A HEALTH LITERACY ALGORITHM IMPACT ON READMISSIONS AND PATIENT SATISFACTION

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Abstract

The purpose of this quality improvement (QI) project was to explore the relationship between health literacy levels and readmission rates and patient satisfaction scores. The medical-surgical unit in the studied community hospital had higher-than-expected readmission rates for patients with congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) and decreased scores for patient satisfaction with nurse communications. In patients with (P) CHF and COPD admitted to the fifth-floor medical-surgical unit, does a (I) two-tiered health literacy algorithm used by nurses decrease CHF and COPD readmission rates by 5% and improve patient communication scores by 5% compared (C) with current patient education methods in a (O) 10-week period? During the project, the Short Assessment of Health Literacy-English (SAHL-E) was used at the bedside with patients meeting the inclusion criteria. This project took place over a 10-week implementation period that allowed for a 4-week follow-up on 30-day readmission rates and patient satisfactions scores. The QI project increased organizational awareness of the low level of health literacy for patients served in the medical-surgical unit. The nurses on the floor displayed improved communication strategies based on the results of the patients' health literacy assessment. This was demonstrated by the improved patient satisfaction scores related to nurse communications following project implementation. This project succeeded in accumulating new knowledge on health literacy data and providing a correlation between low literacy levels and the readmission risk. However, the nurse intervention failed to achieve the expected outcome owing to lack of compliance with the health literacy algorithm and utilization of resources. The lack of nurse participation and compliance with the project algorithm may have contributed to an increase in 30-day readmission rates for the floor.

Keywords: health literacy, patient education, readmission rates, patient satisfaction scores

A Health Literacy Algorithm Impact on Readmissions and Patient Satisfaction

The patient education experience plays an important role in patient health outcomes, patient satisfaction scores, and hospital readmission rates. Because hospitals are struggling to keep readmission rates low and patient satisfaction scores high, there is a need to focus on how health care providers, specifically nurses, educate and communicate with patients. All aspects of patient education and communication are not universal; each patient has individual learning needs that may affect how each processes education about disease management. Among Medicare patients, 20% who are discharged from a hospital are readmitted within 30 days, and the cost of unplanned readmissions is over 20 billion dollars annually (Alper, O'Malley, & Greenwald, 2017). Research has shown that a root cause for readmission to the hospital is poor self-management resulting from insufficient knowledge about disease causes, symptoms, and home management skills (American Heart Association [AHA], 2017).

Patients rely on the education and instructions received in the hospital, which are generally provided verbally, along with printed materials for discharge instructions. Hospitals require patient education to be performed at the bedside, but there are inconsistencies with educational practices and policies within hospitals. Using printed materials and issuing them to a patient cannot be an acceptable policy for fulfilling patient education. Relying on printed materials is constrained because the materials are poor at conveying complex information (O'Halloran, Scott, Reid, & Porter, 2015). The use of printed materials assumes that a patient has a high level of literacy and a degree of motivation that may be lacking (O'Halloran et al., 2015). Patient education has been demonstrated to be an important precursor to adhering to treatment plans and performing self-care behaviors at home (Boyde et al., 2013).

Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Dennison et al., 2011). Individuals with a low level of health literacy are not likely to have the tools for successful self-care, disease management, or preventative health strategies, such as understanding medications, treatment plans, dietary interventions, or self-care activities or scheduling multiple medical appointments (Delgado & Ruppar, 2017). Patients have challenges in understanding the information delivered by health professionals. Up to 80% of the medical information patients receive is forgotten immediately, and nearly half of the information retained is incorrect (Dinh, Bonner, Clark, Ramsbotham, & Hines, 2016). Therefore, it should not be assumed that merely providing a folder full of discharge instructions is effective for all patients.

Frequent hospital and emergency department visits may result if patients do not understand how a disease might progress and how to best manage exacerbations at home (Agee, 2017). Patients who do not understand instructions for home care are at risk for complications, medication errors, and hospital readmissions (Miller, Lattanzio, & Cohen, 2016). These high-risk patients have a decreased ability to carry out activities of daily living, a decreased quality of life, and a decreased sense of self-confidence in how to manage a disease.

The PICOT for this project is: In patients with (P) CHF and COPD admitted to the fifth-floor medical-surgical unit, does a (I) two-tiered health literacy algorithm used by nurses decrease CHF and COPD readmission rates by 5% and improve patient communication scores by 5% compared (C) with current patient education methods during a (O) 10-week period?

Problem Description

Focus and significance. The not-for-profit hospital in which this QI project took place was set in a rural, southeastern community. The hospital had growth in numbers of poorer and uninsured patients during the most recent years. The Community Health Needs Assessment (2016) conducted reported an earlier onset of disease, more usage of the emergency room, and an increased length of hospital stays for patients with diabetes, stroke, heart disease, and pulmonary disease. Readmission rates were monitored and initiatives to reduce readmissions for congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) were initiated through the hospital's Bridge to Home Team. This team met in the hospital with patients who might be at high risk for readmission and followed up with the patients through home visits or phone calls, based on the patient's identified needs.

Aims. Although these efforts were appreciated in the hospital, readmission rates continued to increase. The 28-bed medical-surgical floor had a 20% readmission rate for all-cause, all-payer patients from February to April 2018. The floor's goal set forth by the administration was to have an overall readmission rate of 10.62% or less (D. Camp, personal communication, May 21, 2018). The Bridge to Home Team used data from the Medisolv Application to perform analytics on admissions. Data had shown that the floor's highest rates of readmitted diagnoses were for CHF and COPD during this time period (D. Camp, personal communication, May 21, 2018). Informatics revealed a 29% readmission rate for CHF patients and a 40% readmission rate for COPD patients from this medical-surgical floor (D. Camp, personal communication, May 21, 2018).

Data were disseminated for each floor and shared with all staff members regarding the results of the patient satisfaction scores from the third-party surveyor. The medical-surgical floor

had received its lowest score of 76% for nurse to patient communications. This category encompassed the communications and education that patients received at the bedside. The hospital's stated goal for this category was to have a 90% rating or higher. As evidenced by the decreased patient satisfaction score and increased readmission rates, there was a gap in patient care involving how health care providers, specifically nurses, communicated with and educated patients at the bedside prior to discharge.

Significance of problem. CHF and COPD both require diligent daily home management, with strict attention to diet, medications, activity, and lifestyle changes. Evidence suggested that nearly one in four patients hospitalized with CHF was readmitted within 30 days of discharge (Cloonan, Wood, & Riley, 2013). Additional risk factors for readmission following hospitalization for COPD exacerbations included comorbidities, such as CHF (Derdak, 2017). Both CHF and COPD require constant and continuous patient education and training because these diagnoses are chronic in nature and place patients at a higher risk for exacerbations.

Patient satisfaction had been a driving force in leading the hospital toward new quality improvement (QI) projects and initiatives. The hospital had transitioned from HealthStream to Press Ganey Associates for a third-party surveyor of patient satisfaction. Prior to the change, the HealthStream data tracked overall patient satisfaction for the hospital. Both surveyors are formal, public reporting initiatives that ask patients to rate their experiences regarding their inpatient stays. Results impact the value-based purchasing score for hospitals, which directly affects Medicare payments and reimbursements. The utilization of the third-party surveyor is important not only for measuring the patient's experience but also for revealing important qualitative data regarding patient care in the organization.

Organization's current practice. Education protocols and policies included printed and handwritten discharge instructions. There were inconsistencies in how nurses provided patient education at the bedside. There was a lack of a standardized education protocol for nurses to follow regarding information to be provided to patients and how to assess for patient comprehension. Nurses were required to document that they had provided each patient with some form of education and a copy of the discharge instructions.

Determining a need. As evidenced by the poor nurse communication score and high readmission rates, nurses were not being effective in patient communication and education. The poor patient comprehension could be due to the current resources being provided, a lack of quality nursing time for education, or a failure of nurses to assess patient comprehension of the education provided. These factors affected readmission rates because patients did not understand information needed for them to succeed at home. Based on the data identified, the hospital showed a need to address communication and education strategies in order to benefit the patient and the staff on the floor.

Available Knowledge

A comprehensive search of the literature on hospital readmissions, CHF, COPD, disease management, audio/visual education, health literacy, and the teach-back method included the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed of the National Library of Medicine, Cochrane Library, Medline, Google Scholar, SAGE Journals Online, National Institutes of Health, ProQuest, and PLOS One. The keywords used in the search were *health education, heart failure, heart failure education, heart failure management, chronic obstructive pulmonary disease, COPD management, COPD education, self-management, health literacy, discharge education, self-management, audio/visual education,*

teach-back method, adult learners, and *readmission rates.* The search resulted in 175 articles being found before the search was refined to include only peer-reviewed and academic journals dated 2009 and later. Over 40 studies were selected to support this project.

Searches were limited to articles detailing English-speaking CHF and COPD adult patients. The articles addressed CHF and COPD education, CHF and COPD medications, CHF and COPD teaching, discharge instructions, early follow-up, disease management programs, CHF and COPD disease management, chronic disease management, self-management, multidisciplinary education, audio/visual education programs, the teach-back method, and hospital readmission rates.

Synthesis of the Literature

CHF education and readmission rates. Studies have shown that CHF patients require more teaching than previously thought by healthcare providers (Zeng et al., 2017; Albert et al., 2015; Boyde et al., 2018; Stevenson et al., 2015). Even among patients who had received initial CHF education, there remained a significant knowledge deficit regarding CHF treatments, symptoms, and consequences (Zeng et al., 2017). Assessment of patients' knowledge and understanding of CHF at the baseline helped a study conducted by Albert et al. (2015) to recognize knowledge deficits that could be corrected before discharge. CHF education may need to be more specific to provide opportunities for patients to clarify their own beliefs, doubts, and misconceptions about what they have learned regarding CHF home management (Zeng et al., 2017). Many research protocols do not describe education as a specific intervention; rather, education is viewed as an element of CHF management. Studies have shown that only a brief outline of the educational content is provided at discharge and this education is usually combined with multiple facets of post-discharge information, leading to less focused education and, often,

confusion for the patient (Boyde et al., 2018). This research supports the theory that an education protocol can help reduce readmission rates for CHF patients.

The importance of focusing on the signs and symptoms of CHF has been well reviewed. More than 70% of participants in a study (Stevenson, Pori, Payne, Black, & Taylor, 2015) stated that symptoms of shortness of breath, fatigue, or chest pain were what brought them back to the hospital, and none of these patients reported recognizing the early signs of CHF, such as weight gain or fatigue. In a study conducted by Zeng et al. (2017), more than half of the participants were unable to recognize the signs and symptoms of worsening CHF. Home management skills pinpointed in this study included weight monitoring, fluid restriction, and recognizing signs and symptoms (Zeng et al.). These symptoms impact how a person lives his or her life, and earlier interventions might have been taken for them if patients had been able to appropriately recognize them as signs and symptoms of worsening CHF.

Symptom management and home care management are common areas of poor compliance by CHF patients. The investigation of the learning needs of patients with CHF has confirmed that the essential topics of CHF education are the signs and symptoms, risk factors, and medications (Boyde et al., 2013). CHF education should employ different types of intervention strategies to enhance a patient's understanding and improve information retention (Zeng et al., 2017). An intervention that has been successful in previous studies (Baptiste, Mark, Groff-Paris, & Taylor, 2014) has included a nurse-led, education-based intervention. Patients that took part in standardized one-to-one educational sessions prior to discharge reported better compliance with self-care behaviors at 30 days. These patients also had fewer hospitalizations and lower mortality rates compared with those who received a folder of standard written discharge information (Baptiste et al., 2014). Educational strategies that included bundled

interventions involving personalized self-care management and that promoted dietary, exercise, weight monitoring, and medication adherence had been noted to increase patient compliance and decrease readmission rates.

COPD education and readmission rates. Similarly, to CHF education strategies, multiple studies (Harries et al., 2017; Kiser et al., 2012; Zafar et al., 2017) focused on individualized, patient-centered education prior to the discharge of COPD patients. Unfortunately, despite efforts to reduce the number of total hospitalizations and emergency room visits for the disorder, COPD patients still remain at high risk for hospital readmissions (Harries et al., 2017). Step-by-step instructions with coinciding handouts were shown to improve patient education and satisfaction in a study that focused on a COPD action plan (Kiser et al., 2012). Utilizing multiple resources to target different adult learning strategies has proven to facilitate the patient education experience.

