



Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies
Collection

2019

A Clinical Practice Guideline to Improve Education in the Heart Failure Population

Mailey L. Wilks
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Education Commons](#), and the [Nursing Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Mailey Wilks

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Linda Matheson, Committee Chairperson, Nursing Faculty
Dr. Joanne Minnick, Committee Member, Nursing Faculty
Dr. Mattie Burton, University Reviewer, Nursing Faculty

The Office of the Provost

Walden University
2019

Abstract

A Clinical Practice Guideline to Improve Education in the Heart Failure Population

by

Mailey L. Wilks

MSN, Kent State University, 2014

BSN, Wheeling Jesuit University, 2010

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2019

Abstract

Managing heart failure patients in the outpatient setting can pose a challenge for nurses and health care staff due to the need to educate patients on self-care skills and management of disease. Several factors, including health literacy and numeracy, need to be considered when developing an education program for heart failure patients to promote self-care management. The purpose of this project was to provide nursing staff with a clinical practice guideline (CPG) that incorporated health and numeracy literacy assessment into an individualized education program. The Johns Hopkins nursing evidence-based practice (EBP) model, the situation-specific theory of heart failure (HF) self-care, and Wagner's chronic care model guided the development and implementation of this project. The practice-focused question for this project asked whether evidence informs a CPG intended to assess health literacy and numeracy assessment and promote an enhanced individualized education intervention in an outpatient HF population. A literature review using 20 articles from 2006-2018 was completed. Five articles were selected to review levels of evidence, and three articles were chosen to support the development of the CPG. The CPG was reviewed, refined, and validated by an expert panel of HF nurses and physicians. The CPG might support a positive social change in the practice setting by improving the tools for nurses to assess health literacy in the HF patient population and provide individualized education to influence self-care interventions.

A Clinical Practice Guideline to Improve Education in the Heart Failure Population

by

Mailey L. Wilks

MSN, Kent State University, 2014

BSN, Wheeling Jesuit University, 2010

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2019

Dedication

This project is dedicated to my patients, who are the passion behind this project and subject. I would also like to dedicate this project to my husband and two beautiful daughters, whose support and love throughout this process have been unconditional. May my daughters always know that hard work, desire, and selflessness will allow one to not only be successful but fulfilled.

Acknowledgments

I would like to acknowledge my mentor, Linda Matheson, PhD, RN, who has been a guiding light in the development and execution of this project. Through her example as a nurse and leader, I have learned the real role a doctorate-prepared nurse is capable of undertaking. I would also like to acknowledge my other nursing professors at Walden University who have provided so much passion, encouragement, and insight into my future in nursing.

Table of Contents

List of Figures	iii
Section 1: Nature of the Project	1
Introduction.....	1
Problem Statement	2
Purpose.....	5
Nature of the Doctoral Project	6
Significance.....	6
Summary	8
Section 2: Background and Context	10
Introduction.....	10
Concepts, Models, and Theories	10
Relevance to Nursing Practice	14
Local Background and Context	15
Role of the DNP Student.....	19
Role of the Project Team	19
Summary.....	20
Section 3: Collection and Analysis of Evidence.....	21
Introduction.....	21
Practice-Focused Question.....	22
Sources of Evidence.....	23
Analysis and Synthesis	24

Summary	25
Section 4: Findings and Recommendations	27
Introduction.....	27
Findings and Implications.....	28
Recommendations.....	29
Strengths and Limitations of Project.....	30
Introduction.....	31
Analysis of Self.....	32
References	36
Appendix A: Literature Review Matrix	39
Appendix B: CPGs for Assessing Health Literacy and Numeracy in the Outpatient	
Heart Failure Population	44
Appendix C: AGREE II Instrument Tool Reviewer Scores	48

List of Figures

Figure 1. Newest vital sign tool..... 45

Section 1: Nature of the Project

Introduction

Heart failure (HF) is a growing chronic illness that affects millions of Americans. According to Cajita, Cajita, and Han (2016), 5.1 million U.S. adults have HF, with 825,000 new cases reported each year. This number is expected to reach 8.7 million by 2030, with the greatest portion of this HF population to include patients older than 85 years (Cajita et al., 2016). With the number of HF patients expected to grow in the upcoming decades, it is evermore imperative that consideration for teaching self-care skills to patients and family members be included in nursing CPGs. Klersy (2011) reported the total estimated direct and indirect cost of HF in the United States for 2010 was \$39.2 billion. With a growing population of HF patients, the cost of health care to manage these patients is expected to rise.

Managing HF patients in the outpatient setting can pose a challenge for nurses and health care staff due to the need to educate patients on self-care skills and management of their disease. Nursing staff in a fast-paced northeast outpatient HF clinic within in a large hospital system faced the task of providing a time efficient health literacy and numeracy assessment to provide nutritional education to patients in the outpatient setting to self-manage their heart disease. This doctor of nursing practice (DNP) project developed CPGs for the outpatient setting so that nurses can assess health literacy and numeracy and provide individualized nutrition and self-care education to patients during each outpatient clinic visit.

Nurses and advanced practice providers can work toward cost-effective care that is tailored towards preventing HF exacerbation and morbidity by focusing the attention on self-care needs of HF patients in the outpatient setting through individualized educational assessment. In this DNP project, I had the goal of decreasing disease exacerbations and hospital readmission rates while promoting self-care and an overall improved quality of life. Nursing barriers to providing patients with quality health literacy and numeracy assessment and nutrition education in the outpatient setting included lack of time in a fast-paced work environment, competing nursing tasks, and lack of communication among the multidisciplinary team. The HF nutrition-focused CPGs focused on patient education that is engrossed in improving health literacy and numeracy assessment. In this project, I aimed to promote positive social change by providing nurses with essential assessment and education tools to improve self-care interventions for HF patients. I focused on providing nurses with an evidence-based approach to assessing health literacy and numeracy and educating patients effectively regarding nutrition and self-care interventions.

Problem Statement

An American northeastern HF clinic within a large health care system lacked formal CPGs for the education of HF patients. The population included older adult patients with HF who are at risk for hospital readmissions and morbidity due to a lack of self-care management skills. Due to the high volume of patients in this practice setting, the nurses spend a limited amount of time with each patient as they focus on obtaining vital signs, asking intake questions, and obtaining a chief complaint to present to the

physician. Therefore, a patient-centered, individualized guideline for patient education that incorporates an assessment of health and numeracy literacy needed to be developed. An experienced nurse practitioner in the outpatient department identified the lack of time nursing staff have to education their patients on nutrition and other self-care needs, which put patients at risk for HF exacerbations and readmissions to the hospital (personal communication, December 30, 2016). Prior to this DNP project, a standardized guideline for nursing did not exist to use to educate patients in an efficient manner. Previously nurses were tasked with rooming patients, gathering vital signs, and taking a brief chief complaint allowing for little time to assess health literacy and numeracy in a formal manner or educate patients on needed self-care interventions (personal communication, December 30, 2016). Thus, there was not time for individualized patient education that is imperative to meet a patient's self-care needs.

