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Using a Professional Language Interpreter During Discharge to Promote Self-Care Management for Spanish-Speaking Patients With Congestive Heart Failure: A Quality Improvement Project

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Using a Professional Language Interpreter During Discharge to Promote
Self-Care Management for Spanish-Speaking Patients With Congestive Heart Failure:
A Quality Improvement Project

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Abstract

Background and Review of Literature: The high rate of hospital readmissions has become a national issue after the Affordable Care Act began and was found to be related to lack of proper education and communication during discharge, coupled with medication nonadherence. **Purpose/Goal:** The overarching goal of this DNP project was to improve lifestyle management of Spanish-speaking congestive heart failure (CHF) patients and to reduce their 30-day readmission rate. The intent of the project was to improve patients’ understanding of CHF exacerbation, medications, and discharge instructions geared to increase home self-management and reduce recidivism. The specific aims were (a) to use a professional Spanish interpreter (PSI) during discharge of Spanish-speaking patients, (b) to provide education via the “Teach-Back” method, assessing patients’ understanding of discharge instructions before and after using PSI and (c) to follow up for reinforcement of the discharge education.

**Methods:** Using the PSI, the simple evidence-based DHFKS as a Teach-Back method was used to help patients identify some key aspects of behavior and lifestyle modification.

**Implementation/Procedure:** This DNP project was conducted at an acute care facility in the city of Elizabeth, New Jersey. The DHFKS as an educational tool to guide the Teach-Back on admission and during discharge using a PSI. **Results:** The Wilcoxon signed-rank test showed that using a PSI to improve patients’ understanding of discharge instructions did significantly lower the number of hospital admissions of Spanish-speaking CHF patients ($Z = -3.879, p < 0.001$).

**Interpretation/Discussion:** Two months after the project intervention, the CHF patients who speak Spanish only who received help from a PSI at discharge had significant reduction of the frequency of their readmission compared with their previous admissions.

**Implications/Conclusion:** This QI project will encourage stakeholders to provide PSIs to all Spanish patients with limited English during admission and discharge. PSI use improves self-care management of patients with CHF and reduce readmission.

**Keywords:** limited English proficiency, CHF exacerbation, professional interpreters, disease management, patient-centered education, increased self-care management at discharge, readmission.
Using a Professional Language Interpreter During Discharge to Promote Self-Care Management for Spanish-Speaking Patients With Congestive Heart Failure: A Quality Improvement Project

Introduction

Language differences between patients and healthcare providers threaten communication, which leads to compromised care, increased health disparities, disappointment with care, and an incompetent healthcare system (Kale & Raza, 2010). Tang, Lanza, Rodriguez, and Chang (2011) gave insight on the fact that patients in the cultural minority suffer more serious adverse outcomes from medical mistakes and receive worse care than do English-speaking patients, emphasizing that the number of those who speak primary Spanish has been growing steadily in the United States (US). They also observed that the number of Spanish-speaking physicians and healthcare providers are fewer than Spanish-speaking patients, which has created a serious gap in communication for patients who are discharged from acute care facilities to home. To remedy this situation, Anderson et al. (2003), Andrulis and Brach (2007), Giger et al. (2007), and Sorkin, Ngo-Metzger, and De Alba (2010) suggested in their studies that it is important to provide Spanish-speaking patients proper discharge instructions in their own language by using a professional interpreter service to promote equity and consistency in healthcare by enhancing communication between patient and provider.

Background

Jessup et al. (2009) and Rosamond et al. (2008) identified that 5 million people in the US alone are estimated to have CHF, and that over 550,000 new patients are said to be diagnosed yearly. CHF is known to be the primary reason for 12 to 15 million primary care office visits and
6.5 million hospital days per year. Frequent hospitalization impacts quality of life and cost of the disease. The annual number of hospitalizations increased from 810,000 in 1990 to 1 million in 1999. It is noted that heart failure (HF) patients are prone to readmission with reported rates as high as 50% within 6 months. In 2001, the primary cause of death for about 53,000 patients was CHF. The number of deaths from the disease is also increasing at a steady rate despite advances in treatment (Jessup et al., 2009; Rosamond et al., 2008).

Bui, Horwich, and Fonarow (2011) confirmed the number of people affected by CHF despite an increase in scientific medication to help with the disease, stating that proper management, and good discharge instructions are important aspects of controlling the disease. The frequent readmission of patients with CHF is a risk factor of increased mortality. The European Health Literacy Survey (HLS-EU) Consortium (2012), supported earlier by the US Department of Health and Human Services, and the Office of Disease Prevention and Health Promotion (2008) also identified the importance of empowering patients to understand their health information and to make decisions to control their health as part of CHF improvement. The HLS-EU research had demonstrated that lack of health literacy in most populations in Europe and the US has contributed to the undesirable outcomes of unsatisfactory self-management skills, nonadherence to medication regimen, recidivism, and emergency care utilization (HLS-EU Consortium, 2012).

Burke, Kripalani, Vasilevskis, and Schnipper (2013), mentioned that these undesirable outcomes has resulted in a reduction of the 30-day readmission as a quality indicator in the current era of our healthcare system with the major concern being the conceptualization of effective discharge of patients from acute care to the next level of care. They also pointed to communication as the major issue breaking the gap in transition. Effective communication
therefore should highlight the importance of medication reconciliation, follow-up visits to the primary care providers, and understanding of overall disease management.