One way to improve sustainability and adherence of the staff with patient education is to involve a multidisciplinary team. The team would include social workers, care coordinators, physical therapists, respiratory therapists, nurses, and physicians. A pilot project utilized a multidisciplinary COPD care intervention bundle to try to shift 30-day readmission rates. The bundle focused on inhaler education, standardized education, and follow-up within 2 weeks of hospital discharge (Zafar et al., 2017). Introducing the multidisciplinary team involved earlier care coordination, allowing all disciplines to work together to provide the patient with an appropriate discharge plan, including the resources and equipment that would be needed. Another benefit of this study was the finding that the design of the care bundle, combined with one-to-one education, was a reliable element that reduced the 30-day COPD readmission rates (Zafar et al., 2017). This study also found, however, that staff members had difficulty in

following through with using the care bundle, and reported that improvement was needed on the sustainability of the process (Zafar et al., 2017). This study (Zafar et al., 2017) showed the importance of involving a multidisciplinary team early in efforts to coordinate care and support a proper discharge plan.

Research has supported the need for continued conversations on disease management and the reinforcement of education throughout the COPD disease process. One study initiated a COPD self-management meeting while the patient was in the hospital that allowed for discussions of COPD symptoms, medication management, appropriate diet and nutrition, stress and coping, and smoking cessation activities (Collinsworth et al., 2018). Findings from this study and the current literature indicate that a multifaceted, comprehensive intervention is needed to counter the complex, progressive nature of COPD (Collinsworth et al., 2018). Multiple studies have reported the importance of inhaler instructions in preventing hospital readmissions (Zafar et al., 2017; Russo et al., 2017; Collinsworth et al., 2018). Receiving any component of a discharge disease management program has been associated with lower 90-day readmission rates than receiving no intervention at all (Russo et al., 2017).

There is a need for better understanding of the role of disease severity in the risk of admission for COPD (Harries et al., 2017). COPD patients are reported to have a more extensive length of stay (LOS) in the hospital compared with patients with other diseases requiring inpatient hospital admissions. Patients with a LOS of three to five days had a lower risk of COPD readmission within 30 days compared with COPD patients whose LOS lasted for two days or less (Harries et al., 2017). With a target LOS of three to five days, this allows ample time for the proper education and assessment of patient comprehension prior to discharge (Harries et al., 2017). Collaboration and coordination of care are more likely to be available for a patient

whose LOS is three to five days than for a patient whose LOS is less than 2 days. Because COPD negatively impacts the quality of life for patients, coordination of care is important to appropriately treat patients in the hospital and provide multidisciplinary education and instructions in order to make an impact on hospital readmission rates.

The adult learner and health literacy. Studies have shown that education should be tailored to the needs, culture, and literacy levels of the adult patient (Annaim, Lassiter, Viera, & Ferris, 2015; Albert et al., 2015; Boyde et al., 2013). When informational needs are not adequately addressed, patients experience difficulties in managing home care, and the lack in proper education creates increased unnecessary emergency room and hospital utilization (Albert et al., 2015). Principles of andragogy include investigating the learning styles, needs, and preferences of adult learners (Boyde et al., 2018). Failure to do so will likely result in poor understanding of the educational content and low rates of compliance by older adults who have different health literacy levels and expectations (Im & Park, 2014). *Health literacy* has been defined as the capacity to acquire, understand, and use health information (Boyde et al., 2013). Health literacy has an influence on hospital admissions and readmissions, but there are minimal studies proving the correlation between the two (Bailey et al., 2015).

Health literacy and patient comprehension is important to assess and work to improve the understanding of needed information by the adult learner and the learner's health literacy. The utilization of different educational strategies may be required to tailor information to suit the individual's educational level and learning needs in order to facilitate the understanding and retention of information about CHF and COPD (Zeng et al., 2017). Over one third of adults have literacy skills at or below the basic level. Adults with basic or lower literacy levels are likely to have difficulty in communicating with providers, interpreting medical instructions, engaging in

self-care activities, and navigating the healthcare system (Bailey et al., 2015). Failure to understand medical care places patients at risk for hospitalizations and poor medical outcomes (Bailey et al., 2015; Wallace, Perkhounkova, Bohr, & Chung, 2016).

Health literacy is not routinely addressed or included in the hospital admission assessment. Health literacy assessment is an influential variable in identifying patients at risk for poor outcomes after hospital discharge (Wallace et al., 2016). There is limited research on the most effective modes of delivery of patient education for the adult learner. The use of printed materials assumes a certain level of education and health literacy (O'Halloran et al., 2015). Studies have shown that patients with CHF and COPD need accurate evidence-based information presented to them in more than one format to increase self-care behaviors (Boyde et al., 2013; Wallace et al., 2016; Bailey et al., 2015). Audio/visual materials have worked well for educating older patients, who typically have lower health literacy levels (O'Halloran et al., 2015). More research is needed to understand how to effectively incorporate health literacy into the patient education experience.

A study conducted by Delgado and Ruppar (2017) confirms that in order to have successful management of chronic diseases, there needs to be an adequate level of health literacy for understanding healthcare instructions and performing necessary tasks to promote health. There are limited studies that relate low literacy levels to patient and caregiver stress and anxiety. In a study by Shively et al. (2013), identifying approaches that boost the impact of chronic disease management programs and self-management interventions is a promising direction for improving the outcomes of chronic care. One approach to tailoring interventions and self-management support is to increase the patient's level of activation and engagement (Shively et al.). Boyde et al. (2018) note that interventions that were patient centered and appropriate for a

patient's level of health literacy were associated with improvement in the patient's knowledge and self-care abilities.

Teach-back method. Education is the foundation of the management of diseases (Zarei, Jahanpour, Alhani, Razazan, & Ostovar, 2014). When healthcare professionals asked patients open-ended questions that required a response, the professionals were enabled to make nonthreatening assessments of the patients' understanding of a disease and the self-management efforts needed for it (Albert et al., 2015). Patients felt empowered when they could successfully repeat back information and instructions about CHF and COPD (Zarei et al., 2014). Such a dialogue is often missing in patient interactions with nurses and physicians when at the bedside.

Without a way of checking a patient's comprehension, a nurse or physician cannot be certain that the patient understood the information given, and readmissions could follow simply because of such misunderstandings. One study reported that 75% of readmissions were because patients did not fully understand information about medications at discharge (Miller et al., 2016). The teach-back method asks patients to state key concepts in their own words. This method can improve patient comprehension and outcomes (Miller et al.) and allows for the understanding of critical information. The teach-back method can also positively impact patients' lives outside of the hospital because the teach-back method and help to properly prepare them for management of a disease at home, leading to a better quality of life (Dinh et al., 2016).

The teach-back method can also reveal areas of education that need further reinforcement and follow-up. An important component of patient education is the evaluation of its effectiveness. Fidyk, Ventura, and Green (2014) found that as few as 2% of primary care providers assessed patient understanding after providing health information. Successful self-care depends on the effectiveness of education and the understanding of information (Morrow &

Conner-Garcia, 2013). The teach-back method can be used as soon as a patient has been given educational material. If the patient is not certain about some concepts of disease management, he or she can be given additional information immediately. The teach-back method is an important tool to evaluate whether changes in knowledge result in improved self-care behaviors and whether such changes might be reflected in lower readmission rates and fewer emergency room visits (Boyde et al., 2013). In a recent study of patients with CHF at one hospital, the 30-day heart failure readmission rate decreased from 18% to 13% after implementation of the teach-back method at the bedside (Centrella-Nigro & Alexander, 2017). The simple method of teaching back has proved to reduce readmission rates for patients with whom it was used (Centrella-Nigro & Alexander, 2017).

Studies in a systematic review revealed significantly improved outcomes in disease-specific knowledge, adherence, and self-efficacy when the teach-back method was used to assess the patient's comprehension (Dinh et al., 2016). More research needs to be conducted to measure the outcomes of the teach-back method and determine how to effectively integrate this method into the daily practice of nurses at the bedside (Centrella-Nigro & Alexander, 2017). Patient education continues to challenge nurses in healthcare settings; the teach-back method may be one technique that can improve outcomes such as patient satisfaction (Centrella-Nigro & Alexander, 2017). Further studies are needed to show the positive impact of the teach-back method on 30-day readmission rates and patient outcomes (Almkuist, 2017).

Summary of Contribution to Knowledge by Filling in Gaps in Standard Practice

After the completion of the literature review, the aim of this project should be to study the association between health literacy and its impact on readmission risks and on patient satisfaction. Providing health-literate education and communication is needed to reinforce daily

care practices during home management for CHF and COPD. CHF and COPD patients have high rates of readmission; some readmissions may have been avoided if patients had better understood their discharge instructions and other educational guides. The teach-back method is a reliable form of assessing patient comprehension and is proven to be associated with lowered 30-day readmission rates. Because more data and research are needed regarding the specific relationship between health literacy and readmission rates, this project will help to provide knowledge to fill in the gap in standard practice.

Rationale

QI initiatives are imperative for setting priorities about areas that can be improved through evidence-based practices. The plan, do, study, act (PDSA) QI model allows for small changes in a system and for evaluation throughout the process (Laverentz & Kumm, 2017). The PDSA involves taking continuous measurements during an implementation and following completion of the implementation (Gillam & Siriwardena, 2013). QI initiatives help organizations address gaps in care through pilot projects. These pilot projects are pivotal in gaining feedback from staff members to implement larger interventions in practices and protocols. PDSA QI projects are important because they help leaders to understand both the positive and the negative reactions of staff members. This feedback can be used to evaluate the project and incorporate suggested changes that might improve the process. The staff will have more support and a greater investment in new practices and policies when their observations and comments are acknowledged. The likelihood of success of the new intervention depends on the use and support of those who are involved in the intervention. Use of the PDSA model will contribute to closing the gap in knowledge and overall purpose of this project. Each step of the

PDSA model will identify strengths and weaknesses in the pilot project while new data are gathered, and feedback is solicited for assessments and future initiatives.

Theory Application

The purpose of this QI project was to determine a relationship between health literacy levels and readmission rates and patient satisfaction scores. A goal of this project was to give nurses education and communication strategies for patients with low literacy levels. By studying all aspects, from current practice to discussions with a multidisciplinary team, a plan (Plan) was formulated to implement the health literacy algorithm, managing a trial of it in a small population of CHF and COPD patients (Do), studying the results (Study), and making recommendations based on findings (Act).

This small-scale project could be revised into a larger initiative on implementing health literacy programs and policies for all patients in the hospital and hospital-owned primary care practices. Such a framework was appropriate for this project, because the hospital administration was focusing on ways to reduce hospital readmission rates. The outcomes from this project would suggest ways to improve the intervention for future implementation. The results of this QI project could restructure how the hospital viewed health literacy and its correlation with readmission risk. The future implementation of a health literacy protocol could help identify a population with unmet needs for specialized assessment and education. Success in caring for this population could, in the long term, help reduce readmission rates, which would not only benefit the hospital financially but would also improve the welfare of the community.

Study Assumptions

The primary assumption of this project was that nurses would have the initiative to incorporate health literacy communication strategies and resources into their daily practice. Data

came from the results of the health literacy assessment at the bedside, completed nurse checklists, post project surveys filled out by nurses, a follow-up study of 30-day readmission rates, and a follow-up study of nurse communication and patient satisfaction scores. The project leader was not present to monitor individualized education sessions between a nurse and a patient. Direct observations took place when the project leader reviewed the amount of resources being utilized as she restocked bulletin boards that were part of the project. Observations also included monitoring of completed checklists submitted by nurses. The project leader assumed that the results of this QI project would be accurate and generalizable.

Variables. This project was multidimensional, concerned with looking into how the use of a health literacy algorithm would impact readmission rates and patient satisfaction scores. It also was concerned with how the health literacy algorithm protocol was utilized by nurses. The dependent variable for this project was patient readmission rates and patient satisfaction scores. The independent variable was the health literacy algorithm.

Specific Aim

The aim of this project was to determine whether there was a relationship between health literacy levels and readmission rates and patient satisfaction scores. The goals were to increase nurses' knowledge about health literacy to increase the utilization of tools and resources that enhanced health literacy. This project utilized an accredited health literacy assessment tool from the Agency for Healthcare Research and Quality to determine patients' literacy levels (Agency for Healthcare Research and Quality [AHRQ], 2018). This project also utilized evidence-based resources and strategies for patients with low literacy levels, such as the teach-back method.

Providing appropriate patient-centered education can strengthen a patient's ability to recognize disease exacerbations and take on the home management skills needed to avoid

rehospitalization (AHA, 2017). It is apparent that patients are given minimal and sometimes inadequate discharge information (Alper et al., 2017). Patients with low literacy levels have trouble comprehending factors that affect disease management, such as understanding printed materials, reading appointment papers, reading medication labels, and understanding the dosages of medications (Dennison et al., 2011). Individuals with low literacy levels may have a poorer understanding of skills needed to manage a chronic disease. They also may have issues with medical noncompliance, which may lead to inadequate self-care (Reilly et al., 2009). Because the hospital staff had not assessed health literacy or provided alternative educational materials for low literacy, there was an opportunity for a QI initiative at the bedside to do so.