In this project, I promoted positive social change through improving the tools for nursing to provide individualized education to patients based on their levels of health literacy. The project is beneficial to management of HF patients in the outpatient setting for both patients and nursing staff. It is easy for health care providers to assume that their audience is literate when it comes to health care terminology and may also assume that they can read and understand a food nutrition label accurately. Upon observation of the outpatient HF clinic patients, it was evident that this was not the case with many. Patients were often surprised to hear that the amount of sodium on the nutrition label was only one serving of the food and that having more servings required multiplication of the written milligrams of sodium. Many patients were also observed to not know certain

foods that were higher in sodium content than others. For example, one patient presented to clinic with a weight gain of 7 pounds since his last visit 2 weeks prior. After further inquiry from the advanced practice nurse, the patient admitted that he had eaten sauerkraut balls the weekend prior. The advanced practice nurse explained the high amount of sodium in sauerkraut to the patient and his wife, to which the patient replied, "I had no idea that sauerkraut had so much salt!" The observation in this outpatient HF clinic has led to the need for a more formal assessment of health literacy to identify patients who need formal education of HF nutrition.

Education is a necessary tool to improve self-care for patients, specifically HF patients in the outpatient setting. Health literacy and numeracy play a significant role in how HF patients understand and manage their nutrition and disease. A principal factor in how HF patients successfully receive education from nurses and health care providers is based on their level of health literacy and numeracy. The most recent National Assessment of Adult Health Literacy in 2003 reported that 43% of U.S. adults had below basic or basic literacy levels. More specifically, among older adults older than 65 years, 61% had below basic or basic levels of literacy (Institute of Medicine, 2004). This is a fact well-known among advanced practice providers in this outpatient HF setting; however, nursing staff and providers have verbalized a lack of time during patient encounters to formally assess health literacy and numeracy to provide an education intervention (personal communication, December 30, 2016). According to Friel (2016), low health literacy has a significant impact on the ability of HF patients and their caregivers to successfully manage chronic disease via self-care behaviors, which affects

readmissions to the hospital and can be a significant economic strain on health care system resources. Health literacy includes several skills that allow a patient to understand and process information regarding their health. Grif Alspach (2015) described these skills as accessing, reading, writing, interpreting, and acting upon written text. In addition, these skills include understanding numeric information (understanding, calculating, acting upon quantitative facts) and verbal literacy (listening and speaking effectively). Numeracy is an important characteristic for HF patients to possess to correctly read and calculate nutrition labels, understand weight loss and gain, and track important vital signs such as weight, blood pressure, and heart rate. Therefore, nurses and health care providers need to consider both health literacy and numeracy of HF patients when developing an individualized education program to implement in practice.

Purpose

My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program. The meaningful gap in nursing practice within this outpatient HF setting was that nurses were not implementing a formal, patient-specific education program focused on nutritional needs for those identified with poor health literacy. A lack of formal health literacy assessment existed among patients and no recognized education program for nutrition management. Therefore, no patient-specific education based on health literacy and numeracy needs was given to patients by nursing staff to improve their self-care needs, which puts patients at risk for poor self-management skills and potential readmissions to the hospital due to HF exacerbations. Using a health literacy and

numeracy assessment tool in nursing practice can identify patients at risk for improper nutritional habits that directly affect their HF symptoms and status. By identifying HF patients in an outpatient clinic with poor health literacy, nursing staff, through the use of CPGs, can formally provide education to improve the knowledge base of patients' nutritional understanding. The practice-focused question for this project is geared toward the outpatient HF setting: What is the effect of a formal health literacy and numeracy assessment and an enhanced individualized education intervention on a patient's nutrition and self-care comprehension in an outpatient HF population compared to those who receive usual care?

Nature of the Doctoral Project

I synthesized best practices from the nursing literature and other sources to develop CPGs for nursing staff so they can assess the health and numeracy literacy of their HF patients to provide an individualized education program during clinic visits. I organized evidence for this project through the use of the Walden University literature review matrix. An exhaustive literature review was guided by the practice-focused question and assisted in synthesizing information applied to the project. The CPG was reviewed by an expert panel of HF physicians and nurse practitioners. Developing a formal, patient-specific education program focused on nutritional needs for those identified with poor health literacy helps to connect the identified gap in nursing practice.

Significance

This project holds significance to both nursing practice and the key stakeholders involved because the end-goal of the project was to improve the quality of care for HF

patients. Key stakeholders in this project included nursing staff, advanced practice providers, nurse managers, HF physicians, nutritionists, and nursing clinical care coordinators assigned to the outpatient HF clinic as they all take part in the care of the patient with HF. Stakeholders specifically targeted were nurses, who were affected by addressing the local problem through the expense of their time to assess and implement education to the identified patients. Knowing the quick pace of the outpatient HF department, assessment tools and nursing interventions were implemented with time management, quality, and availability considered. Contributions of the doctoral project to nursing practice include improvement in nurse-driven patient education and nursing assessment of health literacy in the outpatient HF population. The issue of poor health literacy in the HF population is significant to nursing practice because it can affect how nurses teach patients and develop an education program. By educating nurses and providing them with evidence-based practice guidelines to initially identify patients with low health literacy, nursing practice can evolve to identify patients in a time efficient manner for further needed HF education.

This doctoral project may be applicable to similar practice areas in other HF outpatient departments from various health care institutions across the world. In the outpatient HF failure department at a northeast HF clinic, the practice of caring for patients in the outpatient setting is ever-changing and pressured by fast-paced environment. A multidisciplinary approach, which includes the value of nursing practice, is slowly becoming the new normal across health care settings in the United States as the needs of patients expands into several areas. Along with the physicians, advanced

practice providers, and the nursing staff, HF patients in this outpatient clinic are offered resources from pharmacy staff, home health HF failure services, nutritionists, and case managers to tackle the challenges that each specific patient faces in terms of managing their HF. The idea of improving self-management skills in HF patients can also be applicable to other chronic disease populations that require just as much time and consideration by nurses.

This DNP project has the potential for positive social change in nursing practice. Through focused attention by nursing practice to self-care needs, patients in the outpatient HF setting can be effectively educated by nursing staff. In addition to positive social changes for nursing practice, an evidence-based nutrition education program has the goal of decreasing disease exacerbations and hospital readmission rates while promoting self-care and an overall improved quality of life in HF patients. Therefore, CPGs that focus on HF nutrition education and improving health literacy assessment have the potential to promote positive social change by providing nurses with essential assessment and education tools to improve self-care interventions for HF patients.

Summary

The HF population is a complex patient population that faces many challenges for nursing practice regarding assisting patients with self-care, nutrition education, and understanding of their disease. Nursing practice plays a critical role in the education of outpatient HF patients. Several factors can affect how patients and family members manage their disease, including their level of health literacy. When managing HF patients in the outpatient setting, health literacy and numeracy should be assessed to educate

patients on self-care needs such as medication administration, daily weights, and nutrition. A gap in nursing practice was identified in the outpatient HF clinic in which no formal assessment of a patient's health literacy and numeracy was implemented by nursing staff. Therefore, no patient-specific education based on health literacy and numeracy needs was given to patients by nursing staff to improve their self-care needs to reduce HF exacerbations and readmissions in the current outpatient HF setting. Assessing baseline healthy literacy and numeracy and implementing an outpatient education program to specifically meet their self-care needs can help both patients and providers manage the disease. By providing evidence-based CPGs that focus on nursing assessment of health literacy and patient education for nutrition management (including sodium restrictions, fluid restrictions, and daily weight monitoring) and self-care, patients and their family members can receive patient-specific resources to meet their needs. In this next section, I explain the doctoral project further through the discussion of concepts, models, and theories, relevance to nursing practice, local background and context, role of the DNP practice student, and role of the project team.