It is important for health professionals to take cultural differences into consideration when giving care. Vivo, Krim, Cevik, and Witteles (2009) identified the Spanish population as being at greater risk for CHF since they are consistently affected by excessive rates of diabetes, overweight and obesity, atherogenic dyslipidemia, metabolic syndrome, and poorly controlled hypertension.

Purnell (2012) and Wilson-Stronks, Lee, Cordero, Kopp, and Galvez (2008) found the US and other European countries to be growing in more culturally diverse populations, and the worry exists that there are not enough healthcare providers capable of meeting the goals of patients who speak a language other than English. In his Joint Commission perspective on barriers to quality and safety in healthcare, Schyve (2007) used the term “triple threat” to describe the barriers to effective health communication, stating that low health literacy, cultural barriers, and limited English proficiency play a major role. Schyve also noted that nurses who provide care, education, and case management to a diverse patient population with different cultural and health literacy barriers face special challenges that set the framework for the attainment and application of health literacy skills.

In addition to language barriers, healthcare professionals are challenged with relying on nonmedical professionals or family members who lack basic medical knowledge to provide translation due to limited availability of professional interpreter services. According to the Agency for Healthcare Research and Quality (2012), nearly 57 million people, 20% of the US population, speak a language other than English, and 8.6% of this population could be categorized as having limited English proficiency (LEP), which puts them at risk for an adverse
event because of the barriers associated with their language ability. They noted that adverse events affecting low English proficiency (LEP) patients are commonly caused by communication issues that are more likely to lead to serious harm compared to English-speaking patients.

Experts have observed that language is medicine’s most essential technology and that the care of physicians and other health providers could be equated to that of a veterinarian if the language is not addressed. Communication is the core component in healthcare, and the relationship is strong between the quality of communication and patients' specific health outcome such as recovery from symptoms, pain, and vital signs (Schyve, 2007).

Vivo et al. (2009) discovered that HF continues to surge in the general US population with a related cost of nearly $30 billion, resulting from the expected increase in the Hispanic population between 2000 and 2006. The Hispanic population breeds almost four times faster (24.3%) than the total US population (6.1%). It has also been identified that Hispanics with HF are more likely to be younger and underinsured than non-Hispanic Whites. A higher rate of readmission exists among this group as well as short-term mortality rates (Vivo et al., 2009).

The major concern with HF patients is the conceptualization of effective discharge of patients from the acute care to the next level of care, where communication is a major issue that can bridge or break the gap in transition. This highlights the importance of medication reconciliation, follow-up visits to the primary care providers, and understanding of overall disease management (Burke et al., 2013).

The National Institute for Clinical Excellence (NICE; 2011) practice recommendations for patients with HF, in relation to those who do not speak English, indicated that effective communication between health professionals and patients is critical. They encouraged the management and care for patients with HF to be culturally appropriate and available for those
who do not speak or understand the English language. NICE, in its guidance, outlined that people with HF should have access to an interpreter or health advocate. The World Health Organization (WHO; 2017) also recommends that patient's requirements be considered to promote engagement in chronic health management and that care be adapted to fit an individual's first language and therefore methods be used to improve cultural competence in HF management. The use of professional interpreting services, appropriate educational materials, recruitment of ethnic minority and bilingual staff, and the training of staff in cultural competency is necessary for promoting disease self-management.

Masland, Peng, Snowden, Wallace, and Wei-Mien Lou (2011) identified that language barriers impact access to care and that individuals with LEP have trouble navigating the healthcare system and therefore tend to use fewer preventive services as well as fewer physician visits. Masland et al. determined that a language barrier leads to poor understanding of diagnosis, treatment, and medication instructions. They discovered that the loss of visual communication may reduce interpretation quality; however, they determined that the use of telephone interpretation improves the quality of care when professional interpreters are used instead of family interpreters. Mant, Al-Mohammad, Swain, and Laramée (2011). identified an association between literacy and HF patients' knowledge of self-care behavior. They revealed that patients with sufficient literacy had higher HF knowledge, better self-care, and HF quality of life level than those with low literacy, and their conclusion was that low literacy has a poor influence on HF quality of life that may lead to an increase in disease exacerbation.

Low health literacy is known to be a contributor to rates of high mortality, high rehospitalization, and poor self-management of patients with chronic disease such as HF. Patients with low health literacy have difficulty processing matters that affect disease
management that include understanding educational materials, reading appointment papers, discharge instructions, and medication labels as well as difficulties understanding oral communication from their health provider. Ninety million Americans have insufficient health literacy, leading to the inability to follow directions given in the healthcare system (Dennison et al., 2011; Gazmararian, Williams, Peel, & Baker, 2003; Mitchell, Sadikova, Jack, & Paasche-Orlow, 2012; Peterson et al., 2011).

Karliner et al. (2012) used a descriptive unadjusted analysis to indicate that LEP patients have more difficulty with scheduling appointments and less understanding of their follow-ups than their English proficiency (EP) counterparts, resulting in poor medical outcome.