One of the main goals of this project was to be a pilot project to address the increase in readmission rates and the decrease in patient satisfaction scores. Low literacy has not been empirically demonstrated to be an independent risk factor for readmissions, but studies have reported an association between literacy levels and negative outcomes, such as hospital readmissions (Cloonan et al., 2013; Almkuist, 2017). Another goal for this project was to make a correlation between literacy rates and readmission risks. The project had the capability of working toward closing the gap in readmission rates for two high-risk diseases, as well as changing how nurses and providers viewed health literacy in the hospital and the community.

The last goal of this project was to provide the education and tools necessary for nurses and change how they were communicating with and educating their patients at the bedside. Without changing nurses' behaviors, patients' educational needs would continue to be unrecognized and neglected. Without the investment from nurses in using the interventions provided, patients would not benefit from these resources. Patients would continue to leave the hospital ill-prepared for their return home, and the probability for their readmission to the

hospital was significant. This downward cycle would lead to a decreased quality of life for the patient, as they are repeatedly in the hospital. The influx in readmitted patients would also lead to decreased work satisfaction by nurses, because they might become demoralized by seeing the same patients return to the hospital every month.

A health literacy assessment can help identify patients who need alternative communication strategies, additional resources, and extra time for education. Assessing health literacy on admission would give healthcare providers time to review and assess a patient's comprehension throughout a hospitalization. Implementation of a health literacy assessment and algorithm would help providers focus on key points in education, properly assess patient comprehension, utilize the teach-back method as a means of checking patient comprehension, and encourage the use of various forms of educational resources to target all adult learning needs.

Methods

Context

Organizational culture. The project took place at a not-for-profit southeastern community hospital with 197 acute-care beds. A large percentage of patients that utilize this hospital have a low socioeconomic status and have had little education. The hospital administration has set forth an initiative on disease prevention, early detection, and intervention to reduce hospital costs, morbidity rates, and mortality rates (Community Needs Health Assessment, 2016). The acute-care hospital has a mission to deliver superior healthcare services to their patients and to improve the health of the community.

Organizational information. The community in which this hospital is located has seen the worsening of many economic, educational, and health indicators in the past 5 years, and the

effects of this downturn can be seen in its morbidity and mortality statistics. The elderly population is increasing greatly. Because 80% of the 65-year-old and older population has three or more chronic diseases, individuals are at a greater risk for complications and more frequent hospitalizations (Dinh et al., 2016). The Community Health Needs Assessment (2016) identified health literacy as a major problem in the community. There were no protocols in hospital or outpatient practices that addressed health literacy in patient care, however.

Organizational structure. The hospital had emphasized that providers and nurses should discharge patients within two hours of receiving discharge orders. This time constraint did not allow for nurses to thoroughly address patient education and assess patient comprehension. Nurses reported a lack of time for an appropriate evaluation of a patient's health literacy, and this led to a failure in providing information at a level that patients could understand (Dinh et al., 2016). Nurses were often busy with demanding patient assignments, as well as with managing multiple admissions and discharges throughout each shift. With the push to discharge patients within two hours of orders to do so, patients could be discharged before they had comprehended all the necessary discharge information.

Organizational barriers. Patients often felt overwhelmed by the psychological and physical consequences of the condition for which they had been hospitalized. Many patients were not prepared or ready to receive and retain all of the information they would need once they were at home. The primary mode of discharge teaching was accomplished by handing the patient printed discharge instructions. Nursing research revealed discrepancies between nurses' perceptions of the education provided and patients' perceptions of the education received (Fidyk et al., 2014). This shows that without an assessment of patient comprehension, patients may say that they understand the information they are given, and nurses accept their statements without

fully assessing them through teach-back methods. The time constraints caused by pressure from the administration added another element to the organizational barrier. Although education should be initiated at the time a patient is admitted to the hospital, the reality is that most patient education occurs at the time of discharge. Nurses reported needing more time for the discharge process, but the push from the administration made it difficult to gain support for new discharge educational protocols.

Organizational support and stakeholders. This DNP student had multiple discussions with administrators regarding health literacy and the implementation of this project in the hospital. The Bridge to Home Team, QI employees, and nursing director were very positive about and engaged in the creation of this project, and they remained active while it was being implemented. The administrative stakeholders involved wanted to initiate health literacy protocols and follow them into practice, and this project was an introductory one that might spur the further development of health literacy QI projects. The other key stakeholders, the nurses, had minimal involvement in the process, and it was difficult to get their support. It became apparent by the end of the project that the nurses were resistant to changing their ways and having to add another time-consuming task to their day.

The results of this project revealed the reality of the health literacy problem. Data disclosed actual percentages and statistics on what the medical-surgical floor encountered over a six-week period. If the organization invested in a health literacy program, nurses would be positively impacted, because they would have the resources and training to provide patient-centered education at all literacy levels. Patients would benefit by having more confidence about their self-care because their knowledge would be validated by the teach-back method and would enable them to care for themselves at home.

Benefit to the organization. The hospital would benefit from a health literacy program because it would counter the already low educational and socioeconomic levels in the area. The increasing population of older people would also benefit from the program. Older adults tended to have lower levels of health literacy, which predicted health outcomes. Some older adults struggled to understand printed text because they had a sixth-grade reading level or lower. This hospital reported that all their educational materials and discharge instructions were at a sixth-grade reading level, but this level may have been too advanced for some patients, as noted in the Community Health Needs Assessment (2016).

Discharge instructions not only provide home management education but also relay important information on follow-up appointments and medication changes. Health literacy involves a core set of skills necessary for understanding health information. Patients with limited health literacy are more vulnerable to misusing medications and misunderstanding care transitions, leading to increased hospitalizations and readmission rates (Cloonan et al., 2013). Evidence-based interventions addressing low levels of health literacy hold promise for promoting understanding and self-management and reduce 30-day readmission rates (Cloonan et al.).

Research Design

The study design for this project was a QI design that could measure the effectiveness of implementing a health literacy protocol for CHF and COPD patients and how it might influence 30-day readmission rates and patient satisfaction scores for these patients This study design was selected with the intent to show the effectiveness of an intervention on the outcome of the project. Interventions for this project included education and a clinical practice change. This project was a pilot study involving pretest and posttest data collection.

Setting

The project took place at a not-for-profit southeastern community hospital with 197 acute-care beds. The 28-bed medical-surgical floor had many patients with chronic diseases and multiple comorbid ailments. The unit was staffed by 15 fulltime registered nurses during both the day and night shifts.

Inclusion and Exclusion Criteria

The target population for this project was patients admitted to the fifth-floor medical-surgical unit. Male and female adult patients 18 years of age and older with CHF and/or COPD were included in this project. Inclusion criteria also specified that patients must be returning home following hospital discharge and must be able to read and write English. Criteria for exclusion were patients who would be transferred to a skilled nursing facility, patients who were being entered hospice services, patients who did not read or speak English, and patients who had documented cognitive impairments, such as dementia. Insurance benefits and/or coverage were not factoring for inclusion or exclusion in this project.

Participants

A multidisciplinary team was formed to discuss health literacy, resources, and educational needs for CHF and COPD patients with low literacy levels. The health literacy team (HLT) consisted of nurses, physicians, attending practitioners, therapists, members of the Bridge to Home Team, and QI administrators. The HLT reviewed inclusion and exclusion criteria for this project. The team anticipated that at least 25 patients with CHF and COPD would meet the criteria for inclusion over the 4 weeks of implementation. The participation by healthcare providers would be voluntary. Float pool and travel nursing staff were excluded from this

project. Institutional Review Board (IRB) approval was obtained from Capella University, as well as the hospital, to protect involved humans before the study began.

Interventions

For this project, a bundled intervention approach was utilized to be successful in meeting the multidimensional goals identified. Each intervention utilized evidence-based practices. The goals for the interventions were to increase the awareness of health literacy in the staff, to encourage the use of resources and communication strategies for persons with low literacy levels, and to reinforce the efficiency of the teach-back method as a way of assessing patient comprehension. To achieve the goals, the nursing staff had to receive education and training specifically for health literacy, the use of resources for persons with low literacy levels, and the use of the nurse checklist. The remaining parts of this section discuss each of the interventions individually.

Health literacy assessment tool and algorithm. The HLT evaluated three health literacy assessment tools: The Newest Vital Sign (NVS), the Rapid Estimate of Adult Literacy in Medicine (REALM), and the Short Assessment of Health Literacy-English (SAHL-E). All three tools are accredited by the Agency for Healthcare Research and Quality and are used to determine the health literacy level of patients (AHRQ, 2018). Of the three tools, the SAHL-E (see Appendix A) was chosen by the team because it was comprehensive, easy to administer, and easy to explain to patients. The HLT agreed that patients would be ranked as having either low literacy or high literacy. This “what” meant that per the scoring of the SAHL-E (see Appendix B), patients who scored from 0 to 14 would be classified as having low health literacy. After discussions on evidence-based interventions for both low and high literacy levels, the team reported that the current educational practices would be appropriate for patients with high

literacy levels. The HLT members requested that educational material for patients with high literacy levels be provided on posters for the staff to review but that no new interventions were needed for such patients.

After multiple discussions on health literacy and the resources needed for those with low literacy levels, it was decided to have the following formats available to the staff to provide to patients: books published by the Channing Bete Company, interactive sign-and-symptom charts and flowsheets, green/yellow/red daily management trackers, multimedia video links, pill box organizers, and links to websites with information about CHF and COPD. This DNP student created two bulletin boards, one for CHF and one for COPD, on which these resources were displayed; they were printed, labeled, and accessible to healthcare providers to take to their patients. The purpose of these bulletin boards was to showcase resources appropriate for low-literacy patients. The multidisciplinary team had agreed that the resources would be effective tools for the patients served by the hospital, and, especially, the medical-surgical unit. This team thought that this approach, in which health literacy levels had been identified and posters, various types of information, and educational resources were accessible, would be the most effective way for the staff to incorporate health literacy into their daily practice.

Education of staff nurses. Following the HLT meetings and proper considerations being made, it was the time for the first phase of the project to be implemented: a health literacy in-service training program for nurses. Over a 2-week span, the project leader hosted multiple educational sessions. Three sessions were held at the time when shifts changed to accommodate both day-shift and night-shift nurses. Multiple other sessions were held throughout the 2-week span to target more nurses during their shifts. From initiation to completion, the project was reviewed at the daily nurse huddle to remind nurses of their responsibilities and answer any

questions. The educational portion of this project allowed the project leader to teach the nursing staff about health literacy and demonstrate the teach-back method and other communication strategies for educating patients with low literacy levels.

All the information provided at these sessions was also displayed on posters throughout the unit for the staff to read and review during the project timeframe. Posters were made on health literacy, communication strategies, the teach-back method, and the Ask3/Teach3 method, as well as the algorithm for the project. Two bulletin boards were used to display information on low literacy levels and resources that could be used with appropriate patients, one for CHF and one for COPD. The project leader was responsible for monitoring the bulletin boards and restocking resources and material as needed. Signs detailing the health literacy algorithm project were placed throughout the unit to remind staff of the intervention.

The last portion of the in-service training program was to explain the nurse checklist (see Appendix C), which would track the nurses' efforts regarding health literacy. Each nurse was to note the date when a health literacy assessment was done, the teach-back method was used, and resources were provided to a patient and then initial the checklist. The checklist was to be passed from nurse to nurse during the change-of-shift report until the patient concerned was discharged. The nurses were to turn in the checklist to the project leader at discharge for data collection regarding nurse compliance with the health literacy algorithm and protocol.

Practice recommendation. Once the in-service training program was completed, the next phase of the project began. Over a 4-week period, the project leader reviewed the unit's census daily and indicated which patients meeting the inclusion criteria would be candidates for a health literacy assessment at the bedside. The project leader met with the patient's nurse and/or

charge nurse prior to the assessment to notify them that they would be involved; the SAHL-E assessment would take place at the bedside within 24 to 48 hours of admission to the unit.

At the bedside, the project leader explained the purpose of the project and gained verbal consent from the patient to proceed with the health literacy assessment. The standardized SAHL-E health literacy assessment was used at the bedside by the project leader and either the primary nurse or charge nurse for the shift. The SAHL-E tool is publicly available and has been validated and considered reliable per the Agency for Healthcare Research and Quality (AHRQ, 2018). The administration and scoring of the SAHL-E test are explained in Appendix B. This assessment tested the patient's comprehension, as well as the ability to pronounce health-related terms (AHRQ, 2018). A score between 0 and 14 suggests the examinee has low health literacy. Administration of the test took less than 5 minutes and required minimal training.

The patient's score as low literacy or high literacy was noted. An identifier in the form of a magnet was placed on the nurse communication board inside the patient's room. A red magnet was associated with low literacy, and a green magnet was associated with high literacy. These magnets were correlated with the posters and bulletin boards to guide nurses to appropriate resources.

The project leader notified the primary nurse for the patient about the patient's literacy level and gave the checklist to the nurse to attach to the report sheet. At this point, the project leader screened the daily census to capture all patients for the project. Nurses were to turn in the checklist to the designated secure folder at the time of the patient's discharge. The project leader tracked all information (see Appendix E) in a table that was updated daily.