Section 2: Background and Context

Introduction

Managing HF patients in the outpatient setting can pose a challenge for nurses and health care staff due to the need to educate patients on self-care skills and management of their disease. Several factors, including health literacy and numeracy, need to be considered when developing an education program for HF patients in order to promote self-care management. The purpose of this project was to provide nursing staff with a clinical practice guideline (CPG) that incorporates health and numeracy literacy assessment into an individualized education program. The practice-focused question for this project was: Can the evidence inform a CPG intended to assess health literacy and numeracy assessment and promote an enhanced individualized education intervention in an outpatient HF population? My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program. The background and context of this project can be supported by several concepts, models, and theories, relevance to nursing practice, local need in the community, and need for leadership and innovation by me, the DNP student.

Concepts, Models, and Theories

I applied several models and theories to this DNP project that focus on HF self-care, management of patients with chronic disease in the outpatient setting, and translating evidence-based guidelines into practice. These include Johns Hopkins Nursing evidence-based practice model and guidelines, the situation-specific theory of HF self-care, and Wagner's chronic care model.

I utilized The Johns Hopkins evidence-based practice (EBP) model to systematically integrate new approaches to practice to address the issue of poor health literacy and numeracy, while addressing the concept of chronic disease management and identifying variations in practice and differences in community standards. Dearholt and Dang (2012) described the Johns Hopkins EBP model as the process of developing a practice question, searching the evidence, and translating the evidence into practice. This model uses evidence-based research to guide the planning and implementation of a program for nursing staff to use through identification of current practices in the evidence and evaluation of successfully implemented nursing practices.

Schaffer, Sandau, and Diedrick (2012) identified the Johns Hopkins EBP model as providing specific steps for identifying the practice question and leadership responsibility, evaluating the evidence, and developing recommendations and translating evidence for practice change. The Johns Hopkins EBP model not only addresses all the important components of the EBP process, but it provides guidance for practice change through an action plan with implementation and evaluation and dissemination steps. This model also supports the formation of an inter-professional team, a focus on the improvement of patient outcomes, and a framework for implementing change into practice. Dearholt and Dang (2012) discussed how the formation of an interprofessional team is important in identifying aspects of a research study that may be missed by nursing alone. An interprofessional team is important to the practice problem because it requires the resources of many disciplinary teams in order to be successful. This model can specifically be applied to this DNP project through the development of a CPGs that

include a formal, outpatient nursing health literacy and numeracy assessment as well as education guidelines for HF patients. The CPGs will be developed using the process of steps found in the Johns Hopkins EBP model to include evaluation of evidence, development of recommendations, and suggestions for implementation into nursing practice through a multidisciplinary and leadership approach.

The CPGs were validated by an expert panel in the outpatient HF clinic that included a staff physician, nurse manager, staff nurse, nursing clinical care coordinator, and an expert HF nurse researcher who is doctorate prepared. Based on the feedback of the expert panel and their evaluation, the CPGs were revised so that they may be implemented efficiently by nursing staff in future practice.

An applicable theory to this DNP project is the situation-specific theory of HF, which can be pragmatic in that it establishes a foundation for nurses to educate HF patients on self-care needs such as their nutritional diet. Riegle, Dickson, and Faulkner (2016) discussed the importance of knowledge in HF self-care, especially with dietary sodium restriction and medication adherence. The authors also point out that HF self-care can improve both patient-reported and clinical outcomes. Reigal et al. defined *self-care* as a naturalistic decision-making process that influence actions that maintain physiologic stability, facilitate perception of symptoms, and direct the management of those symptoms. Health literacy and numeracy can play an important role in a patient's self-care management in that a patient must be able to understand health terms and numerical data to maintain physiologic stability and monitor symptoms. For example, patients need to be able to correctly read and understand nutrition labels to maintain a

low-salt diet. They must be able to calculate their weights to monitor weight gain or weight loss. Self-care behaviors, such as sodium adherence, are associated with partial neurohormonal deactivation and a significant reduction in biomarkers of systemic inflammation (Reigel et al., 2016). HF self-care finds that maintenance and management are integral parts of the self-care process, which require a patient to possess both health literacy and numeracy skills to ensure accurate dietary restrictions are maintained. Sezgin et al. (2017) suggested that educational and follow-up programs conducted under the supervision of nurses improve self-care behaviors in patients. Through the implementation of CPGs to guide nursing staff in providing education for patients that focuses on nutrition and improves health literacy and numeracy, patients have the potential to be successful in aspects of their self-care.

Another applicable model to this DNP project is Wagner's chronic care model. Wagner's chronic care model proposes that improvement in the care of patients with chronic conditions can occur only when the following changes occur within the health care delivery system: (a) delivery system redesign; (b) community linkages; (c) effective self-management support; (d) organizational structure, leadership, incentives, and resources; (e) evidence-based decision support; and (f) improved information systems (Allen & Hazelett, 2011). It is a useful framework for this DNP project as it focuses on managing and providing resources to patients with chronic diseases such as HF. Wagner's theoretical framework places an emphasis on self-management support of chronic disease patients and evidence-based ideas. Allen and Hazelett (2011) used the framework to develop a comprehensive posthospitalization nurse-led interdisciplinary

care management for HF patients. The authors focused on interventions that promoted patient activation through health coaching, evidence-based protocols, and integrates with community based agencies. This model provides another framework for the development of this DNP project in that evidence-based support is utilized to develop effective-self management support for patients with a chronic disease, specifically HF in this case.

The Johns Hopkins Nursing EBP model, the situation-specific theory of HF self-care, and Wagner's chronic care model are appropriate models and theory to apply to the framework for this DNP project because they focus on HF patients' self-care needs and the management of chronic disease patients using an evidence-based approach. Using these models and theory to develop the context for translating evidence-based guidelines into practice within this northeast outpatient HF clinic allowed for a scholarly foundation in the development of this DNP project.

Relevance to Nursing Practice

This DNP project is relevant to nursing practice through its focus on health promotion through formal health literacy and numeracy assessment and implementation of patient-specific education. An important component of nursing practice is promoting self-care management for patients through patient specific education. A HF nutrition-focused education program centered on improving health literacy and numeracy assessment has the potential to promote positive social change by providing nurses with essential assessment and education tools to improve self-care interventions for HF patients. These practice guidelines have the potential for larger impact on the HF population through nursing's role in improving patient health literacy and numeracy

skills, decreasing hospital readmission rates, and decreasing morbidity and mortality rates. In this project, I focused specifically on providing nursing staff with an evidence-based approach to assess health literacy and numeracy to educate patients effectively regarding nutrition and self-care interventions.

Local Background and Context

A HF patient's ability to understand their disease and perform simple tasks such as weight monitoring, accurately taking their medications, and measuring their nutritional intake are crucial to their morbidity and mortality (Macabasco-O'Connell et al., 2011). Macabasco-O'Connell et al. (2011) spoke to the concern that low literacy may be a compelling cause of adverse health outcomes for HF through poorer knowledge about health conditions, less use of preventative services, higher hospitalization rates, increased mortality, and poorer self-reported health status. The Institute of Medicine (2004) defined *health literacy* as the degree to which individuals have the capacity to obtain, process, and understand basic health information to make appropriate health decisions. The National Assessment of Adult Literacy (2003) identified that only 12% of U.S. adults have a proficient level of adult literacy. *Numeracy* has been defined as the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life (Nogueira, 2016). Numeracy skills in health is not only essential for interpreting nutrition labels, but for being able to use and interpret health information in general.