Patients with LEP are less likely to know their appointment types, medication purpose and category than EP patients. This supports the conclusions by Peterson et al. (2011) on minority HF patients with limited EP hospitalized for 7 years, using a multivariable logistic regression and Cox proportional hazards regression, that low acculturation is associated with a higher risk of readmission compared to low economic status. Of the 7,023 patients they observed for 2 years in an urban hospital, the non-English speakers (Latino and Chinese) had higher readmission rates than those with low socioeconomic status.

Evidenced by the work of Hepburn (2016) on 100 low-literacy patients, found medication nonadherence to be due to the patients forgetting to take their medication. Patients with high health literacy levels were 21% more likely to adhere to their medication administration.

Two studies (Evangelista et al., 2012; Seliverstov, 2011) also identified cognitive function, limited English proficiency, and health literacy as factors for patients' medication compliance. They noted that empowered clinicians need to make efforts to address health literacy not only in HF patients but in all patients with chronic health issues. They added that all
HF patients must be evaluated for health literacy and providers should follow these four steps: (a) recognizing the consequence of low literacy, (b) screening patients at risk, (c) documenting literacy levels and learning preference, and (d) coming up with strategies to improve patients understanding.

**Problem Statement**

The language barrier that exists between Spanish-speaking patients and their English-speaking medical providers can cause ineffective communication of discharge instructions provided at the time of the patients' discharge, thus negatively affecting patient outcome. This breakdown in communication significantly increases the risk of poor self-care management and medication nonadherence among the Spanish-speaking population with CHF, resulting in increased frequency and severity of CHF exacerbation that may lead to multiple hospital readmissions. Effective education in patients’ native language with reinforcement by utilizing the Teach-Back method and phone follow-up will improve self-care and disease management for Spanish-speaking patients with CHF.

**Organizational “Gap” Analysis of the Project Site**

The project site is in a low-income community in the city of Elizabeth, New Jersey, which consists of 63.1% Spanish-speaking population, of which 38.9% are foreign born, compared to 21.6% statewide. The site is a safety-net hospital with a high readmission rate for its CHF patients—24.8%. Their emergency room sees about 200 patients a day, of which 10% are Spanish-speaking patients with HF, of whom 20% are readmitted later for HF exacerbation. The hospital has no assessment tool to stratify patients with LEP to reduce the risk of 30-day readmission. Moreover, post-discharge follow-up care to assess understanding of discharge
instructions is limited, leading to inadequate care for the patients who speak only Spanish, resulting in recidivism.

The community has a limited number of Hispanic primary care physicians (PCPs), and 50% of the Hispanic PCPs have no hospital privileges and therefore have no access to discharge records. Failure to communicate with the next healthcare provider leads to patients’ nonadherence with PCP follow-up instructions, disease management, and medication adherence. Patients are given education handouts about medicine and health conditions in Spanish, yet discharge instructions including appointment times, medication dosage and instructions, and smoking cessation are written in English. As a result, patients do have a lack of understanding about their current health conditions, preventing exacerbation and knowing whether medication has been discontinued or added.

**Review of Literature**

A systematic literature review was done using articles from the years 2000–2016 to search the effect of proper education on Spanish-speaking patients with CHF. A matrix displaying the conceptual map was used as a database. The database used Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Google, for which the key terms were *Education, CHF, Readmission, Limited English proficiency, Professional interpreters, Teach-Back Self-Management* and *Disease management*. The inclusion criteria included research articles, reports, full text and review of the abstract. The search resulted in 30 articles from CINAHL and 65 from Google. A total of 80 studies were extracted, and 40 studies relevant to the topic of interest were read in full text. Out of the 40 full-text studies reviewed, 30 were noted to have the adequate information needed for this project.
The final inclusion criteria were studies that discussed the relevance of education to CHF patients and readmission irrespective of methodology, since the discussion of readmission started less than 10 years ago. Also included were articles on the effects of transitional care models on readmissions and reports indicating CHF education gaps. The exclusion criteria were those with the word *education* but no *disease prevention* and studies published before 2007 with few citations before 2000.

The evidence was appraised using the 2016 European Society of Cardiology (ESC) Guidelines for the diagnosis and treatment of acute and chronic HF (Ponikowski et al., 2015). The AGREE II tool from Advancing the Science of Practice Guidelines (AGREE, 2016) was also used to appraise the HF guidelines. Nursing Resources Level of evidence rated Level I and validation studies rated Level II, were used, based on the randomized control trial, adequate sample size, and ultimate conclusions. These recommendations were consistent with the comprehensive literature review.

**Improving Outcome for LEP**

Immigrant populations with LEP are at higher risk for medication nonadherence because a patient’s understanding of providers’ communication is crucial to adherence (Parker, Ratzan, & Lurie, 2003). Improvement in communication among hospital providers is well documented to contribute to better health outcome, making communication an important determinant of health. Powers, Trinh, and Bosworth (2010) revealed methods for providers to identify patients whose English proficiency is limited.

**Use of Professional Interpreter**

The percentage of the US population speaking a language other than English at home rose from 23.1 million in 1980 to 57.1 million in 2009, as reported by the American Sociological
PROMOTING SELF-CARE IN SPANISH-SPEAKING CHF PATIENTS

Association (Ortman & Shin, 2011). The largest increase of that number was for Spanish speakers (increased by 24.4 million speakers). According to the 2000 US Census data, 47 million people aged 5 and over speak a language other than English at home. Of the 47 million, nearly 50% indicate that they do not speak English well and are often identified as LEP. This population may have difficulties speaking, reading, writing, or understanding the English language which can also reduce their involvement in society.

