (Wittenberg, Ferrell, Kanter & Buller, 2018).

C) Using patient health education materials written at 3rd to 5th grade reading levels with

an average of a 5th grade level was chosen. Because it meets the America Medical

Association (AMA) recommendation. Studies have shown that 5th grade text has

appropriate sentence length and an average three-syllable text. (Athilingam, Jenkins,

Redding, 2019).

Appendix C: Pretest and Post-Test Questions

1.What is health literacy?

    (a) Ability to read health information.

    (b) Ability to obtain, comprehend, process, and understand basic health

    information.

    (c) Ability to follow health care instructions.

    (d) Ability to understand the health services needed for appropriate

    healthcare decisions and assessment

2. Which of these tools are used in the health literacy assessment? Select all that

apply.

    (a) Newest Vital Signs (NVS)

    (b) Test of Functional Health Literacy in Adults (TOFHLA)

    (c) Rapid Estimate of Adult Literacy in Medicine (REALM)

    (d) A & B only

3. When is the best time to assess for patient's health literacy?

    (a) on the first encounter with the patients

    (b) on admission

    (c) on subsequent visit

(d) the time does not make any difference

4. Which of the health literacy screening tool uses ice cream nutritional label in assessing patient's literacy level?

(a) Newest Vital Signs (NVS)

(b) Test of Functional Health Literacy in Adults (TOFHLA)

(c) Rapid Estimate of Adult Literacy in Medicine (REALM)

(d) A &B

5. Is it crucial to assess every patient as if they are at risk of low health literacy?

(a) Yes

(b) No

6. Can adequate Health literacy improve HF patient's adherence to management?

(a) Yes

(b) No

7. Limited health literacy is associated with

(a) Higher mortality rates

(b) Lower levels of health knowledge

(c) Greater use of inpatient and emergency department care

(d) Poor Medicine adherence

(e) B and D

(f) All of the above

8. What is the average reading level of U.S. adults?

    (a) 4th-5th grade

    (b) 6th-7th grade

    (c) 8th-9th grade

    (d) 10th-11th grade

    (e) 12th grade

9. You can tell how health literate a person is by knowing what grade he or she completed in school.

    (a) True

    (b) False

10. What reading level is appropriate for patient's information supposed to be written?

    (a) 12th grade reading level.

    (b) College level

    (c) 3rd to 6th grade reading level.

    (d) All of the above