The issue of poor health literacy and numeracy in the HF population is significant to providing self-care tools to this patient population and how nursing can educate

patients. Health care providers are faced with the challenge of managing patients in the outpatient setting, where variables are often difficult to control and multiple resources are required to efficiently manage HF patients. Health literacy can affect the management and self-care of many diseases. One study found a direct link between low health literacy in HF patients and poor outcomes. Wu et al. (2016) provided a longitudinal study of 575 rural patients with HF from outpatient clinics, where patients cardiac mortality and readmissions were followed for 2 years, that addressed the effects of health literacy on patient outcomes. It was found that low health literacy was prevalent in older compared with younger patients (47% versus 21%), and it was associated with 1.8x risk of cardiac events. Nursing interventions that are focused on improving health outcomes in patients with HF should consider the patient's level of health literacy and numeracy.

For nursing staff to understand and evaluate a patient's health literacy and numeracy, a formal, initial assessment should be done. Evidence presents validated tools that have been used in practice to formally assess health literacy and numeracy in HF patients. The Test of Functional Health Literacy in Adults (TOFHLA) is available in either English or Spanish and is presented to patients as a 36-item, 7-minute timed test of reading comprehension to assess health literacy (Macabasco-O'Connell et al., 2011). This tool was used by Macasbasco et al. (2011) to assess health literacy in 605 HF patients. It was found that 37% of this population was found to have low literacy levels. Macasbsco et al. (2011) discovered that low literacy was associated with lower general and salt-related HF knowledge, lower performance of self-care behaviors, lower self-efficacy, and lower quality of life. More specific to both health literacy and numeracy assessment, the

Newest Vital Sign tool has been used in primary care settings to assess patients' literacy (Macabasco-O'Connell et al., 2011). The Newest Vital Sign involves a verbally administered, 6-item measure that asks about information contained in a standard food nutrition label that requires reading comprehension and numeracy skills (Welch, 2011). This makes the Newest Vital Sign adventitious compared with other literacy assessment tools as it also focuses on numeracy. According to Shealy and Threatt (2016), the Newest Vital Sign assesses the functional tasks patients are required to perform involving manipulation of numbers. Such HF self-care skills such as assessing blood pressure readings, measuring medications, tracking daily weights, and understanding nutrition labels all require the use of adequate math and numeracy skills. Nurses in the outpatient HF clinic may find the Newest Vital Sign health literacy and numeracy assessment tool to be time efficient because it takes approximately 3 minutes for a patient to complete. Linnebur (2016) found that a self-administered Newest Vital Sign assessment of adolescents was successful and well-received in a sixth-grade student population. Because the Newest Vital Sign would be used in adult HF patients, the feasibility of providing patients with a time-efficient, formal health literacy and numeracy assessment tool that is self-administered would be ideological to nursing staff.

The local background for this DNP project identified the relationship between lack of self-management skills and poor patient outcomes. Although clear data or studies exist gathered from the outpatient HF clinic specifically on patient's health literacy and numeracy, evidence has been gathered regarding the clinic system's patients noted to have poor cognitive function with the diagnosis of HF. The medical director of the

outpatient HF department noted that poor cognitive function in patients could potentially lead to poor health literacy and numeracy, which in turn leads to poor self-management skills (personal communication, June 30, 2017). In a study done within the DNP student's practicum setting regarding HF patients and cognitive function, the director and colleagues found an association between impaired cognitive function and poor medication self-management skills among older adults hospitalized for HF with an intended home discharge. They also found that difficulties with reading a pill bottle label from impaired cognitive function led to medication administration errors once discharged from the hospital (Howell et al., 2017). The director recognizes that while this link has been identified within the clinic's patient population, there are no interventions formulated yet to address this issue within the outpatient clinic.

The institutional context applicable to this DNP project revealed a fast-paced, busy outpatient HF clinic that currently has little time to devote to health literacy and numeracy assessment in addition to any formal patient education. The clinic sees 30 to 60 patients per day on average, Monday through Friday. Patients are older than 18 years and have various types and stages of HF with different etiologies. Most patients are seen for 7-day and 30-day follow-up appointments after discharge from an acute setting for HF exacerbation. Patients who have not been recently hospitalized are seen on an individual basis based on their symptoms and therapy changes, ranging from 2-week to 6-month follow-up appointments. The outpatient HF department has several staff physicians, two advanced practice providers, three staff nurses, and one registered nurse clinical care coordinator.

Role of the DNP Student

My role as the DNP student in this project was to develop evidence-based CPG for nurses to implement that are based on assessment of a patient's health literacy and numeracy. I synthesized best practices from the nursing literature and other sources to determine how to develop CPGs for HF nurses based on evidence. After a synthesis of the literature, I proposed evidence-based CPG that guided nursing staff to provide patients with a formal health literacy and numeracy assessment and patient-specific education program. I am employed by the hospital system, but practices as a nurse practitioner in a different disease institute. Therefore, the DNP project is not affiliated with my current practice site. I served in the leadership role to identify evidence-based interventions to address the problem of no current formal health literacy and numeracy assessment within the outpatient HF clinic and provide recommendations for practice guidelines on patient-specific nursing education.

Role of the Project Team

The role of the project team was to provide feedback to me on the proposed evidence-based CPG. Nursing staff involved in this project invested time throughout their busy day to provide insight regarding current practices in the outpatient setting and implementation regarding the CPG. The project team also involved nursing management and leadership as well as advanced practice nurses and physicians to support the nursing staff's role in participating in the expert panel for the CPG. The timeline for feedback was 2 weeks.

Summary

My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program. The background and context of this project can be supported by several concepts, models, and theories discussed in this section. The practice problem and CPG presented to the expert panel held relevance to nursing practice, local need in the community, and a need for leadership and innovation by me.

Section 3: Collection and Analysis of Evidence

Introduction

Managing HF patients in the outpatient setting can pose a challenge for nurses and health care staff due to the need to educate patients on self-care skills and management of their disease. Several factors, including health literacy and numeracy, need to be considered when developing an education program for HF patients in order to promote self-care management. My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program. The practice-focused question for this project was: Can the evidence inform a CPG intended to assess health literacy and numeracy assessment and promote an enhanced individualized education intervention in an outpatient HF population? My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment and an individualized education program. The meaningful gap in nursing practice within this outpatient HF setting was that nurses are not currently implementing a formal, patient-specific education program focused on nutritional needs for those identified with poor health literacy. There was a lack of formal health literacy assessment in patients and no recognized education program for nutrition management. The issue of poor health literacy and numeracy in the HF population is significant to providing self-care tools to this patient population and how nursing can educate patients. Health care providers are faced with the challenge of managing patients in the outpatient setting, where variables are often difficult to control and multiple resources are required to efficiently manage HF patients.

Through an exhaustive review of evidence-based literature, I developed a CPG for nurses in an outpatient HF setting. According to the Manual for CPG Development (2017), CPGs within a health care organization or system provide a method to translate evidence into practice and improve outcomes. A CPG to provide recommendations for nursing staff on how to formally assess patient health literacy and numeracy in order to provide individualized education on nutrition and self-care needs. The following paragraphs will discuss the project's practice-focused question, sources of evidence, and analysis and synthesis.

Practice-Focused Question

The practice-focused question for this project was geared toward the outpatient HF clinic setting: Can the evidence inform a CPG intended to assess health literacy and numeracy assessment and promote an enhanced individualized education intervention? By identifying patients with low health literacy and numeracy, nursing staff can then answer the practice problem at hand. These guidelines used current evidence-based research and information to assess an individual patient's health literacy and numeracy and provide HF patients with individualized education. After presentation of the guidelines to the expert panel, they were validated and available for nursing staff to implement into future practice. This doctoral project and question align with the types of scholarly projects conducted by DNPs by designing evidence-based practice guidelines that nursing practice can utilize when educating HF patients in the outpatient setting (American Association of Colleges of Nursing, 2006).