Project leader's role and team's role. The DNP project leader was responsible for all staff training. The project leader had several tasks. She created the posters and bulletin boards

stationed throughout the unit for nurse review; educated the staff on the health literacy algorithm; and initiated the project by performing the health literacy assessment at the bedside with patients that met the inclusion criteria. The team's role was to follow the algorithm once the assessment was done. The project leader emphasized to the nurses that the algorithm was their responsibility as well as to provide the resources to the patients and educate them according to their literacy level. The project leader highlighted to the staff that they should approach the project leader if they had any questions or concerns regarding the project. After the educational process for the staff was completed, the clinical practice change was implemented in the unit for 4 consecutive weeks by the project leader. The project leader then collected the completed nurse checklists and following data.

Study of the Interventions

Assessment of impact. To assess the impact of the interventions, multiple methods were used. First, the nurses attended a health literacy in-service program provided by the project leader. The program reviewed the health literacy curriculum and the nurse's responsibilities for the project. During the next, or implementation, phase of the project, the project leader and nurses used the health literacy assessment at the bedside and initiated the nurse checklist by identifying the patient's literacy level. The expectation was that the nurses would pass along the checklist with their end-of-shift report and include any education and/or follow-up that the patient may have needed based off their teach-back response and teaching efforts. The nurse checklist was to be turned in to the project leader at the time of patient discharge.

Evaluation plan and impact. The project leader had a separate Excel spreadsheet (see Appendix E) that tracked the disease, literacy level, resources, comprehension methods, discharge date, and any readmission date. This tracking sheet was used to create counts,

frequencies, and percentages for the final data analysis. As the project was being implemented, it was noted that nurses were not turning in completed checklists. Daily monitoring of the bulletin boards by the project leader also revealed that nurses were not utilizing the resources. Because the nurses did not follow the algorithm, this intervention failed. The lack of nurse compliance negatively impacted the results of this project.

Impact of change. Implementation of the health literacy assessment revealed new data on the low-literacy population treated in the unit. These data increased the awareness of nurses and other staff members involved in this project. However, the nurse intervention portion failed because of the lack of nurse compliance with the nurse checklist. This portion of the project will need to be reinvented if hospital administrators want to pursue another study based on the foundation laid by this DNP leader's project results. A reduction in readmission rates was one outcome that had been anticipated, but with the lack of nurse compliance, this project was not going to lower such rates. Both the lack of nurse compliance and lack of data prevented readmission rates from being lowered. The nurse noncompliance prevented the project leader from knowing the project's effect on readmission rates.

The education the nurses received about health literacy and communication strategies may have had an impact on patient communication satisfaction scores; the knowledge the nurses absorbed about such strategies may have improved the way they communicated with patients and patients therefore were more satisfied with their interactions with the nurses. The nurse checklist was not a factor in the improved patient satisfaction scores. It was anticipated that nurses would change their communication strategies following their in-service training and use of poster information. Finally, one aim of this project was to see whether there was a correlation between health literacy and the risk for readmission. The purpose of this correlation was to identify a

high-risk, and un-met, population within the community and how to better serve this patient population. The follow-up data regarding readmission rates after implementation of this project provided the most significant findings about the change that this project brought.

Measures

This QI project focused on the implementation of a health literacy algorithm to increase the nurses' ability to effectively communicate and educate their patients. An analysis of readmission rates and patient satisfaction scores was conducted for 2 months prior to the implementation process. After the intervention was completed, the same analysis showed an increase in readmission rates but also an increase in patient satisfaction scores related to nurse communications.

Instruments. The completed nurse checklist is the first measure of nurse compliance with the health literacy algorithm. Checklists were turned in and completed, turned in and not completed, or not turned in. As the project was progressing, it was noted that many nurses were not turning in the nurse checklists. Discussions with staff were held reinforcing the project and the nurses' responsibility regarding the nurse checklist. The lack of nursing response was an unplanned, undesired outcome. For this reason, there was no way to quantify an accurate percentage of use for each resource in order to rank its popularity with nurses and patients.

At this time, the multidisciplinary team discussed a way to formulate a post project survey of nurse compliance. The survey contained a multiple-choice questionnaire and allowed for open-ended feedback from nurses regarding their opinions on the usefulness of the health literacy algorithm protocol, as well as the nurse checklist. The project team also analyzed the readmission rates and patient satisfaction scores related to this project. The survey intervention was planned after the initiation of the project, when nurses were found to be noncompliant with

the nurse checklist. The IRB was notified and approved this change in the project description and protocol. The purpose of the survey was to identify the barriers to nurse compliance with the project. There were minimal nursing responses on the post project survey.

Planned change. Data were collected following the completion of the health literacy algorithm protocol project. The percentage of low-literacy patients compared with high-literacy patients was calculated when the project was completed. This figure was used to help present potential resources and educational programs to the hospital key stakeholders for future initiatives. Data were collected on the unit's readmission rates, focusing on CHF and COPD patients. The hospital had a third-party surveyor, HealthStream, that followed up with discharged patients; one of the factors addressed by the surveyor was patient satisfaction regarding the communication with providers while in the hospital.

Analysis

Data. A quantitative method was applied to analyze whether the health literacy algorithm and protocol were valuable in lowering readmission rates and increasing patient satisfaction scores. Descriptive statistics of counts, frequencies, and percentages were used to analyze and determine trends. Data were initially collected by obtaining the floor's all-cause, all-payer readmission rates. This percentage was broken down into the top two diagnoses, CHF and COPD. Also, preliminary data were obtained, as a percentage, from the HealthStream patient satisfaction score.

Statistics. At the completion of the project, data analysis utilized percentages for 30-day follow-up readmission rates and patient satisfaction scores. By tracking patient data, multiple counts, frequencies, and percentages were identified. There was a numerical count of total patients appropriate for the project and a count of exactly how many CHF and COPD patients

were identified over the 4-week period. The new data were expressed as percentages of low and high literacy rates for identified patients. Following this tabulation, the project leader tracked the number of resources used with patients over the four weeks. Final data tracked nurse utilization of the checklist and compliance with submitting it at patient discharge.

Ethical Considerations

The IRB of Capella University determined that this project did not meet the federal definition of human subjects' research and, therefore, IRB oversight was not needed. The IRB and the Ethics Board at the project site approved the project, stating that the project was exempt and did not require oversight. The hospital emphasized the importance of deidentifying patients during the intervention and tracking process.

Patient-subjects were identified by the above sampling criteria. The project and educational intervention were explained to them before the SAHL-E health literacy assessment was done. All patients were volunteers, and there was no monetary compensation for participation in the project. Possible benefits were explained to each potential patient-subject and each was told that following the assessment, the nurse would be able to provide educational resources tailored to the patient's needs before discharge. If the patient did not want to complete the health literacy assessment or be provided with additional resources, the patient was withdrawn from the project without consequences.

To minimize the risk of breaking confidentiality, each patient-subject was deidentified by using a unique code for the tracking of data that was correlated with the nurse checklist for data collection purposes. This code was stored on an encrypted electronic device to which only the DNP student had access. Data collected from the project were maintained on this device, and no information was connected to the patient-subject or the patient-subject's medical record.

Confidentiality of data was maintained throughout the entire project. The DNP student was the only person to possess or use the information for reidentification of the patient-subject to obtain data on 30-day readmission rates.

Results

This multidimensional project had many aspects that were reviewed and analyzed for data. Preintervention analysis had revealed a 20% readmission rate for all medical-surgical floor patients; specifically, the rate was 29% for CHF patients and 40% for COPD patients. This floor also suffered from a low patient satisfaction score related to nurse communications, with a rating of 76%.

The goal was to achieve a decrease in readmission rates, specifically for CHF and COPD patients, and an increase in patient satisfaction scores related to nurse communications. Postintervention data showed that the readmission rate increased to 27.6%. Patient satisfaction scores with nurse communications increased by 19.7%; the new score of 91% was the highest rating the floor had been awarded in over a year and a half. These results were seemingly conflicting in their showing of a failed effort to improve readmission rates but a successful effort in improving patient satisfaction scores. The results could mean that the nurses implemented the communication strategies and styles learned from in-service sessions but did not physically use the health literacy algorithm or resources with patients at the bedside. Better give-and-take with patients could explain why communication scores improved, and little improvement in patients' health literacy could explain why readmission rates worsened.

Health Literacy Patient Population

Following the 4-week implementation of the health literacy algorithm, data were collected so that new information on health literacy percentages for the unit could be reported.

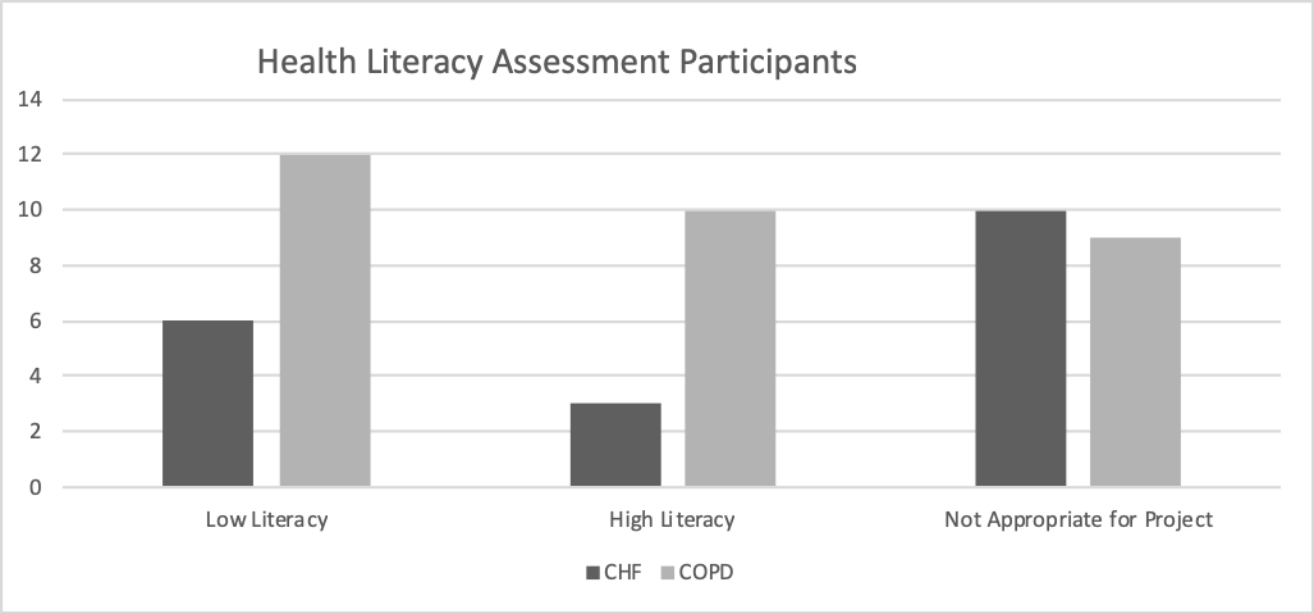
Patients with a diagnosis of CHF or COPD were identified by the physician history and physical and progress reports in the electronic health record. There were 50 patients with documented CHF and/or COPD admitted to the floor during the 4-week implementation timeframe. Of the 50 patients, only 31 met the inclusion criteria for this project. The 19 that were excluded were those who had a diagnosis of a cognitive impairment, were enrolled in hospice services, were transferred off the floor or were residents of skilled nursing facilities. Of the 31 that were appropriate, all agreed to participate in the health literacy assessment at the bedside.

Table 1 shows the literacy levels of the participants included in the project. For the 31 participants that met the inclusion criteria, the SAHL-E health literacy assessment was conducted at the bedside. A score of 14 or less deemed a patient as having low literacy, and a score of 15 or higher deemed a patient as having high literacy. Of 31 participants, 18 were scored as having low literacy (58.1%) and 13 were scored as having high literacy (41.9%). Chart 1 is a graph demonstrating the characteristics of all 50 participants screened for this project.

Table 1. *Descriptive Statistics of Health Literacy Assessment Participants*

	Low-Literacy Patients	High-Literacy Patients	Patients Excluded From Project
CHF	6	3	10
COPD	12	10	9
Total	18	13	19

Chart 1. *Health Literacy Assessment Participants*



Nurse Checklist

Thirty-one nurse checklists were given to nurses for both high-literacy and low-literacy patients. For a checklist to be considered complete, the nurse had to initial and date each resource provided to a patient and each time the nurse used the teach-back or Ask3/Teach3 method to assess patient comprehension. The nurse checklist was attached to the nurse report sheet because the initial plan was for the checklist to be incorporated into the bedside report during the shift change. The completed nurse checklist was to be placed in a designated folder when the patient was discharged. Table 2 reveals the counts of completed checklists, incomplete checklists, and checklists not turned in at patient discharge. Only nine nurse checklists were completed appropriately, resulting in a 29% nurse compliance rate for this project. Five additional checklists were turned in but were blank, so they could not be quantified.