To reduce the communication problems, the national origins clause of Title VI of the Civil Rights Act of 1964 was set to protect against language discrimination (Belton, 1975; Chen, Youdelman, & Brooks, 2007). President Clinton issued Executive Order No. 13,166 on August 11, 2000, to direct each federal agency to execute a structure that would allow LEP persons to meaningfully access services provided by organizations including the healthcare setting (Reich, 1964; Rubin-Wills, 2012). When caring for a patient with LEP, the efficiency of the clinical interaction may be in danger when there is no familiar language between patient and the healthcare provider (Timmins, 2002).

Bischoff and Hudelson (2010), González, Vega, and Tarraf (2010), and Kirmayer et al., (2011) identified the use of professionally trained interpreter services to be associated with better health outcomes, indicating that patients who do not receive trained interpreter services may have increased medical tests, greater test cost, and an increased risk of hospitalization. The interpreter services also preserve the reliability of the LEP patient-physician encounter and a language barrier can adversely affect patient safety, medication compliance, adherence and patient satisfaction.

Lindholm, Hargraves, Ferguson, and Reed (2012) determined that the lengths of stay (LOS) for LEP patients are significantly longer when professional interpreters are not used at
admission or discharge. Using a 3-year multivariable regression model to explore the differences among patients who received language interpretation at admission, discharge, or both, they found out that those who did not receive professional interpretation at admission and/or discharge had an increase in LOS of between 0.75 and 1.47 days, compared to patients who had an interpreter on both admission and discharge. Patients receiving interpretation at admission and/or discharge were less likely than patients receiving no interpretation to be readmitted within 30 days. As observed by Karliner, Pérez-Stable, and Gregorich, (2017) there is a significant decrease in 30-day readmission rates for the LEP group during the 8-month intervention period of providing a professional language interpreter compared with 18 months pre-intervention (17.8% vs. 13.4%). They concluded that providing comprehensive language access is an important, high-value service that all medical facilities should provide to accomplish equitable, quality healthcare for vulnerable LEP patients.

**Benefits of Teach-Back**

Wyer et al. (2016) developed a case study to reduce readmission in CHF patients using a 3-day innovative capacity-building conference in evidence-based healthcare over a 3-year period beginning in 2009. A multidisciplinary team of health professionals applied a knowledge-to-action model to teach patients how to manage their disease with medications and lifestyle modification, and then they tracked their readmissions. They followed patients up with phone calls to assess their medication reconciliation, symptoms, and weight monitoring. The team was able to reduce the patients’ 30-day readmissions from 23.1% to 16.4%. The protocols used were patient education, medication reconciliation, and transition to community-based care. Gunadi et al. (2015) discovered that patients who are readmitted for CHF were taking 6–10 medications, adherence for which patient knowledge was required. Koh et al. (2012) identified the need for
health professionals to focus on patients' transition from the time of discharge to home by promoting understanding of disease management.

The Teach-Back method enables health professionals to identify and tackle gaps in patients’ understanding of their disease management. The method improves patients’ satisfaction because it helps to retain discharge information and medication understanding and adherence in patients with HF (Putney & Kelly, 2015). Dinh, Bonner, Clark, Ramsbotham, and Hines (2016) conducted a quality appraisal of 21 articles on the effectiveness of teaching back and found that the Teach-Back method has positive effects on outcomes. Their review revealed that Teach-Back improves outcome in disease-specific knowledge, adherence, and self-efficacy and a reduction in readmission with adherence to medication and improvement of quality of life in HF patients. Also, inadequate self-care management because of ineffective teaching and reinforcement during discharge is a reason for CHF readmission (Hwang, Moser, & Dracup, 2014).

As concluded by White, Garbez, Carroll, Brinker, and Howie-Esquivel (2013), the Teach-Back method is efficient to educate and assess HF patients' learning because it makes them retain information longer when HF-specific Teach-Back questions are used.

**Post-Discharge Follow-Up**

Krumholz (2013) acknowledged that comprehensive post-hospital discharge follow-up will reduce the stressors that contribute to vulnerability in patients, and follow-up interventions, will reduce the disruptions in sleep, reduce pain and stress, encourage and address good nutrition and nutritional deficiencies, and help to avoid confusion. Moreover, addressing gaps in patients' knowledge about the progression of chronic disease and signs of increasing acute exacerbation as well as eliminating medication error to reduce the risk of the adverse clinical outcome. A comprehensive study done by Jackson, Trygstad, DeWalt, and DuBard (2013) identified the
value of timely outpatient follow-up post-hospital discharge with face-to-face self-management and education for patients and families to fully assess and educate any clinical or social issues that might complicate the patient’s care. Good transitional education and care can strengthen patients’ responsibilities in managing their health and as such can contribute to improved outcomes.

Hibbard, Greene, and Tusler (2009) revealed that patients' activations have better health outcomes and enhanced care experiences than patients who did not have enough education about their disease. This has been identified with different racial and ethnic groups and patients with multiple chronic conditions. Also increasing patient commitment is an important aspect of reaching the "Triple Aim" of healthcare reform: better individual care, population health, and lower cost (Berwick, Nolan, & Whittington, 2009). There is also the need to encourage patients to play an active role in their disease management and to improve the effectiveness and efficiency of their care (Remmers et al., 2009). Moreover, disease self-management improves patients’ skills, confidence, and knowledge needed to manage their health (Shiverly et al., 2013; Skolasky, MacKenzie, Wegener, & Riley, 2011).