Sources of Evidence

Sources of evidence for this DNP project included a review of the literature and the expert panel feedback. A review of the literature included resources obtained from databases: PubMed, CINAHL, MEDLINE, Allied Health Source, Nursing Academic Search Premier, and the Cleveland Clinic Library Database. Other additional nursing resources include the Institute of Medicine, American Association of Colleges of Nursing, Sigma Theta Tau International, and the American Association of Heart Failure Nurses. Both primary and secondary nursing research sources were used to identify evidence-based education programs focused on nursing-based HF nutrition education. I synthesized best practices from the nursing literature and other to determine how to develop an enhanced individualized education program for outpatient HF patients. Evidence for this project was gathered through the use of the Walden University literature review matrix using the following search terms: health literacy and numeracy, health literacy, health numeracy, HF and health literacy, HF and self-care needs, HF models, self-care models, self-care, HF and patient education, and HF and self-management. I developed a CPG using the literature review. Institutional Review Board (IRB) approval was obtained from both Walden University and the institution where the expert panel was employed. The expert panel, consisting of four participants, was used to review the literature presented in the CPG. To ensure the integrity and validity of the evidence in the CPG, the expert panel used the AGREE (Appraisal of Guidelines for Research and Evaluation) II instrument. The doctoral project purpose, to provide nursing

staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program, can connect the identified gap in nursing practice.

Analysis and Synthesis

I conducted a literature search using the key words: HF, health literacy, health numeracy, Newest Vital Sign, health literacy tools, to identify studies published between 2006 and 2018 using the following databases: PubMed, CINAHL, MEDLINE, Allied Health Source, Nursing Academic Search Premier, and the Cleveland Clinic Library Database. Of the 20 articles that met inclusion criteria, five were selected to review level of evidence to support the development of the CPG (see Appendix A). From these 5 articles, 3 articles were chosen based on level of evidence to ultimately support the development of the CPG (Melnik, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012). An expert panel of two cardiologists and three nurse practitioners used the AGREE II tool to evaluate the CPG and the three studies that founded it. The expert panel's feedback was used to review, refine, and validate the final CPG.

The literature review was helpful to identify best practice to develop the CPG. The literature review was used to synthesize information addressing this gap in practice to identify strengths and weaknesses of current evidence. These tools allowed critiquing of the evidence to ensure that I had accurate information and evidence to develop the CPG. The anticipated findings from the literature review analysis provided me with sufficient evidence to connect my project to the gap in nursing practice. The expert panel then used the AGREE criteria II instrument to review, refine, and validate the CPG and the evidence provided by me.

Through synthesis of literature, the development of an evidence-based CPG allowed nurses to formally assess health literacy and numeracy. An expert panel within the practicum setting was identified. The CPGs were presented to the expert panel through individualized emails. The expert panel had 2 weeks to provide feedback based on the AGREE criteria. Their job was to assess the level of evidence of the literature review and the subsequent guidelines. The expert panel provided helpful feedback based on the current evidence, in addition to feedback related to the individualized practice setting itself and realistic expectations of implementation. Using the AGREE II instrument, the expert panel reviewed the proposed guidelines to validate the content. The identified key stakeholders and expert panel were then presented the revised guidelines and given the opportunity to discuss and validate the content and ensure usability. I established a final report to disseminate to the expert panel and nursing staff in the outpatient setting. The literature review enabled the development of the CPG, which the expert panel reviewed and completed the AGREE II instrument (see Appendix B). The results of the AGREE II instrument completed by the expert panel were reviewed with the nursing staff for further discussions around future plans of implementation.

Summary

The nature of this DNP project was to develop evidence-based CPGs for nurses to formally assess health literacy and numeracy and provide individualized nutrition and self-care education to patients in the outpatient HF clinic setting. Through the use of the Johns Hopkins Nursing EBP model and guidelines, the situation-specific theory of HF failure self-care, and Wagner's chronic care model, a CPG was developed, and the

expert panel used the AGREE II instrument to validate. The CPG focused on identifying a need for patient specific education with consideration of their health literacy and numeracy assessment. Assessment of patient specific needs in this practice setting identified the practice problem. The literature review guided the development of practice guidelines informed by a systematic process of review of evidence. Presentation of these practice guidelines to key stakeholders and end-users allowed the DNP student to receive scholarly feedback and ensure validity and usability. The practice guidelines presented within the outpatient HF clinic provided a method to translate evidence into practice and improve patient outcomes.

Section 4: Findings and Recommendations

Introduction

Managing HF patients in the outpatient setting can pose a challenge for nurses and health care staff due to the need to educate patients on self-care skills and management of their disease. Health literacy and numeracy need to be considered when developing an education program for HF patients to promote self-care management. My purpose in this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment into an individualized education program. The practice-focused question for this project was: Can the evidence inform a CPG intended to assess health literacy and numeracy assessment and promote an enhanced individualized education intervention in an outpatient HF population? My purpose in this this project was to provide nursing staff with a CPG that incorporates health and numeracy literacy assessment and an individualized education program. Nursing staff in a fast-paced, highly populated outpatient HF clinic were having difficulty finding time to provide patient education. The practice problem, evidence identified, and CPGs were presented to an expert panel. The expert panel used the AGREE II instrument to review, refine, and validate the evidence in the CPG. They also gave additional feedback regarding the CPG and identified whether they would use the CPG in practice. Although time constraints remain an issue within the outpatient HF clinic, the overall consensus of the project was highly favored and recognized as a need among nursing practice in this setting.

The CPG provides a way for nurses to assess health literacy and numeracy in the outpatient HF population. Appendix B shows the final document developed after

presentation to the expert panel. Based on the findings of the AGREE II evaluation, the expert panel found that evidence provided for the clinic practice guidelines was supportive of the cause (see Appendix C). Staff nurses decided they will use the CPG in future practice by identifying patients within the practice setting who are eligible for taking a health literacy survey, called the Newest Vital Sign (Appendix B), which is identified in the CPG. Based on the evidence provided, the survey would take a patient approximately 5 minutes to complete. The Newest Vital Sign (Appendix B) provides a patient with a nutrition label and asks a series of questions that requires the patient to calculate and use reasoning to answer questions regarding the nutritional label.

Findings and Implications

The expert panel found the evidence presented in the CPG to be supportive of the purpose of the DNP project (see Appendix C). A literature review matrix was presented at the time of the CPG presentation in support of the evidence obtained (see Appendix A). The literature review matrix was the foundation of evidence relied upon for the DNP student to formulate the CPG. The AGREE II scoring favored the agreement that the evidence presented in the guidelines was strongly supportive of the purpose of the guideline: to assess health literacy and numeracy in the outpatient HF population (see Appendix C). Limitations of the findings is that the expert panel was small, consisting of four providers. Although they are experts in the field of HF, they do not reflect the entire population of experts within the large HF outpatient practice. There may also be bias in the fact that the expert panel had knowledge of the identity of the DNP student. I worked with the expert panel for several months during the practicum experience; thus, favor

could have influenced expert panel results. From these results, positive social change could occur through improved identification of patients with low health literacy and numeracy that would require more attention from nursing staff and focused education. Based on the CPG, nursing staff were eager to implement the guidelines into their practice. This could allow for more individualized education for patients with HF and allow patients who are struggling with self-care needs and nutritional decisions to find assistance through nursing care. One concern did remain with the expert panel and nursing staff around staffing numbers and time as the most significant concern. The expert panel acknowledges a need for this CPG in their daily practice and identifies it to improve patient care.