Table 2 *Descriptive Statistics of the Nurse Checklist Intervention*

	Low-Literacy Patients		High-Literacy Patients		Total
	CHF	COPD	CHF	COPD	
Completed and Turned In	1	4	0	4	9

Uncompleted and Turned In	1	1	1	2	5
Uncompleted and Not Turned In	4	7	2	4	17

Of the nine completed checklists, five of them were for low-literacy patients. This means that only 27.8% of the patients identified as having low literacy were given additional resources, education, or an assessment at the bedside prior to discharge, as per the completed and turned-in nurse checklists. Analyzing the data further, Chart two shows that four of the completed low-literacy nurse checklists were for COPD patients and one was for a CHF patient. The result was that only 33% of the low-literacy COPD patients and 16.7% of the low-literacy CHF patients benefitted from the health literacy algorithm.

Chart 2. *Low-Literacy Nurse Checklists*

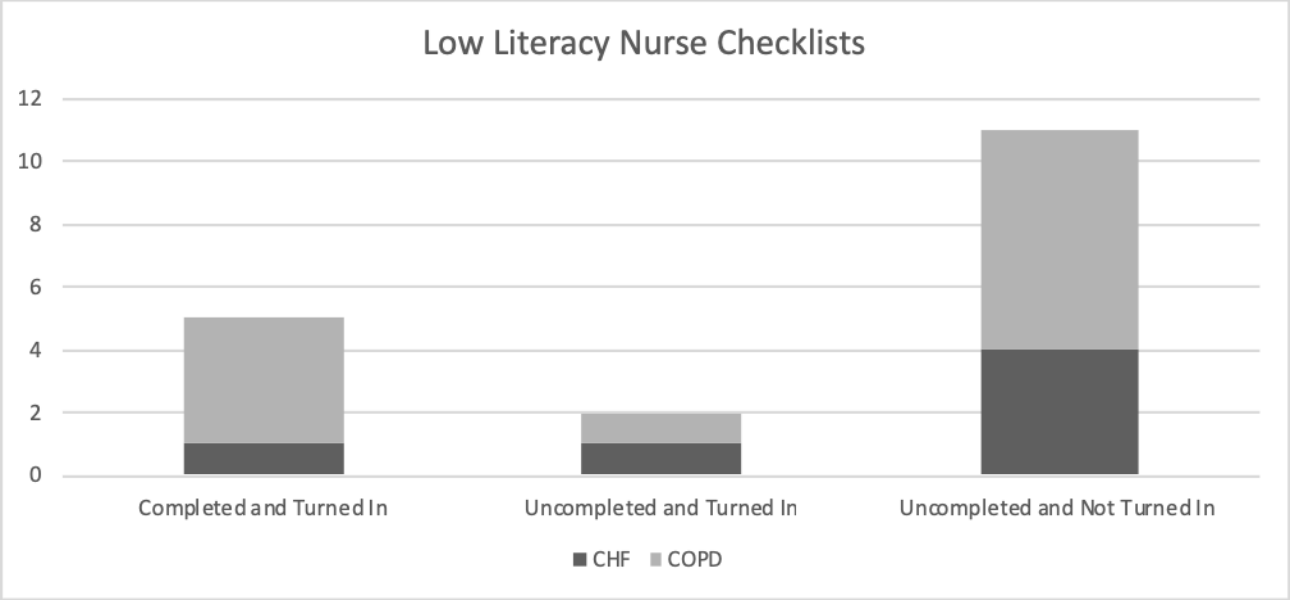
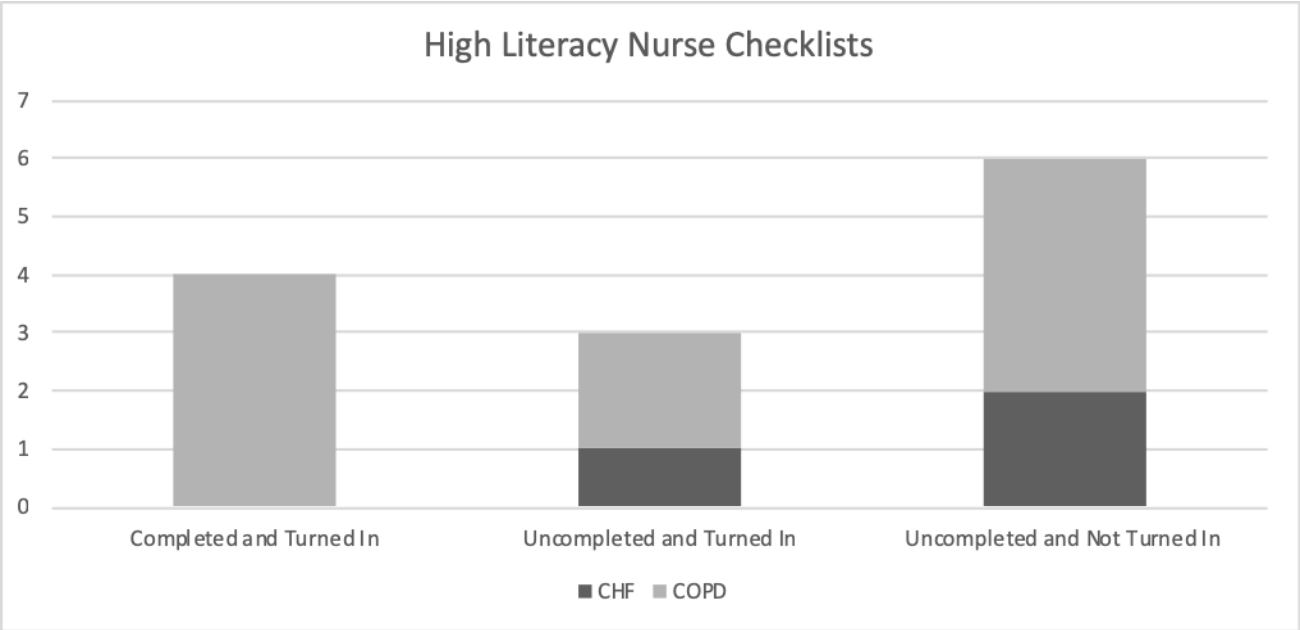


Chart three presents the nurse checklist counts for high-literacy patients identified in this project. The checklists that were completed and turned in were for COPD patients; none were completed and turned in for CHF patients. Because this project was not aimed at providing additional educational resources for high-literacy patients, these data show that a small number

of nurses thought their high-literacy patients could benefit from the low-literacy resources available with this project.

Chart 3. *High-Literacy Nurse Checklists*



Utilization of Literacy Resources

After the review of completed checklists, a breakdown of the resources was conducted to rank which resources were utilized the most. The resources provided most frequently are shown in Table 3. The purpose of this data collection was to develop a count of and pattern showing which resources the nurses preferred the most to enhance patient education. The Channing Bete books, Disease Slide Cards, and Self-Check/Action Plans were comprehensive and easy to follow, and they also encouraged interactions through the use of pictures, colors, and a unique design. These resources were utilized the most of all the ones available.

Table 3. *Descriptive Statistics of Resource Utilization*

Resource	Total	Amount of Times Used for Low–Literacy Level Patients		Amount of Times Used for High–Literacy Level Patients	
		CHF	COPD	CHF	COPD

Channing Bete *Living With* Book	5	1	2	0	2
Disease Slide Card	5	0	2	0	3
Self-Check/Action Plan	5	1	2	0	2
Green/Yellow/Red Zone Chart	4	0	2	0	2
How to Get Moving Book	3	0	2	0	1
Nutrition Card	3	0	2	0	1
Videos	3	1	2	0	0
Pill Box	2	1	0	0	1
CHF Weight Log	1	0	1	0	0

Chart four shows the limited use of low-literacy educational resources with patients. These counts were significantly low, considering there were 18 low-literacy patients in this project. The nurses were noncompliant with the health literacy algorithm as demonstrated by the lack of utilization of the resources available for these patients. According to Chart four, none of the CHF patients received a Disease Slide Card, Green/Yellow/Red Zone Chart, *How to Get Moving* book, nutrition card, or weight log. One of the nurses documented that the only CHF weight log used was provided to a COPD patient.

Chart 4. *Low-Literacy Patients: Resource Utilization*

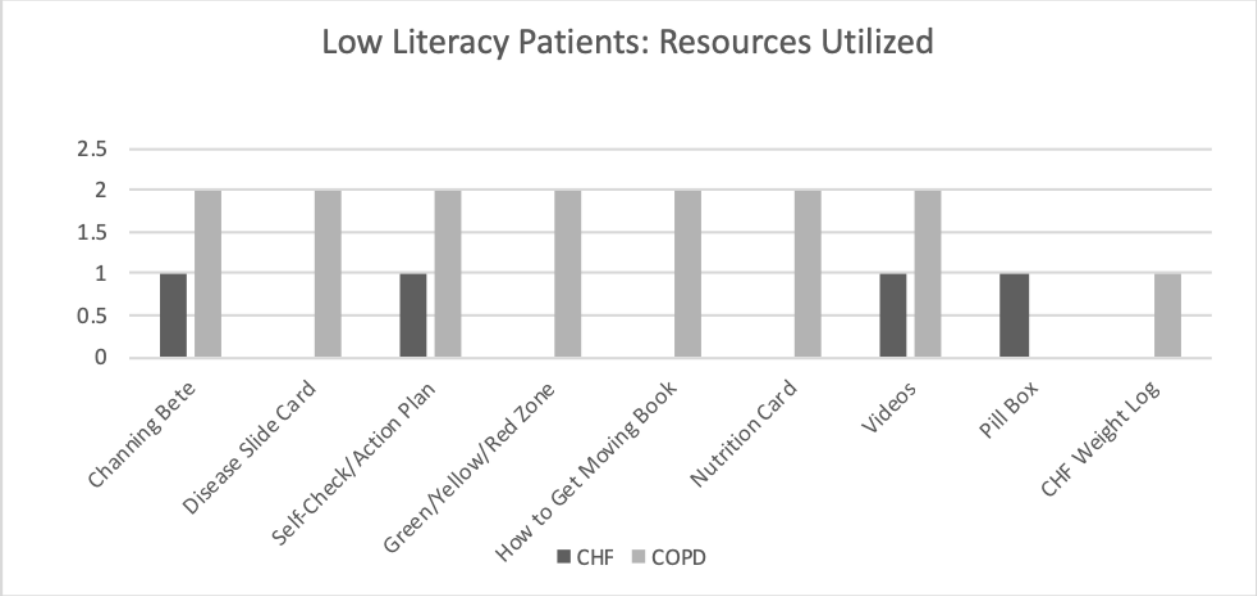
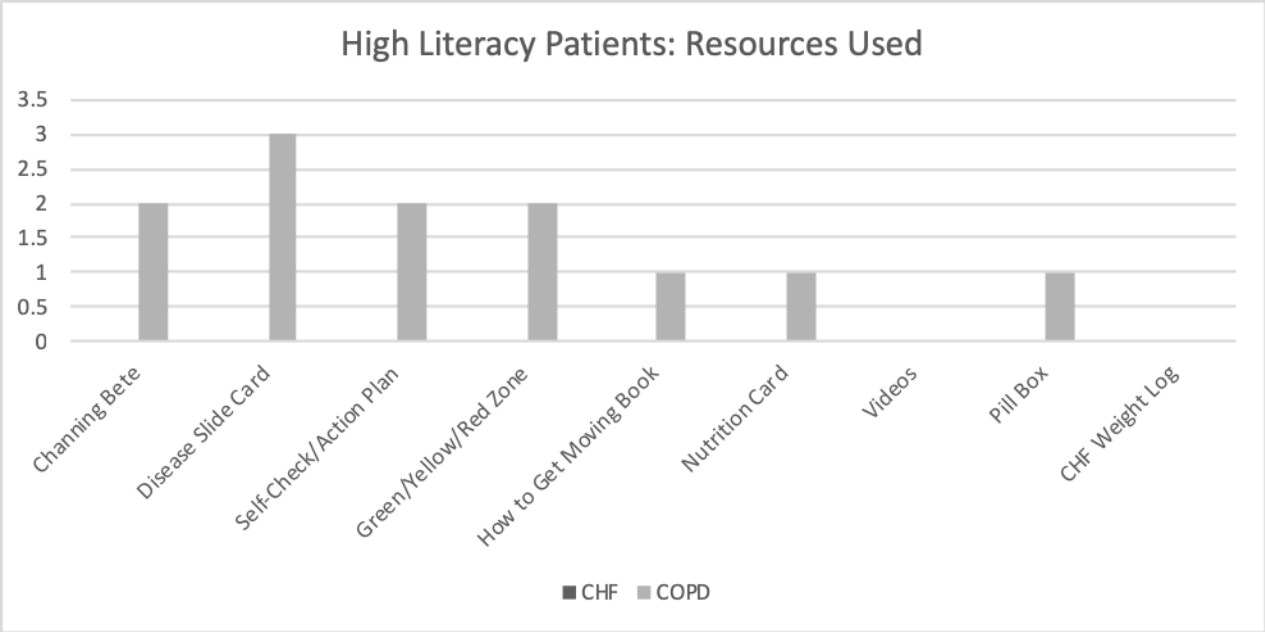


Chart five reviews the resources that were provided to high-literacy patients. The data show that no resources were given to CHF patients. When comparing the utilization of resources with low-literacy and high-literacy patients, one can see that there was no statistical significance showing that the nurses provided more resources to low-literacy patients.