**Evidence-Based Practice: Verification of Chosen Option**

Effective education in patients’ native language with reinforcement by utilizing the Teach-Back method and follow-up will improve self-care and disease management for Spanish-speaking patients with CHF, moreover, clinical practice guidelines should be used by clinicians in the care of their patients with specific conditions and should be based on the best available up-to-date research evidence. As the communication gap widens between patients and their health providers, provision of accurate, timely, and appropriate information and communication about long-term implication of their disease may improve patients' outcome (Barry & Edgman-Levitan,
merged a one sentence paragraph2012). As confirmed by Delbanco, Gerteis, Aronson, and Park (2012), a patient-centered view of the clinician-patient relationship guideline findings on patient perceptions of communication proposes that patients request more information than they are given and that they need time to digest the information given. In summary, the guideline deduces seven dimensions to improve care as follows: respect for patient's values, care coordination, communication with providers, enhancing physical comfort, emotional support, involving family and friends, and managing care transition (Silow-Carroll, Alters, & Stepnick, 2006).

The Institute of Medicine expressed the importance of patient-centered care and quality cross-cultural communication as an important piece of improving quality in healthcare. An extensive peer-reviewed article by Karliner, Jacobs, Chen, and Mutha (2007) addressed the effect of professional medical interpreter on clinical outcomes and patient satisfaction. Using 3,698 references, they found that professional interpreters improve clinical care significantly more than do ad hoc interpreters, and that the quality of clinical care for LEP patients is improved by professional interpreters.

**Theoretical Framework**

Imogene King, in her theory of communication, used human interactions, perception, communication, role stress, time, space, growth, development, and transactions as concepts for goal attainment (King, 1992). Good communication, verbal or nonverbal, between nurses and patients is essential for the improvement of patients’ outcome (King, 1992). Therefore, this theory should be used by health providers to unify communication in a form that will benefit all ethnic groups. The Chronic Care Model (CCM; Appendix A) is an organizational approach developed for health professionals to care for patients with chronic disease in a primary care setting (Davy et al., 2015). Boyd et al. (2010) reported its effects on older people
with multiple morbidities, while Gabbay, Bailit, Mauger, Wagner, and Siminerio (2011) focused on its implementation in medical/nursing homes. The CCM also deals with the interactions provided by the healthcare team when the patient leaves the hospital. It provides supportive, evidence-based interactions between patients and their community (Rea et al., 2007).

The CCM provides a structure that helps to identify the changes across and within the health system. It helps to structure the care for patients in a systematic way to achieve a quality outcome (Speroff & O’Connor, 2004; see Appendix A). The CCM helps with the organization and improvement of patients with chronic disease. The CCM is important to reduce fragmentation of the care given to patients with chronic disease and at the same time improving health outcomes at an acceptable cost to the system. It currently has eight elements, two of which were used for this quality improvement (QI) project. Those elements are community support and self-management support to meet the needs of patients.

**Goals, Objectives, and Expected Outcomes**

The goal of the project was that the staff at the acute care hospital would always utilize the professional interpreter system when patients are being discharged. The specific intent was to (a) improve communication and bridge the language gap when discharging Spanish-speaking patients by using professional interpreter services, (b) provide the education via the Teach-Back method, assessing patients’ understanding of discharge instructions before and after Teach-Back method using the DHFKS, and (c) conduct weekly follow-up phone calls for 4 weeks to reinforce the discharge instructions. Table 1 summarizes the goals and expected outcomes of the project.
Table 1

Goals and Expected Outcomes of Quality Improvement Project

<table>
<thead>
<tr>
<th>Goals</th>
<th>Objectives</th>
<th>Outcomes</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Dutch Heart Failure Knowledge Scale (DHFKS) will be used as an educational guide to teach and assess disease comprehension.</td>
<td>The use of the DHFKS will help in the Teach-Back method.</td>
<td>The DHFKS will increase understanding of patient discharge.</td>
<td>Met</td>
</tr>
<tr>
<td>The DHFKS tool will be given to the hospital administration to review.</td>
<td>The tool, if approved, will be translated into Spanish language and sent for printing.</td>
<td>Printing will be completed and ready for distribution.</td>
<td>Met</td>
</tr>
<tr>
<td>Hospital HIPAA consent form will be used.</td>
<td>Patients will be screened with HIPAA compliance.</td>
<td>All patients involved in this project will have a signed consent.</td>
<td>Met</td>
</tr>
<tr>
<td>Staff and medical interpreters will be educated on the need to discharge all Spanish-speaking CHF patients by using the medical interpreters.</td>
<td>Staff will sign their names for proof of receiving the education. Should be completed by August 30, 2017.</td>
<td>All nursing staff will repeat back the need to use the interpreters upon discharge.</td>
<td>Partially met (all nursing staff were not available for education due to their time schedule)</td>
</tr>
<tr>
<td>All Spanish-speaking patients with CHF patients will be included in the project with the exclusion of those with end-stage disease and those who are confused and have no caregiver during the time of discharge.</td>
<td>60% of patients approached will agree to participate.</td>
<td>Patients will be able to “Teach Back” 50% of education given before discharge.</td>
<td>Met: all patients approached agreed to be part of the project</td>
</tr>
<tr>
<td>100% of these patients will receive a weekly follow-up phone call post-discharge by the DNP student to review their understanding of discharge instructions further reinforce disease management.</td>
<td>90% of patients will receive follow up phone calls. Project will be completed for write-up by February 2018.</td>
<td>Those who received professional interpreter and a follow up phone calls will have a reduction in recidivism.</td>
<td>Partially met: Project ended February 11th, and analysis started 2 months later (April)</td>
</tr>
</tbody>
</table>
Project Design