Recommendations

The expert panel reviewed the CPG (see Appendix C) and recommended that I also investigate other education programs in the literature that revolved around HF patients and self-care needs. The expert panel wanted to know whether other studies had shown any type of education program to be effective. Although the literature review was exhaustive, I found no literature to support one education plan over another except to state that individualized education plans for patients were needed. Feedback regarding the CPG was positive and encouraging from the expert panel (Appendix C) that cares for HF patients on a daily basis and sees firsthand the struggle with health literacy and compliance to a HF medical regimen. A rating of 7 was given for all categories in the AGREE II instrument except for one category. The nurse would then review the survey and identify whether the patient has low health literacy or numeracy as evidenced by any

missed question on the survey. If a nurse identifies a patient with poor health literacy or numeracy, he or she would then notify the provider and document the patient as being at high risk for issues with self-care needs and nutrition adherence. The nurse would then develop an individualized education plan for the patient to improve health literacy and numeracy.

Strengths and Limitations of Project

Strengths of the project included the evidence found to support the need for assessing health literacy and numeracy in the outpatient HF population through a strong literature review based on the AGREE criteria (Appendix C). The AGREE criteria is an instrument used to evaluate the process of practice guideline development (see Appendix C). The AGREE II survey asked the expert panel to score statements related to the CPG from 1 (strongly disagree) to 7 (strongly agree). Statements asked included domains about scope and purpose, stakeholders' involvement, rigor of development, clarity of presentation, applicability, and overall guideline assessment. This information is presented in Appendix C. Experts believed that the literature review provided not only showed a need for a CPG in the area of patient education, but a concern regarding low health literacy and ways to assess this. Concerns regarding implementation lie around the fact that the practice setting is a busy, fast-paced atmosphere of the clinical practice setting, which resulted in concerns for dissemination of the CPGs into practice due to lack of staffing and resources. For me to disseminate the CPGs into the practice setting in the future, further leadership would be needed to organize resources and staffing appropriately.

Section 5: Dissemination Plan

Introduction

After expert panel review, I presented the CPG to the outpatient HF department nurses for dissemination. The nursing staff plans to use the CPG to formally assess health literacy and numeracy in their practice. Members of the expert panel plan to implement the CPG into the outpatient setting first, as staffing allows. Nurses in this practice setting are supportive of improving education in patients with HF and see the potential benefit of promoting a positive social change. Plans to disseminate this work into the institution experiencing the practice problem in practice include nursing staff and medical assistants identifying patients at potential risk for health literacy and numeracy problems or patients with low threshold for a HF readmission. Nursing staff have discussed providing the Newest Vital Sign tool at the beginning of an outpatient office visit during intake. Although the information obtained from patient participation in this screening process is still unknown, nursing staff and providers are willing to use this practice guideline to identify patients at risk for poor health literacy and numeracy. Once these patient population is identified, a nursing care coordinator in the outpatient setting can work closely with an identified patient to establish an individualized education care plan. To a broader nursing profession, this practice guideline could also be used in other chronic disease outpatient settings to identify patients at risk for poor health literacy and numeracy that will directly influence their nutrition and self-care needs. For example, this guideline could be used in an outpatient diabetic or COPD clinic. This guideline could be beneficial in many outpatient settings to allow nursing staff to identify those patients who

need special attention and individualized education care plans in hopes of reducing hospital admissions and acute decompensation of chronic disease. Audiences that would be appropriate for dissemination of the project to the broader nursing profession would be nurses that are dedicated to providing quality education to patients. Nurses cannot achieve this goal of providing individualized patient education without first identifying populations in need, such as those with poor health literacy and numeracy.

Analysis of Self

The journey of the DNP project has been enlightening to me as the DNP student. The appreciation for the process of research, development, and implementation for such a scholarly project has exemplified in the lengthy process of doctoral work. The project allowed for extensive professional development through the experience of scholarly writing, literature review, multidisciplinary collaboration, and leadership. As a current practicing nurse practitioner, I found the DNP project to provide excellent experience in collaborating with key stakeholders and working on projects with fellow nursing staff in order to achieve a common goal. The project also allowed me to gain confidence in working with other groups unsimilar from my own. It allowed me to work with several experienced and scholarly advanced providers and physicians, who come with their own wealth of knowledge and expertise. The project set the foundation for my current state as a provider and some of the long-term goals set for myself professionally. Since starting this project, I have obtained my goal of becoming an advanced nurse practitioner leader for both advanced practice registered nurses and physician assistants. I have also been

invited to become adjunct faculty for a local university, teaching nurse practitioner and clinical nurse specialist students.

Challenges of this project included time management. Obtaining IRB approval from the site proved challenging due to the approval process and waiting period. Once IRB approval was achieved, I found the next steps to be challenging due to personal time constraints and other professional obligations within my job. During my final months in the DNP project, I was promoted to a leadership role within my institute, which led to further time constraints and availability for writing. I also had the honor of starting my path as adjunct faculty for a local university, for which teaching has always been one of my aspirations. Professionally, the process of this DNP project and the additional knowledge obtained through my DNP practicum courses and didactic allowed for me to transition into the roles of advanced practice leader and faculty educator smoothly. The process of the DNP project has allowed me to develop other process improvement and quality projects within my current jobs. My leadership skills, role and knowledge base has grown greatly throughout this process. This project helped identify the characteristics that are needed for one to obtain their doctorate in nursing practice and grow as a leader, which include organization, time management, leadership, strength, and courage. To lead, one must exemplify these qualities. This project has allowed me to grow outside of my comfort zone of working individually and has encouraged me interact with a multidisciplinary team to establish these CPGs in a collaborative manner and as an evidenced-based scholarly clinician in the DNP role.

Summary

In this DNP project, I was successful in that I acknowledged as an appropriate tool for nurses based on the evidence for formally assessing health literacy and numeracy in the outpatient HF population. Although the timing of dissemination for the CPGs remains unknown, the expert panel found the guidelines to be helpful and recognized the need based on the identified gap in nursing practice. Patient education remained the soul focus of this DNP project, which was highly acknowledged by the expert panel. I focused on improving education for HF patients through the role of providing nurses with evidence-based guidelines. The expert panel used the AGREE II survey to evaluate the CPG, which was found to be accepted by all expert panel reviewers. Personally, the DNP project was meaningful because I have many years of experience working with patients with HF, who are battling a chronic disease. Simple daily choices, such as nutrition, can affect how a patient feels and their symptoms. To help patients better understand their abilities to self-manage their disease and make appropriate nutritional choices, the nurse needs to identify areas where health literacy and numeracy may hinder such abilities. Through the use of a formal evaluation for poor health literacy and numeracy, nursing staff can identify patients that will require more time and efforts regarding education and self-management skills. As a DNP student and advanced practice nurse, I have found anecdotally that more time spent with patients who require further education is worthwhile. When the nurse invests his or her time into roles of educator and advocate for a patient, patients not only develop understanding, but trust. In my role as the DNP student, I was able to develop relationships with the nursing staff and health care

providers in the outpatient HF department and was respected for my role in helping to improve patient outcomes and quality of life within their clinic. The role of the DNP student gave me the confidence to become a leader for the group and also a better advocate for my patients.