Chart 5. *High-Literacy Patients: Resource Utilization*



Patient Comprehension Assessment Methods

At the minimum, it was expected that nurses would utilize the teach-back method or the Ask3/Teach3 method to assess patient comprehension. Unfortunately, the teach-back method was used only seven times and the Ask3/Teach3 method only three times, as noted in Table four. Chart six and Chart seven show which diagnoses and literacy levels were assisted by one or both assessment methods.

Table 4. *Patient Comprehension Assessment Results*

	Total	Low-Literacy Patients		High-Literacy Patients	
		CHF	COPD	CHF	COPD
Teach-Back Method	7	1	3	0	3
Ask3/Teach3 Method	3	1	1	0	1

Chart 6. *Low-Literacy Patients: Comprehension Assessment*

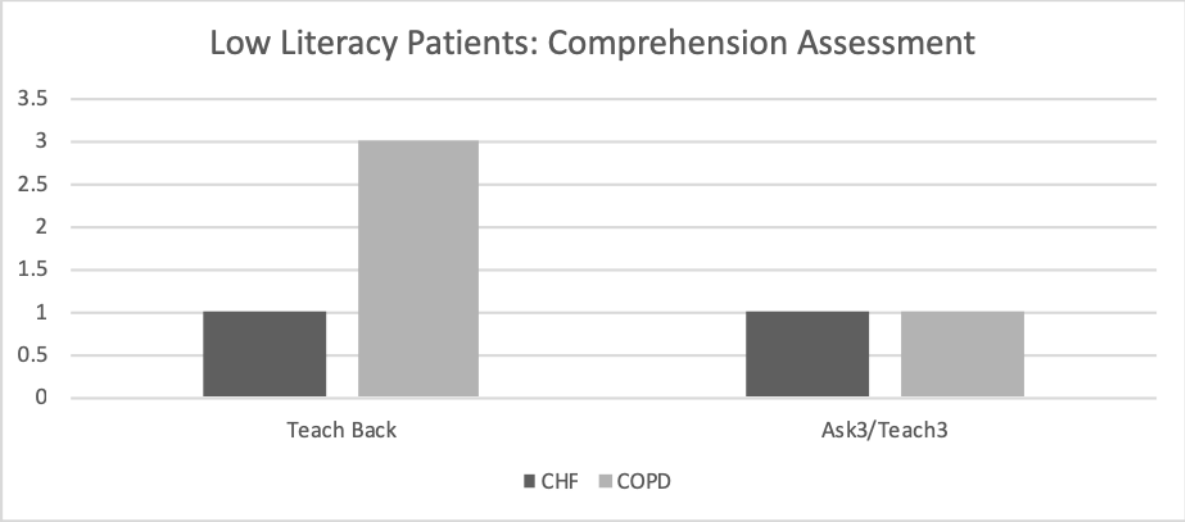
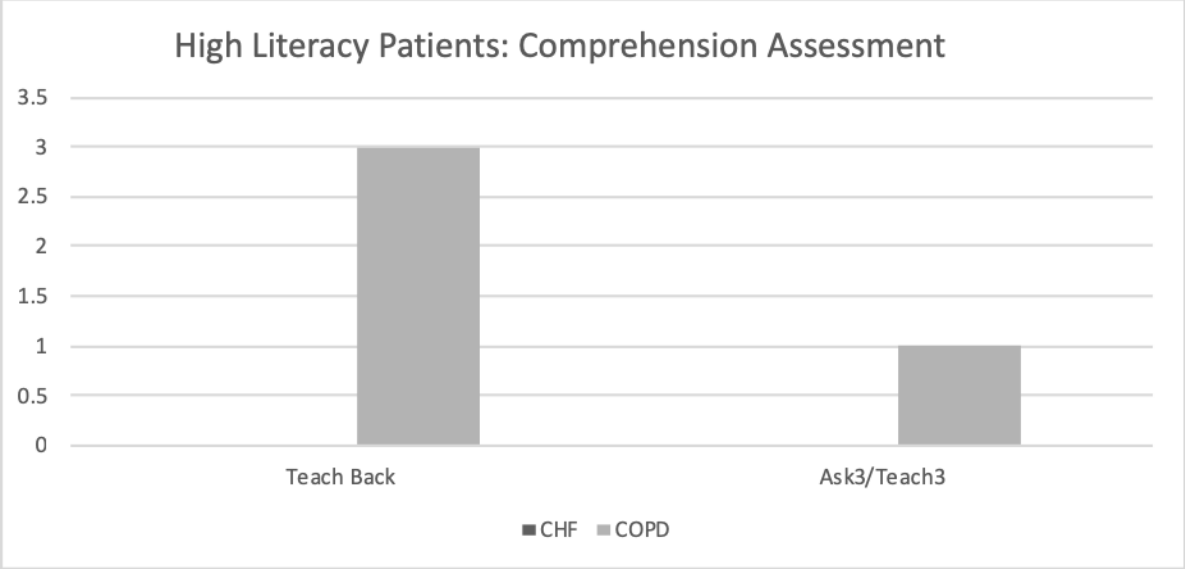


Chart 7. *High-Literacy Patients: Comprehension Assessment*



Readmission Rates

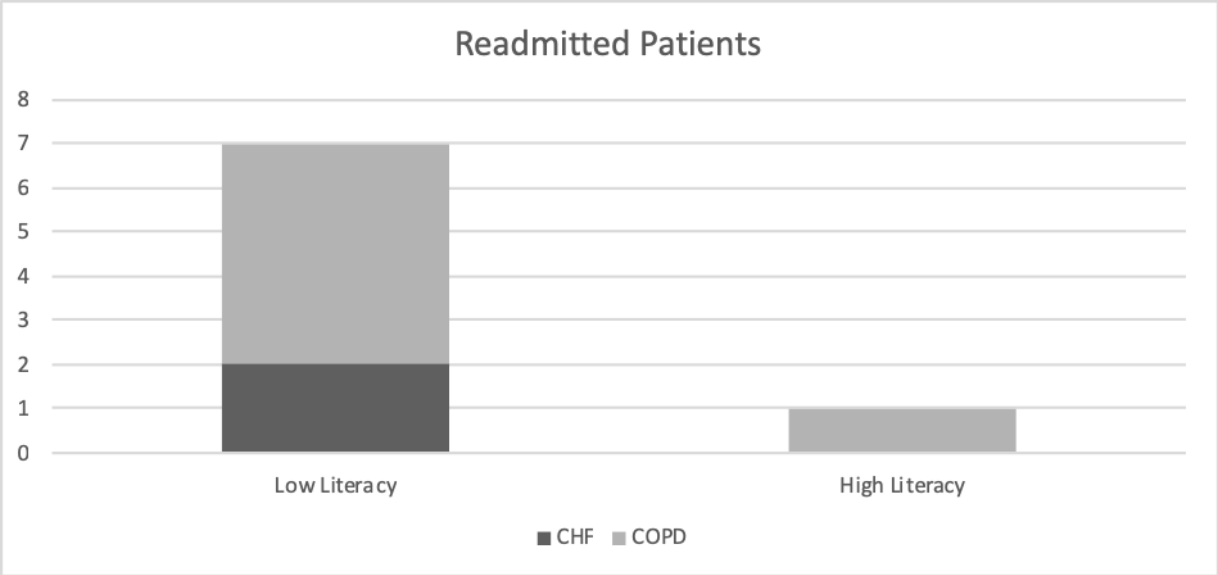
The readmission rate for the medical-surgical floor was analyzed during the health literacy implementation period, as well as the 30-day follow-up period. The all-cause, all-payer readmission rate increased to 27.6%. The data revealed a CHF readmission rate of 25% and a COPD readmission rate of 60%. The CHF readmission rate was an improvement compared with the rate before the project, but the COPD readmission rate increased by 50% compared with the rate before the project.

After the 30-day follow-up data collection was completed, descriptive statistics were gathered on the discharged participants. According to Table 5, there were eight total readmissions following the 4-week implementation period. Of these eight, seven (87.5%) were low-literacy patients. For only one patient of the eight was there a completed nurse checklist showing that interventions of the health literacy algorithm had been utilized.

Table 5. *Readmission Rates for Health Literacy Participants*

Readmission Data	Total		
		CHF Patients	COPD Patients
Low-Literacy Patients	7	2	5
High-Literacy Patients	1	0	1

Chart 8. *Readmission Rates for Health Literacy Participants*



Patient Satisfaction Scores

At the initiation of data collection for this project, the organization was utilizing a third-party surveyor, HealthStream, to measure patient satisfaction scores. At the time of data collection, the medical-surgical floor had a 76% rating for nurse communications. During the time in which data collection began, the organization switched from HealthStream to Press Ganey Associates as a third-party surveyor. At the request of the administrators, the same questions were asked and reported. Use of a different surveyor may have impacted results for this project. At the completion of the project and after the 30-day follow-up, the data for patient satisfaction scores were collected for this unit. Patient satisfaction in nurse communications had increased from 76% to 91%. These data included the timeframe of the implementation of the project and the 30-day follow-up timeframe.

Analysis of Results

Project outcomes were achieved in two parts. The first part was gathering new data on percentages of low and high literacy levels. These data are new for the hospital and can be used

to educate staff members on the high percentage of low-literacy patients that are being cared for daily. The literacy level data support the encouragement of the administration in initiating health literacy education for the staff and reviewing current educational resources being administered to patients at this time.

One outcome of this project revealed a trend of low literacy levels with a high risk of readmission. Because seven of the eight (87.5%) readmitted patients were scored as having low literacy levels, the data prove that there is a correlation between literacy rates and readmission risk. Currently, the hospital admission nurse estimates the readmission risk, but there is no score for the literacy level. This project's results show that patients with low literacy levels should be ranked as having a high risk for readmission. This project, therefore, helped to identify another population that is at risk for readmission.

There were a multitude of reasons why the nurse intervention could have failed. The failure that did occur resulted in data that could not be obtained for this DNP project. The limited participation by the nurses resulted in a minimal amount of data for analysis. It may be beneficial to consider the use of an alternative nurse checklist, because the checklist was the major weakness of this project. The rate for compliance in using the checklist was minimal; the checklist often was not completed or turned in. Because many of the nurses and charge nurses were involved in planning for the project, the nurses' noncompliance was the most unexpected aspect of the project. Data that could have been collected from the nurse checklists but was missing affected the analysis of how resource utilization and patient comprehension might have influenced patient readmission rates and nurse communication scores. The overall lack of nurse compliance for this project limited the data so that generalizations were difficult to make.

The key facilitators for this project were the project leader and the nurses that were participating in the project. Nurses were reminded by the project leader to follow the algorithm; however, they were not under direct observation when they were at the bedside and would have been using the patient education materials. Even with continuous direction and encouragement, nurses were not consistent in providing additional resources to patients, assessing patient comprehension, or completing and turning in the nurse checklist. Although there was administrative support for this project, the lack of oversight influenced the lack of nurse compliance. The most significant barrier that affected results was noncompletion of the tasks required of the nurses.

Future Practice

The biggest takeaway from this project is the high percentage of low-literacy patients that this hospital serves. This project also showed evidence of a high risk of readmission for those who have low literacy levels. This project lacked formal training for all staff members on health literacy. The hospital would benefit by initiating health literacy education and training as part of the orientation and annual training required for all employees. Tackling this first, before using different educational materials and resources, would help bring about awareness of the health literacy issue. Changing the culture in which patient communications takes place would help to raise patient satisfaction scores and lower readmission rates over the long term.

Further recommendations include modifying the project with an alternative nurse checklist and simplifying the resources for the nurses. Currently, nurses document patient information in the electronic health record and do not have to do any hand-charting of their daily tasks, including how much education is provided. One recommendation for future practice would

be to incorporate the nurse checklist into a task that is part of the electronic worklist. This intervention would then have to be addressed and completed by the end of every shift.

Another way to improve this project would be to have preassembled packets available for low-literacy and high-literacy patients. During this project, the intervention was up to each individual nurse to decide what educational resource might be appropriate for a patient and then provide it. This process could have been a barrier to nurses' compliance with the project. If nurses had a readymade packet for each literacy level and disease, it would be simple to give the whole packet to the patient. This concept would increase the number of resources provided to the patient, but nurses would still have to give the patient information appropriate for his or her literacy level and document their efforts via the teach-back method or Ask3/Teach3 method.