The DNP student included the Health Resources and Services Administration (2011) Quality Improvement framework with an educational evaluation design to lead a QI team in implementing a QI project aimed at improving communication and disease management for our Spanish-speaking-only CHF patients by using professional interpreter services.

Project Site and Population

This project was done in a hospital facility located in the City of Elizabeth, New Jersey, the largest city in Union County with a population of 128,640. The demographics by race are 63.1% Hispanics, 17.5% Blacks or African Americans, 14.1% Whites, 1.7% Asians, and 3.6% from another race. Spanish is the language most commonly spoken (60.7%), followed by English (25.1%), with the others being French or African languages (Elizabeth New Jersey Demographic data, 2018).

Setting Facilitators and Barriers

The main facilitator of this project was the fact that the hospital is facing Medicare and Medicaid readmission penalties, giving urgency to the need to strategize the facility’s readmission process. Also, collaborating with the physicians to help their patients become compliant with their disease and medication management made it easy to gain support from the stakeholders.

It was initially difficult to obtain the projected number of Spanish patients with CHF due to the effectiveness of prior readmission reduction programs. Also, some patients were admitted and discharged during the weekend (from Friday to Sunday), therefore they were omitted from the patient selection process. Exclusion criteria were patients who are admitted on Fridays and
could not meet the 24-to-48-hour cut-off to receive education before discharge. Moreover, staff education was not completed because the DNP student had other work obligations.

**Implementation/Procedures**

This QI project was conducted by the DNP student and a professional Spanish interpreter (PSI); a team approach was used to improve the education for these patients guided by the PDCA (Plan, Do, Check, Act) process improvement framework. The project focused on improvement of discharge instructions in patients’ own native language, and it was designed to provide a permanent effective education and instructions within the hospital system that serves a large Spanish population.

All Spanish-speaking patients with CHF admitted to the hospital had equal access to culturally and linguistically appropriate discharge instructions on quality HF management. To reduce health disparity among these patients, they were provided with a professional PSI to help them understand their disease state. This reduced poorly managed care and avoided complications associated with treatment and outpatient care.

To achieve this behavior modification, patients should be able to understand their discharge instructions. Participants were sampled according to their index diagnosis of CHF. Only Spanish-speaking patients were selected for the study, and the DHFKS educational tool (Appendix B) was translated into Spanish (Appendix C) and used on admission and discharge to assess patients’ understanding of their discharge instructions given by the professional interpreter. Also, their readmission after the intervention was compared with their previous visits to assess if a reduction exists in their readmissions. The standardized, validated questions of the DHFKS were used to assess patients’ understanding of their disease upon discharge and during home/phone follow-ups.
The Plan-Do-Check-Act (PDCA; Figure 1) is a four-step cycle that permits clinicians, industrialists, and managers to implement change, solve problems, and endlessly improve processes. The model in its cyclical nature is often used for ongoing improvement (Agency for Healthcare Research and Quality, 2017).

According to Pavletic, Pipan, and Sokovic (2010), the recurring and continuous nature of improvement is represented by the cycle referred to as the Deming circle, named after W. E. Deming. Using the PDCA cycle shows that you are continuously finding a better method of improvement. It enables both a temporary and a permanent corrective action (Pavletic et al., 2010) and was used to examine if the use of professional interpreters will affect readmissions at the project site (Safety net hospital). The cycle was used for investigating and eliminating the root causes of the readmission of Spanish patients with CHF and accordingly targets the sustainability of the improved process.

Figure 1 Plan, Do, Check, Act (University of Texas at Arlington, 2017).
Plan: CHF Spanish-speaking patients with LEP have increased readmissions due to lack of efficient communication with their healthcare providers. The main plan for this QI project was to reduce recidivism of Spanish patients with CHF using a professional interpreter at discharge.

Do: Educate patients on CHF disease management and using the DHFKS as a guide and Teach-Back method to assess patients’ knowledge base on their disease management, which includes medication adherence, diet, exercise, daily weight, and fluid consumption. The CCM was the focus of follow-up intervention, which involves: community resources, self-management support, and clinical information systems to direct the professional interpreters. The follow-up phone calls after discharge was to reinforce the disease management education. All patients were home during follow up and therefore there were no need for any community centers collaboration.

Check: Readmission of patients who receive the intervention were compared to themselves 2 months before their intervention and 2 months afterwards. To assess the process and the outcome of the QI project, the following instruments were used: the DHFKS assessment tool, the Wilcoxon signed-rank test.