References

- American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Retrieved from <http://www.aacn.nche.edu/dnp/essentials.pdf>
- Cajita, I., Cajita, T., Han, H. (2016). Health literacy and heart failure: A systematic review. *Journal of Cardiovascular Nursing, 31*(2), 121-130. doi: 10.1097/JCN.0000000000000229
- Dearholt, S., & Dang, D. (2012). Johns Hopkins evidence-based practice model and guidelines (2nd ed.). Indianapolis, IN: Sigma Theta Tau International.
- Friel, C. J. (2016). Improving health outcomes for low health literacy heart failure patients. *Home Healthcare Now, 34*(8), 434-439. doi: 10.1097/NHH.0000000000000433
- Grif Alspach, J. (2015). Heart failure and low health literacy: Mitigating this lethal combination. *Critical Care Nurse, 35*(5), 10-14. doi:10.4037/ccn2015734
- Howell, E., Senapati, A., Hsich, E., & Gorodeski, E. (2017). Medication self-management skills and cognitive impairment in older adults hospitalized with heart failure: A cross-sectional study. *SAGE Open Medicine, 5*, 1-10. doi: 10.1177/2050312117700301
- Institute of Medicine (2004). *Health Literacy: A Prescription to end confusion*. Washington, DC. National Academy Press.
- Klersy, C., De Silvestri, A., Gabutti, G., Raisaro, A., & Auricchio, A. (2011). An Integrated economic model derived from a meta-analysis of randomized

- controlled trials in heart failure. *European Journal of Heart Failure*, 13(4), 450-459. doi: 10.1016/j.jacc.2009.08.017
- Linnebur, Lauren. (2016). Self-administered assessment of health literacy in adolescents using the newest vital sign. *Health Promotion Practice*, 1-6. doi:10.1177/1524839916677729
- Macabasco-O'Connell, A., DeWalt, D., Broucksou, K., Hawk, V., Baker, D., Schllinger, D., Ruo, B., . . . & Pignone, M. (2011). Relationship between literacy, knowledge, self-care behaviors, and heart failure-related quality of life among patients with heart failure. *Journal of the Society of General Internal Medicine*, 26(9), 979-986. doi:10.1007/s11606-011-1668-y
- Melnyk, B. M., Fineout-Overholt E., Gallagher-Ford, L., & Kaplan, L. (2012). The state of evidence-based practice in US Nurses. *Journal of Nursing Administration*, 42(9), 410-417. doi:10.1097/NNA.0b013e3182664e0a
- Nogueira, L. M., Thai, C. L., Nelson, W., & April, O. (2016). Nutrition label numeracy: Disparities and association with health behaviors. *American Journal of Health Behavior*, 40(4), 427-436. doi:10.5993/AJHB.40.4.4
- Riegel, B., Dickson, V. V., & Faulkner, K. M. (2016). The situation-specific theory of heart failure self-care. *Journal of Cardiovascular Nursing*, 31(3), 226-235. doi: 10.1097/JCN.0000000000000244
- Schaffer, M. A., Sandau, K. E., & Diedrick, L. (2012, July). Evidence-based practice models for organizational change: overview and practice applications. *Journal of Advanced Nursing*, 1197-1209. doi:10.1111/j.1365-2648.2012.06122.x

- Sezgin, D., Mert, H., Ozpelit, E., & Akdeniz, B. (2017). The effect on patient outcomes of a nursing care and follow-up program for patients with heart failure: A randomized controlled trial. *International Journal of Nursing Studies*, 70, 17-26.
doi:10.1016/j.ijnurstu.2017.02.013
- Shealy, K. M., & Threatt, T. B. (2016). Utilization of the Newest Vital Sign (NVS) in practice in the United States. *Health Communication*, 31(6), 679-687.
doi:10.1080/10410236.2014.990079
- Walden University. (2017). *Manual for CPG development: Doctor of nursing practice scholarly project*, pp. 1-16.
- Welch, V., Vangeest, J., & Caskey, R. (2011). Time, costs, and clinical utilization of screening for health literacy: A case study using the newest vital sign (NVS) instrument. *Journal of The American Board of Family Medicine*, 24(3), 281-289.
doi:10.3122/jabfm.2011.03.100212
- Wu, J., Moser, D., DeWalt, D., Rayens, M., Dracup, K. (2016). Health literacy mediates the relationship between age and health outcomes in patients with heart failure. *Circulation Heart Failure*, 9, 1-8.
doi:10.1161/CIRCHEARTFAILURE.115.002250

Appendix A: Literature Review Matrix

Citation	Main finding	Research method	Strengths of study	Weaknesses	Level of Evidence
Huang, Y.-M., Shiyanbola, O. O., Smith, P. D., & Chan, H.-Y. (2018). Quick screen of patients' numeracy and document literacy skills: the factor structure of the Newest Vital Sign. <i>Patient Preference And Adherence</i> , 12, 853–859.	The Newest Vital Sign provides an easy and quick screen to evaluate patients' ability to comprehend and perform basic numerical operations based on printed health information.	A cross-sectional study administering the NVS in a face-to-face manner was conducted at two family medicine clinics in the United States.	The first study to explore the factor structure of the NVS, showing that the NVS assesses two distinct aspects of health literacy. Among the six questions in the NVS, the last two questions assess document literacy, comprehension, application, and evaluation; the first four items also add a strong quantitative literacy assessment.	Of the 199 participants approached, most were well-educated white females, not reflective of the patient population in heart failure that may have poor health literacy and numeracy issues.	B
Cole, S. A., Farber, N. C., Weiner, J. S., Sulfaro, M.,	The pilot study	The methods	The pilot study	The study	B

<p>Katzelnick, D. J., & Blader, J. C. (2006). Double-disease management or one care manager for two chronic conditions: pilot feasibility study of nurse telephonic disease management for depression and congestive heart failure. <i>Disease Management, 9</i>(5), 266-276.</p>	<p>demonstrated feasibility and effectiveness of a nurse telephonic double-disease management program for depression and a general medical comorbidity in a frail elderly Medicare population. It was found that elderly patients with CHF and depression were generally willing to cooperate with and appreciate telephonic nurse care coordination.</p>	<p>used in this study utilized all six required elements of the chronic illness care model. The model for telephonic care included an initial telephone call establishing the working relationship, assessment of adherence to the physician's overall treatment plan, evaluation of side effects from medication, and subsequent calls, at least monthly, with</p>	<p>showed significant feasibility of a nurse-telephonic double-disease management program with improved depression severity scores and a 6-month response rate of 73% for patients with major depression.</p>	<p>population for this study was small and there was an absence of a control group. The authors advise caution in their preliminary conclusions of the pilot study due to the small study population size.</p>	
---	---	---	---	--	--

		telephonic administration of a Patient Health Questionnaire.			
Linnebur, Lauren. (2016). Self-administered assessment of health literacy in adolescents using the newest vital sign. <i>Health Promotion Practice</i> , 19(1), 1-6.	Self-administration of the NVS was successful and showed similar health literacy scores compared to other studies in adolescents.	Sixth graders in a Colorado middle school were provided a self-administered survey containing the NVS.	NVS is more transferable to adult population if the evidence from this study shows its success in the sixth grade age group.	There was no way to tell if sample size had help with answers since surveys were not administered in person	B
Shealy, K. M., & Threatt, T. B. (2016). Utilization of the newest vital sign (NVS) in practice in the United States. <i>Health Communication</i> , 31(6), 679-687. doi:10.1080/10410236.2014.990079	A review of the literature demonstrates the applicability of the NVS tool in various settings and patient populations	The systematic review was conducted to identify articles that reported use of the (NVS) tool in adult patients using the terms newest vital sign and health literacy,	23 articles were used from the review of literature in support of the NVS.	The review of literature used variable settings that utilized the NVS instead of just focusing on a chronic disease patient population.	A

		from 2005 through September 2013			
Welch, V., Vangeest, J., & Caskey, R. (2011). Time, costs, and clinical utilization of screening for health literacy: a case study using the newest vital sign (NVS) Instrument. <i>Journal of the American Board of Family Medicine</i> , 24(3), 281-289. doi:10.3122/jabfm.2011.03.100212	Data were collected in 2008 in the Morehouse School of Medicine Department of Family Medicine Primary Care Clinic, where health literacy screening was implemented as part of routine intake procedures within an ongoing quality improvement effort to improve cardiovascular disease and diabetes outcomes. Specifically, we				

	monitored time requirements, administrative and training costs, and clinician utilization associated with the NVS				
--	---	--	--	--	--

Appendix B: CPGs for Assessing Health Literacy and Numeracy in the Outpatient Heart

Failure Population

Purpose: The purpose of these guidelines is to assist nursing staff in formally assessing health literacy and numeracy in the outpatient heart failure population to develop an individualized education plan.