This project was focused directly on patients; it would be important to expand the program to include patient caregivers, because they are key stakeholders in the success of healthcare for patients once they are at home. This project did not assess any patients with a cognitive impairment, but if the project had included the caregivers of such patients, an additional seven participants could have been added to it. Assessing caregivers would open another population with unmet needs when it comes to education and instructions.

Before any future projects are begun, full administrative support must be obtained for the project to be successful. The project would require full nurse compliance, active participation at the bedside with patients, and careful documentation of health literacy practices used. Creating a health literacy protocol that is efficient for nurses to use is key for the sustainability of any future projects.

Post-Project Survey on Nurse Compliance

After the project leader became aware of the nurses' lack of compliance with the nurse checklist throughout the 4-week implementation timeframe, a nurse compliance post project survey was created (see Appendix D). The purpose was to determine whether the nurses believed that knowing about and understanding health literacy would affect their interactions with patients. The survey allowed for nurses to identify barriers to the use of the algorithm and checklist. The goal was to gain feedback from nurses regarding the project and present the findings to the administrators to generate more support for future health literacy projects.

The post-project survey was made available in the medical-surgical unit to nurses on the day and night shifts and could be filled out anonymously. Over the 2-week period in which the survey was posted, announcements about it were made at daily huddles. Nonetheless, only five surveys were completed and turned in. All five reported finding the health literacy in-service sessions and posters educational and informative. Three of the five nurses reporting stated that they used the nurse checklist, and the other two nurses acknowledged that they did not use it. All five nurses reported that it was helpful to know their patient's health literacy level and that it influenced how they communicated with and educated the patient. All five nurses reported that they did use resources with their patients. Per the completed surveys, all five nurses reported that the teach-back method was appropriate for checking patient comprehension. The five nurses all agreed that health literacy was a topic that the hospital needed to address for all patients and that they would like to see a formal health literacy assessment and protocol implemented in the hospital. Finally, the nurses reported that they wished there was more staff, more time for patient education at discharge, more readily accessible resources, and better discharge instructions and educational material for patients. Nurses were given the opportunity to lead the feedback, and their comments were as follows:

"Patients loved the information we gave them. It was more than just a white pack of papers. I saw family and patients interacting and using the resources. Great tools to have!"

"We definitely need easier-to-understand and attention-grabbing educational resources!"

"Low-scoring–literacy patients need a lot of time; staffing/time were major issues."

"Great project and beneficial to patients, especially reminders like pill boxes."

Discussion

Summary

Relevance of key findings to the rationale and specific aims. The key finding for this project was that there was a high percentage of low literacy–level patients identified in the medical-surgical unit over a 4-week period. The data confirmed the Community Health Needs Assessment's (2016) acknowledgement of the low health literacy population served by the hospital. The primary focus of this project was to determine if the use of a health literacy algorithm would affect the readmission rates and patient satisfaction scores for this medical-surgical floor. The secondary focus was to implement this protocol on the floor and to follow up on nurse compliance with the algorithm, checklist, and patient comprehension assessments. The data for health literacy rates were strong, but the nurse compliance interventions were minimal.

The overall goal was to perform a pilot QI project on the medical-surgical floor to determine whether there was a relationship between health literacy levels and readmission rates and patient satisfaction scores. The goal was to see if the use of the health literacy algorithm tool would prove beneficial in helping nurses in their communication and educational efforts for high-risk patients. The hoped-for outcome of this project was to obtain data to support the development of a health literacy protocol in the hospital for all patients. Despite a small sample size, the data analysis indicated there was a significantly high percentage of low literacy–level

patients. The specifics of this project revealed a correlation between low literacy rates and an increased risk for readmission.

Health literacy is a significant factor to address on the floor in order to benefit the patients that the hospital staff cares for daily. To make use of the data, nurses must use the communication strategies and educational resources for low literacy–level patients to make an impact on readmission rates and patient satisfaction scores related to nurse communications. There needs to be a more effective way to share information on health literacy needs from nurse to nurse in order to increase the utilization of resources and expand nurse compliance.

Project strengths. The potential benefits of this project made it ideal to implement on the medical-surgical floor. The health literacy assessment was simple to integrate into existing practice. The nurse intervention portion of this project was multidimensional, but the algorithm was simple, straightforward, and easy to understand, document, and use. Use of the health literacy assessment and nurse interventions has the potential to improve patient education on the floor, making an impact on readmission rates and patient satisfaction scores. The health literacy assessment can be utilized for more patients with different diagnoses and in multiple settings. The nurse interventions can be reformatted so they can be added to the nurses' electronic education and documentation activities.

Interpretation

Association between the intervention and its outcomes. This project can have a positive impact on patients, nurses, the hospital, and the community. The initiation of a health literacy algorithm and protocol can help guide the staff and providers to effectively communicate with and educate patients. Patients' health literacy levels will be better matched with available educational resources. A formal protocol will help providers to focus on key points in their

educational efforts and assessments of patient comprehension so that they can reinforce specific educational needs with appropriate resources. The nurses' ability to communicate with their patients and educate them will be enhanced.

Project findings compared with those of the literature. Efforts to increase health literacy may help patients to be better prepared when they are at home and to understand their medications, their home management, and how to handle obstacles they may encounter with management of their disease. This, in turn, will decrease readmissions or unnecessary emergency room visits over time. Patients will be able to recognize earlier signs and/or symptoms of exacerbations and notify their providers so interventions can take place outside of the hospital or emergency room. The community will have better outcomes because patients will be happier and healthier within the community. More resources and initiatives can be geared toward the community for disease prevention because a lesser amount of funds would be utilized for readmission penalties.

Variations between anticipated and observed outcomes. The anticipated findings for this project were for readmission rates to decrease by 5% and for patient satisfaction scores to increase by 5%. Instead, readmission rates increased from 20% to 27.6%. These findings validate that without nursing support, results will not show improvement. The increase in readmission rates also showed that nurses were not using the resources or the teach-back method at the bedside.

Patient satisfaction scores increased from 76% to 91%. The increase can be considered a benefit of the project, and it reflects the education and training that nurses received in communication strategies so they could better engage patients and speak with them productively. The data are encouraging, because they show that the training and education that this project

included influenced how nurses communicated with their patients. This project was not the sole reason for the increase in nurse communication ratings; however, it is possible to see that the health literacy project had an impact on the increase in patient satisfaction scores.

It was anticipated that there would be more nurse participation in the health literacy project at the bedside. The unanticipated minimal nurse participation and lack of completed nurse checklists resulted in a lack of ability to collect reliable data on the use of educational resources and patient assessment comprehension methods. If there had been more nurse involvement in the project, the checklist data would have provided more substantive information on nurse compliance and resource use. This could have had a greater impact on readmission rates and patient satisfaction scores.

Costs, strategic trade-offs, and opportunities. The costs of the project were minimal because the sample size was small. If administrators were to decide to implement a health literacy assessment and protocol in the future, the cost to the organization would be much larger. The cost of various low literacy–level resources would be greater because the whole hospital, not just one floor, would need these resources. There would be additional costs for training nurses and other staff members about health literacy. There would have to be updates to the current software to include areas in which nurses could document their efforts in patient education in the health literacy protocol. The initial implementation would have a financial burden for the organization, but the results would outweigh the initial costs because of the reduction in readmissions and increased reimbursements from insurance companies.

Limitations

There were many unanticipated constraints for this project. These constraints were directly correlated with the lack of nurse compliance with the health literacy algorithm and nurse

checklist. Nurses initially were eager to take part, but their motivation declined quickly over the 4-week period. The night-shift nurse group has many travel nurses, and they were not included in this project. Most participants in the project were day-shift nurses. The nurses reported being too short staffed and not having enough time to fully invest themselves in this project. Nurses reported that the additional time needed to educate low-literacy patients was more than they could accommodate. Their lack of compliance was anticipated to a certain degree, but not to the level that resulted. Because of their lack of compliance and the limited amount of data that ensued, the results could not be generalized to a larger population.

The lack of support from the nurses throughout the project was the major limitation. The nurse checklist was not returned to the project leader as expected. This could have been related to noncompletion of the checklist or to shredding of the nurse report sheet at patient discharge. Nurses may have utilized the health literacy algorithm but not documented their efforts for this project. Another limitation could have been that nurses now use electronic means of documentation and are not used to doing paper charting or filing appropriate paperwork. Regardless of these problems, the data could only be analyzed on the completed and turned-in checklists.

If there had been more support during the implementation phase, more data may have been collected, and this could have resulted in a more complete analysis of the benefit of using a health literacy algorithm. It was unknown at the start of this project that the faculty would not be entirely supportive of it during the implementation stage. More support could be generated by a more thorough educational session and longer period of implementation of the interventions on the floor.

Attempts to mitigate the limitations included follow-ups with nurses to discuss patient literacy level scores. At this time, the project leader revisited the bulletin boards with the nurses to talk about the appropriate low literacy–level information that could be provided to patients. The project leader was often present in the unit and continuously advocated for the project with the nurses, nurse managers, and physicians on the floor. The project manager attended morning huddles, staff meetings, and group gatherings to present the project multiple times and gain support for it.

Expected limitations of the project included a small sample size since it was a pilot project. The short timeframe for implementation also contributed to obtaining fewer data for analysis. These anticipated limitations were acknowledged and managed during implementation by constant communication with the nurses about using the health literacy algorithm.

The actual health literacy assessment at the bedside was conducted with another nurse also present to avoid any bias in the results. The literacy level percentages were valid and accurately described the population of patients treated on the medical-surgical floor. By standardizing the health literacy assessment at the bedside, this effort minimized any disruption in the data collection process regarding health literacy levels.

Considerations

This project was able to gather new data related to actual percentages of low- and high-literacy patients, and the findings are generalizable to the population this hospital serves. The project ended up with a sample size of 31 for the health literacy algorithm. This number is large enough to analyze and bring forth important data related to the levels of low and high literacy levels. The hospital can use the data to spearhead future projects related to patient education and incorporation of health literacy into daily practice for all health care providers. Further research

would be required on how to increase nurse support and compliance with the project. There is an opportunity to reevaluate the structure of the current project in order to improve it for more nurse compliance. With a higher degree of compliance, more supportive data could be identified that would help in understanding the relationship between health literacy levels and readmission risks and patient satisfaction scores.

Even with the poor nurse compliance, the project had important and successful outcomes. First, the ability to gain actual data on health literacy levels can be used to help promote nurse awareness in the unit and change their communication and education strategies, with or without a protocol. Second, the hospital administrators can now acknowledge that health literacy is an issue in the hospital that needs to be addressed.

Although the project succeeded in achieving higher patient satisfaction scores, it failed in reducing readmission rates; the failure reflected the fact that nurses did not comply with the algorithm. The hospital can utilize this project and set in motion a curriculum for all staff members on health literacy and communication strategies. The hospital can also restructure current educational material and resources in order to better serve the majority of the patients with low literacy levels. This project also revealed that nurses utilized the lower-literacy resources with higher-literacy patients and had good results in doing so. Together, a reorganized health literacy protocol can work toward reducing the high readmission rates of this hospital.

Sustainability

In discussion with the administration at the facility, the results of this project sparked an interest in initiating a health literacy assessment at the bedside. However, a plan to restructure discharge education, resources, and communication strategies is not possible in the near future for this organization. It would require training all of the staff members in health literacy,

communication strategies, and use of the teach-back and Ask3/Teach3 methods. The hospital would have to invest in new patient educational material and resources. The information technology department would have to add tasks for documentation of the health literacy assessment and checklists to the electronic health record. The efforts needed to sustain this project would be extensive. Even with the data produced by this project, it is not foreseeable that a follow-up QI project would be initiated or implemented within the next few years. Elements of this project may be slowly introduced over time.

Conclusions

Current and previous interventions for educating the adult learner have not made an impact on 30-day readmission rates and patient satisfaction scores for the medical-surgical unit of the hospital. Health literacy can be defined as the degree to which individuals can obtain, process, and understand the basic health information and education they need to be successful at home. Patients of low literacy are unable to analyze and review treatment plans, understand medication dosages and side effects, or recognize signs and symptoms of disease exacerbations. All these issues contribute to an increased risk for hospital readmissions and poor medical compliance. Health literacy education, resources, and instructions are essential in order to address the needs of the low literacy–level population. The teach-back method is crucial in making sure that patients can repeat and comprehend the knowledge and instructions they have received. This process can pinpoint issues that need reinforcement and further education. The interventions of the health literacy algorithm have the potential to address hospital readmission rates and patient satisfaction scores.