Act: After project completion, the results will be presented to the hospital stakeholders and nursing research council. Clinicians will be encouraged to use professional interpreters for all LEP CHF patients on admission and discharge. The DHFKS data will be incorporated in the electronic medical record (EMR) used for all CHF patients for initial education and to assess their understanding of disease management upon discharge.
**Data Collection Procedure**

Data collection began on November 11, 2017 and ended on February 11, 2018. Patients were approached 24 to 48 hours after admission. The QI project was introduced to them for which they must consent to receive education and follow-up. Patients were educated on the CHF disease and its management using a certified PSI once or twice at the hospital. The Teach Back method was used to assess their understanding of their discharge instructions, communication with their nurse/physicians, follow-up appointments, understanding of medications, and education after discharge.

After the education, the DHFKS was used to assess patients’ understanding and then depending on their answers, they were scored on how well they did on the scale. Patients received discharge instructions with using in-person PSI and were followed up 2 days after discharge either by phone or home visits to reinforce and reassess their understanding of their discharge instructions and disease management. A total of 22 patients were recruited, one expired at the hospital, four refused home visits and had phone follow-up only, and 17 patients had both home visit and follow-up phone calls. Each patient received a phone call every week for a month and during that time, they were asked to Teach Back the education provided on their disease management using the DHFKS as a guide. The PSI was involved for all the phone calls and home visits. Patients were followed up for 2 months after the intervention. The following is the Patients’ data, plotted on an Excel spreadsheet: Age, ejection fraction, admit and discharge date, readmission dates after 2 months, hospital and/or home follow-up, number of admissions 2 months before and after the intervention, and if admitted reason for readmission.
Data Analysis

The data collected was plotted into an Excel spreadsheet, and the frequency of admissions before and after the intervention were transcribed onto an SPSS data set. The nonparametric Wilcoxon signed-rank test was run, comparing the number of hospital admissions within 2 months after the Teach-Back intervention for each patient to the number of admissions 2 months before the intervention. Descriptive and inferential statistics were calculated using SPSS. Statistical tests were considered significant at an alpha level of .05. The rest of the variables were analyzed using the results produced by the Excel spreadsheet.

Results

Clear communication of discharge instructions becomes especially important when language differences exist between patients and health care providers. Therefore, the population of interest for this QI project was Spanish-speaking individuals suffering from CHF.

Twenty-two Spanish-speaking CHF patients were recruited from an acute care facility in Elizabeth, New Jersey. During discharge, participants were educated via a PSI using the DHFKS as a Teach-Back method.

A total of 22 participants were screened in the initial data collection with this project education and Teach-Back; however, due to time needed for completion to meet the timeline, three participants were excluded from the statistical analysis. Out of the 19 participants, 21.05% were females and 78.95% were males. The participants mean age was 69.5 with the youngest being 30 years old and the oldest 86 years old. They had good knowledge about their disease management with their mean Teach-Back percentage of 90.33%, with the highest percentage being 100% and the lowest percentage of 80%. Participants also had variable ejection fractions
which determined the extent of their disease progression, with mean ejection fraction of 47.63%, lowest being 25% and the highest at 70% (Table 2).

Table 2  *Descriptive Statistics of the Data*

<table>
<thead>
<tr>
<th>Descriptive Statistics of the Data</th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
</tr>
<tr>
<td>Number of admissions before PSI and Teach-</td>
<td>19</td>
<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.2632</td>
</tr>
<tr>
<td>Back intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of admissions after PSI and Teach-</td>
<td>19</td>
<td>1.00</td>
<td>.00</td>
<td>1.00</td>
<td>.2105</td>
</tr>
<tr>
<td>Back intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>19</td>
<td>56.00</td>
<td>30.00</td>
<td>86.00</td>
<td>69.5263</td>
</tr>
<tr>
<td>Ejection Fraction</td>
<td>19</td>
<td>45.00</td>
<td>25.00</td>
<td>70.00</td>
<td>47.6316</td>
</tr>
<tr>
<td>Teach-Back</td>
<td>19</td>
<td>20</td>
<td>80</td>
<td>100</td>
<td>90.33</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All 19 participants (100%) were educated using a PSI in the hospital prior to discharge; however, 78.95% received further education at home for reinforcement. The 21.05% who did not receive home visits post discharge either refused or asked to be interviewed over the phone. All participants received the DHFKS assessment tool as a Teach-Back tool to assess their understanding of their discharge and disease management. Follow-up was done irrespective of their Teach-Back scores. The DHFKS had 15 questions with three multiple choices for each question. Patients were asked to choose the best answer from the choices, and their final answers were scored in percentage. Due to reading level below high school, most patients heard the
questions via the PSI and had to verbalize their answers. The Teach-Back percentages were scored by dividing the number of answers scored right by the total number of questions.

The Wilcoxon signed-rank test was calculated to compare hospital readmission rates of Spanish-speaking CHF patients 2 months before and 2 months after being educated by healthcare providers with the PSI using the DHFKS as the Teach-Back method.

Results of the Wilcoxon signed-rank test showed that the PSI and Teach-Back intervention did significantly lower the number of hospital admissions of Spanish-speaking CHF patients ($Z = -3.879$, $p < 0.001$) (see Appendix D). Patients had significantly fewer hospital admissions within 2 months after the intervention compared to 2 months before the intervention (Tables 3 and 4, presented graphically in Figures 2 and 3).