Evidence: The Newest Vital Sign tool has been used in primary care settings to assess patients' literacy. The Newest Vital Sign involves a verbally administered, 6-item measure that asks about information contained in a standard food nutrition label that requires reading comprehension and numeracy skills (Welch, 2011). This makes the Newest Vital Sign advantageous over other literacy assessment tools as it also focuses on numeracy. According to Shealy and Threatt (2016), the Newest Vital Sign assesses the functional tasks patients are required to perform involving manipulation of numbers. Such heart failure self-care skills such as assessing blood pressure readings, measuring medications, tracking daily weights, and understanding nutrition labels all require the use of good math and numeracy skills.

Nursing Practice Guidelines:

1. The staff nurse will identify a patient with heart failure in the outpatient setting who presents for an appointment with his or her heart failure provider.
2. The staff nurse will provide the identified patient with the Newest Vital Sign tool to complete. The survey takes approximately 5 minutes to complete.

3. The staff nurse will review the completed Newest Vital Sign tool and grade appropriately.

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.

Score Sheet for the Newest Vital Sign Questions and Answers

READ TO SUBJECT: This information is on the back of a container of a pint of ice cream.

	ANSWER CORRECT?	
	yes	no
1. If you eat the entire container, how many calories will you eat? <i>Answer: 1,000 is the only correct answer</i>		
2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have? <i>Answer: Any of the following is correct: 1 cup (or any amount up to 1 cup), Half the container. Note: If patient answers "two servings," ask "how much ice cream would that be if you were to measure it into a bowl."</i>		
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 one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day? <i>Answer: 33 is the only correct answer</i>		
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? <i>Answer: 10% is the only correct answer</i>		
READ TO SUBJECT: 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? <i>Answer: No</i>		
6. (Ask only if the patient responds "no" to question 5): Why not? <i>Answer: Because it has peanut oil.</i>		
Interpretation	Number of correct answers:	
Score of 0-1 suggests high likelihood (50% or more) of limited literacy		
Score of 2-3 indicates the possibility of limited literacy.		
Score of 4-6 almost always indicates adequate literacy.		

Figure 1. Newest vital sign tool.

- If the patient's answers are correct, the staff nurse and heart failure provider team will continue to provide standard of care heart failure education to the patient (including Heart Failure Education Booklet).
- If the patient answers any of the Newest Vital Sign questions incorrectly, it will flag the patient as a potential risk for poor health literacy and numeracy. The staff nurse will inform the heart failure provider team of the potential risk.
- Patients with heart failure who are a potential risk for poor health literacy and numeracy will receive standard of care heart failure education (including Heart Failure Education Booklet) while also receiving more individualized, specific

education based on the identified need. Advanced education includes consult to nutrition to review food labels and receive education on calculating labels appropriately, one-on-one appointments monthly with the heart failure nursing care coordination for individualized education, social work consult to identify gaps in financial assistance and home assistance, consult to pharmacy to review medications and dosage calculations and frequency of administration, and more frequent visits with the advanced practice provider (nurse practitioner or physician assistance) when needed.

Time to Complete Nursing Practice Guidelines:

Nurses in the outpatient heart failure clinic may find the Newest Vital Sign health literacy and numeracy assessment tool to be time efficient because it only takes approximately three minutes for a patient to complete. Linnebur (2016) found that a self-administered Newest Vital Sign assessment of adolescents was successful and well-received in a sixth-grade student population. Since the Newest Vital Sign would be used in adult HF patients, the feasibility of providing patients with a time-efficient, formal health literacy and numeracy assessment tool that is self-administered would be ideological to nursing staff.

References

- Linnebur, Lauren. (2016). Self-administered assessment of health literacy in adolescents using the newest vital sign. *Health Promotion Practice*, 19(1), 1-6.
- Shealy, K. M., & Threatt, T. B. (2016). Utilization of the newest vital sign (NVS) in

practice in the United States. *Health Communication*, 31(6), 679-687.

doi:10.1080/10410236.2014.990079

Welch, V., Vangeest, J., & Caskey, R. (2011). Time, costs, and clinical utilization of screening for health literacy: a case study using the newest vital sign (NVS)

Instrument. *Journal of the American Board of Family Medicine*, 24(3), 281-289.

doi:10.3122/jabfm.2011.03.100212

Appendix C: AGREE II Instrument Tool Reviewer Scores

AGREE II Tool Reviewer Scores					
Scoring system: 1: Lowest possible quality, 7: Highest possible quality					
	Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 4	Domain Composite Score
Domain 1. Scope and Purpose					100%
1. The overall objective(s) of the guideline is (are) specifically described	7	7	7	7	
2. The health question(s) covered by the guideline is (are) specifically described.	7	7	7	7	
3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.	7	7	7	7	
Domain 2. Stakeholder Involvement					100%
4. The guideline development group includes individuals from all relevant professional groups.	7	7	7	7	
5. The views and preferences of the target population (patients, public, etc.) have been sought.	7	7	7	7	
6. The target users of the guideline are clearly defined.	7	7	7	7	
Domain 3. Rigor of Development					99.5%
7. Systematic methods were used to search for evidence.	7	7	7	7	
8. The criteria for selecting the evidence are clearly described.	7	7	7	7	
9. The strengths and limitations of the body of evidence are clearly described.	7	7	7	7	
10. The methods for formulating the recommendations are clearly described.	7	7	7	7	

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.	7	7	7	7	
12. There is an explicit link between the recommendations and the supporting evidence.	7	7	7	7	
13. The guideline has been externally reviewed by experts prior to its publication.	7	7	7	7	
14. A procedure for updating the guideline is provided.	7	7	6	7	
Domain 4. Clarity of Presentation					100%
15. The recommendations are specific and unambiguous.	7	7	7	7	
16. The different options for management of the condition or health issue are clearly presented	7	7	7	7	
17. Key recommendations are easily identifiable.	7	7	7	7	
Domain 5. Applicability					100%
18. The guideline describes facilitators and barriers to its application.	7	7	7	7	
19. The guideline provides advice and/or tools on how the recommendations can be put into practice.	7	7	7	7	
20. The potential resource implications of applying the recommendations have been considered.	7	7	7	7	
21. The guideline presents monitoring and/or auditing criteria.	7	7	7	7	
Domain 6. Editorial Independence					98.8%
22. The views of the funding body have not influenced the content of the guideline.	7	7	7	7	

23. Competing interests of guideline development group members have been recorded and addressed.	6	7	7	7	
Overall guideline Assessment					
1. Rate the overall quality of this guideline	7	7	7	7	
2. I would recommend this guideline for use.	Yes	Yes	Yes	Yes	