This project was introduced to address a gap in care, specifically with CHF and COPD patients, and to identify new interventions that could be implemented in the hospital in the

future. It was a multidimensional project with bundled interventions. A health literacy team was formed, which led to in-service sessions for nurses and staff members on health literacy. This project was successful in educating nurses on ways to communicate with patients of low literacy levels, as evidenced by a 15% increase in patient satisfaction rates with nurse communications. This pilot project included new nursing interventions and tasks regarding educational materials and patient comprehension assessments. Reception of these efforts was not good, as shown by the resulting lack of nurse compliance and increase in readmission rates by 7% for the floor. The findings on readmission rates show that work is needed to make the health literacy algorithm easier for nurses to use. With an algorithm and protocol that are accepted by nurses and utilized to the patient's benefit, the anticipated results would be lowered readmission rates.

The project attempted to answer the question of the correlation between health literacy and readmission rates, as well as patient satisfaction scores. This project ultimately showed that low literacy levels are directly correlated with a readmission risk. This is important data that can be used to help identify high-risk patients. Incorporating health literacy into the hospital protocol can help transform the hospital's culture regarding health-literate patients. Addressing health literacy can transform how care is provided to patients and lead to better outcomes for the patient, the hospital, and the community.

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Appendix A. SAHL-E Assessment Tool

The 18 items of SAHL-E are shown, ordered according to item difficulty (keys and distractors are listed in the same random order as in the field interview).

Stem	**Key or Distractor**		
1. kidney	__urine	__fever	__don't know
2. occupation	__work	__education	__don't know
3. medication	__instrument	__treatment	__don't know
4. nutrition	__healthy	__soda	__don't know
5. miscarriage	__loss	__marriage	__don't know
6. infection	__plant	__virus	__don't know
7. alcoholism	__addiction	__recreation	__don't know
8. pregnancy	__birth	__childhood	__don't know
9. seizure	__dizzy	__calm	__don't know
10. dose	__sleep	__amount	__don't know
11. hormones	__growth	__harmony	__don't know
12. abnormal	__different	__similar	

			__don't know
13. directed	__instruction	__decision	__don't know
14. nerves	__bored	__anxiety	__don't know
15. constipation	__blocked	__loose	__don't know
16. diagnosis	__evaluation	__recovery	__don't know
17. hemorrhoids	__veins	__heart	__don't know
18. syphilis	__contraception	__condom	__don't know

Appendix B. SAHL-E Instructions and Scoring

Instructions for Administering SAHL-E

The Short Assessment of Health Literacy-English, or SAHL-E, contains 18 test items designed to assess an English-speaking adult's ability to read and understand common medical terms. The test could help health professionals estimate the adult's health literacy level. Administration of the test could be facilitated by using laminated 4- to 5-inch flashcards, with each card containing a medical term printed in boldface on the top and the two association words (i.e., the key and the distractor) printed at the bottom.

Short Assessment of Health Literacy-English (SAHL-E) Interviewer's Instructions

Directions to the Interviewer:

1. Before the test, the interviewer should say to the examinee:

"I'm going to show you cards with three words on them. First, I'd like you to read the top word out loud. Next, I'll read the two words underneath and I'd like you to tell me which of the two words is more similar to or has a closer association with the top word. If you don't know, please say 'I don't know.' Don't guess."

2. Show the examinee the first card.
3. The interviewer should say to the examinee:

   "Now, please read the top word out loud."

4. The interviewer should have a clipboard with a score sheet to record the examinee's answers. The clipboard should be held so that the examinee cannot see or be distracted by the scoring procedure.
5. The interviewer will then read the key and distractor (the two words at the bottom of the card) and say:

"Which of the two words is most similar to the top word? If you don't know the answer, please say 'I don't know.'"

6. The interviewer may repeat the instructions so that the examinee feels comfortable with the procedure.
7. Continue the test with the rest of the cards.
8. A correct answer for each test item is determined by both correct pronunciation and accurate association. Each correct answer gets 1 point. Once the test is completed, the interviewer should tally the total points to generate the SAHL-E score.
9. A score between 0 and 14 suggests the examinee has low health literacy.

Appendix C. Nurse Checklist

Health Literacy Nurse Checklist

Patient #

Diagnosis (please circle): CHF COPD

Admission Date: _____

Health Literacy Assessment Date: _____

Please Circle: **High** Literacy **Low** Literacy

Identifier Placed (please circle): Yes No

Resources Provided	**Date and Initials**
Channing Bete *Living With* Book	
How to Get Moving Book	
Nutrition Pocket Card	
Disease Slide Card	
Weight Log (CHF)	
Self-Check/Action Plan	
Green/Yellow/Red Zone	
Pill Box	

Videos Online	
Method of Comprehension Check Used	**Date and Initials**
Teach-Back Method	
Ask3/Teach3	

Discharge Date: _____

Please return this to the designated blue folder when the patient is discharged from the floor.

Appendix D. Nurse Compliance Postproject Survey

1. Did you find the health literacy in-service sessions and/or posters to be educational and informative?
    a. Yes
    b. No
    c. I did not attend/I did not know about the posters
2. Did you use the nurse checklist for patients that were ranked as having low literacy or high literacy?
    a. Yes
    b. No
    c. I did not know what it was for
3. Did knowing your patient's level of health literacy help you with how you communicated with and educated your patient?
    a. Yes
    b. No
    c. I did not know the literacy level
4. Did you use any of the resources (Channing Bete books, pamphlets, pill box, videos, etc.) with your patients?
    a. Yes
    b. No
    c. I did not know there were resources to use
5. If you answered no, why did you not use them? (choose all that apply)
    a. Did not know there were resources available
    b. Did not have the time
    c. Did not think they were beneficial
    d. Forgot to take them to patients
6. Do you think the teach-back method is a good way to check patient comprehension?
    a. Yes
    b. No
    c. I haven't used the teach-back method
7. Do you think that health literacy is something the hospital needs to address for all patients?
    a. Yes
    b. No
8. Would you like to see a health literacy assessment and protocol implemented in the hospital?
    a. Yes
    b. No
9. What would help you provide better patient-centered education to your patients? (choose all that apply)
    a. More staff (i.e., a resource nurse, disease-specific education nurses)
    b. More time for patient education at discharge
    c. More readily accessible resources (i.e., videos, booklets, tools)

d. Better discharge instructions and educational material

10. Any other recommendations/comments/feedback for this project?

Appendix E. Health Literacy Assessment Data Tracking

Patient	Diagnosis	Meets Criteria for Project	Admission Date	SAHL-E Date	If No, Why?	Literacy Level	Channing Bete	Get Moving	Nutrition Card	Slide Chart	Weight Log (CHF)	Self-Check/Action Plan	Green/Yellow/Red	Pill Box	Video	Teach-Back	Ask 3/Teach 3	Discharge Date	Readmission	Nurse Checklist
P001	COPD	Yes	10/12/18	10/16/18		High										x	x	10/18/18		Nurse checklist completed and turned in
P002	CHF	Yes	10/8/18		NO; discharge prior to assessment at bedside													10/16/18		
P003	CHF	Yes	10/12/18	10/17/18		Low												10/19/18	11/4/18, 11/15/18	Nurse checklist not turned in, unable to collect data
P004	CHF	NO - Hospice	10/12/18		NO; hospice													10/20/18		
P005	COPD	NO - SNF	9/17/18		NO; skilled nursing facility													10/18/18		
P006	CHF	Yes	10/4/18		NO; transferred off floor													10/22/18		

P007	COPD	Yes	10/14/18	10/16/18		Low											10/17/18		Nurse checklist uncompleted and turned in
P008	COPD	Yes	10/13/18	10/16/18		Low	x			x					x	x	10/20/18		Nurse checklist completed and turned in
P009	COPD	Yes	10/16/18	10/17/18		Low	x	x	x	x	x	x	x		x		10/20/18	11/28/18	Nurse checklist completed and turned in
P010	COPD + CHF	Yes	10/17/18	10/18/18		Low											10/20/18		Nurse checklist not turned in, unable to collect data
P011	CHF	Yes	10/17/18	10/18/18		High											10/22/18		Nurse checklist not turned in, unable to collect data

P012	COPD	NO-Cognitive Impairment	10/16/18		NO; cognitive impairment													10/20/18		
P013	CHF	Yes	10/19/18	10/22/18		Low	x					x		x	x	x	x	10/22/18		Nurse checklist completed and turned in
P014	CHF	Yes	10/22/18	10/22/18		High												10/29/18		Nurse checklist uncompleted and turned in
P015	CHF	No-SNF	10/6/18	10/22/18	NO; skilled nursing facility	High														
P016	CHF	Yes	10/19/18	10/23/18		Low												10/23/18		Nurse checklist uncompleted and turned in
P017	CHF	NO-Cognitive Impairment	10/25/18		NO; cognitive impairment													10/28/18		
P018	COPD	NO-Cognitive Impair	10/23/18		NO; cognitive impairment													10/24/18		

		ment																		
P019	COPD	Yes	10/23/18	10/23/18		High												10/28/18		Nurse checklist uncompleted and turned in
P020	COPD	Yes	10/28/18	10/29/18		Low												10/31/18	12/10/18	Nurse checklist not turned in, unable to collect data
P021	CHF + COPD	Yes	10/26/18	10/30/18		Low												11/3/18	11/15/18	Nurse checklist not turned in, unable to collect data
P022	CHF	Yes	10/29/18	10/30/18		High												11/3/18		Nurse checklist not turned in, unable to collect data
P023	COPD	Yes	10/25/18	10/30/18		Low		x	x							x	x	10/31/18		Nurse checklist completed

																				and turned in
P024	COPD	NO-SNF	10/25/18		NO; skilled nursing facility													11/1/18		
P025	COPD+CHF	Yes	10/29/18	10/30/18		Low												10/30/18	11/10/18, 11/28/18	Nurse checklist not turned in, unable to collect data
P026	COPD	NO-SNF	10/31/18		NO; skilled nursing facility													11/1/18		
P027	COPD	NO-Cognitive Impairment	10/18/18		NO; cognitive impairment													11/2/18		
P028	COPD	Yes	11/1/18	11/2/18		Low												11/8/18	11/27/18	Nurse checklist not turned in, unable to collect data
P029	COPD	Yes	11/2/18	11/2/18		Low												11/8/18	11/27/18, 12/5/18	Nurse checklist not turned in, unable to coll

																				ect data
P030	COPD	Yes	11/1/18	11/2/18		High	x	x		x		x	x					11/4/18		Nurse checklist completed and turned in
P031	COPD	Yes	11/1/18	11/2/18		High												11/5/18		Nurse checklist not turned in, unable to collect data
P032	COPD	Yes	10/31/18	11/2/18		Low												11/6/18		Nurse checklist not turned in, unable to collect data
P033	CHF	Yes	11/1/18		NO; discharge prior to assessment at bedside													11/1/18		
P034	CHF	NO - Cognitive Impairment	11/3/18		NO; cognitive impairment													11/6/18		
P035	COPD	NO -	11/2/18		NO; skilled													11/8/18		

		SNF			nursing facility															
P036	COPD + CHF	Yes	11/2/18	11/5/18	NO; transferred off floor	High												11/12/18		
P037	COPD	Yes	11/3/18	11/5/18		High												11/7/18	11/7/18	Nurse checklist not turned in, unable to collect data
P038	COPD	Yes	11/8/18		NO; skilled nursing facility													11/9/18		
P039	COPD	Yes	11/5/18	11/6/18		High				x				x		x		11/10/18		Nurse checklist completed and turned in
P040	CHF + COPD	NO - Cognitive Impairment	11/5/18		NO; cognitive impairment													11/9/18		
P041	COPD	Yes	11/2/18	11/6/18		High												11/13/18		Nurse checklist not turned in, unable to collect data

P042	CHF	Yes	11/8/18		NO; discharge prior to assessment at bedside													11/9/18		
P043	COPD	Yes	11/8/18	11/9/18		High	x		x	x		x	x			x	x	11/11/18		Nurse checklist completed and turned in
P044	COPD	Yes	11/6/18	11/9/18		Low						x	x			x		11/12/18		Nurse checklist completed and turned in
P045	CHF + COPD	Yes	11/8/18	11/9/18		Low												11/11/18		Nurse checklist not turned in, unable to collect data
P046	COPD	Yes	11/8/18	11/9/18		High												11/10/18		Nurse checklist uncompleted and turned in
P047	COPD	Yes	11/11/18	11/12/18		High												11/12/18		Nurse checklist not

																				turned in, unable to collect data
P048	CHF	NO-SNF	11/9/18		NO; skilled nursing facility													11/15/18		
P049	CHF	Yes	11/9/18	11/12/18		Low												11/13/18		Nurse checklist not turned in, unable to collect data
P050	COPD	Yes	11/6/18	11/12/18		Low												11/13/18		Nurse checklist not turned in, unable to collect data

Appendix F. Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or DNP project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the APA *Publication Manual*.

Learner name and date Emily Whitaker 2/25/19

Mentor name and school George Peraza-Smith, Capella University