Table 3

<table>
<thead>
<tr>
<th>Number of hospital admissions</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>73.7</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4

<table>
<thead>
<tr>
<th>Number of hospital admissions</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
<td>78.9</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>21.1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 2 *Number of hospital admissions 2 months before PSI intervention*

Figure 3 *Number of hospital admissions 2 months after PSI intervention*
Interpretation/Discussion

Results of the Wilcoxon signed-rank test indicated that hospital admissions 2 months after the intervention were significantly lower compared to hospital readmissions before the intervention. These results designate that using a PSI for educating patients regarding discharge, after-care, and management of CHF may reduce their hospital readmission rate. Being that the hospital has one of the highest readmission rates of CHF patients and is in a highly populated Hispanic environment, this project will be of great benefit to their readmission prevention. The literature reveals that communication is the key for CHF management; however, when these patients are not being educated in their native language there will be no understanding of how to manage their disease once home.

In addition, discharge instructions are partially written in Spanish. Yet since most of these patients read below high school level, it was difficult for them to follow the written instructions given to them when they get home, making it difficult for them to manage their diseases or to make a follow-up appointment with their provider 1 week after discharge. Since there were no set times for discharging patients, the efforts made to complete this project were not to limit the education only while they are admitted but also to make a home or phone follow-up visit to cover the second reinforcement of the DHFKS. With the DHFKS the education became more focused and directed toward the management of CHF.

Using the DHFKS was cost effective and easy to administer since it is only 15 questions and was administered by the interpreters, which assured that patients understood enough to pick the right answers. Moreover, post-discharge disease management is billable and is reimbursed by patient’s insurance not to mention the reduction in readmission penalties for the hospital when patients are able to manage their disease at home to prevent recidivism. The Teach-Back method
used to educate patients is a means of making sure that patient understands their discharge instructions. In addition, there was a significant reduction in the frequency of readmission of the patients used for this project and statistically significant ($P = <0.001$)

To my knowledge, the DHFKS is not being used by most hospitals even though studies have documented its validity and reliability to CHF patients. Martie, Van der Wal, Jaarsma, Moser, and Veldhuisen (2005) tested the validity and construct validity in 19 hospitals in the Netherlands and were able to differentiate between the HF patients with high and low levels of HF knowledge. Using 902 patients, and the Cronbach’s alpha knowledge scale enabled the researchers to conclude that the DHFKS is a valid and reliable scale that can be used to improve the education of HF patients. They identify the tool as valid and reliable when used in a clinical setting to measure patients’ knowledge about their HF.

As for this QI project, the DHFKS was used as a tool for patients to understand their heart failure management. This project also indicated that when patients understand and can manage their disease, their readmissions will be reduced. White, Garbez, Carroll, Brinker, and Howie-Esquivel (2013), in their prospective study design over a 13-month period of 276 patients hospitalized for HF, used the Teach-Back method for educating and evaluating the patients during pre- and post-discharge. They concluded that there was a significant reduction in readmission of HF ($p = 0.15$) patients compared with all-cause readmission ($p = 0.775$). They concluded that the Teach-Back method is an effective method to educate and assess learning.

This demonstrates the usefulness of the Teach-Back method to increase patients’ knowledge and adherence to their disease management as discussed by Negarandeh, Mahmoodi, Noktehdan, Heshmat, and Shakibazadeh (2013), in their randomized control trial on 127 patients with diabetes they explore the impact of pictorial image and Teach-Back educational strategies
on knowledge, adherence to medication and diet with type 2 diabetes and low health literacy. After patients were educated for 20 minutes within three-week sessions, using the Teach-Back method, they identified that increased patients’ knowledge helps them to adhere to their medications and diet. Using the Anova and paired t-test, they found a significant difference between the intervention and control group (p < 0.001).

The result of this QI study confirms the above research study on the effectiveness of Teach-Back and chronic disease management, showing a significant decrease in readmission (p = .001) using the DHFKS as a method to improve patients’ knowledge about chronic disease management. Much progress has been made at the facility for nurses to use the Teach-Back method during patient education; however, it is very important to make sure that all patients have maximum understanding of the education being given.

**Cost-Benefit Analysis/Budget**

No cost was involved in the training of the professional interpreters since the hospital already has certified trained Spanish interpreters. The DHFKS printout, office supplies, data collection, and analysis, time spent for education and readmission team meeting were the costs incurred. There was no purchase of new hardware or software since the hospital’s existing EMR was used for data storage; therefore, there was no capital investment.

**Materials**

Patient educational material $ 1.25 x 100 = $125.

Total Expenses: $125.

**Estimated Cost Savings**

Table 5

*Estimated Cost and Savings*
### Project Component

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The cost of one readmission reported by the AHRQ, 2011</td>
<td>$13,333.33</td>
</tr>
<tr>
<td>2. Readmission reduction by 10 patients</td>
<td>$133,333.30</td>
</tr>
<tr>
<td>3. Return of Investment</td>
<td>$133,333.30</td>
</tr>
<tr>
<td>4. Total expenses</td>
<td>$125</td>
</tr>
<tr>
<td>5. Total Saved</td>
<td>$133,208.30</td>
</tr>
</tbody>
</table>

### Benefits

The benefit without a dollar value to the health system is the health of their patients and families, patient satisfaction and better communication with community primary care providers. With the readmission prevention, patients get healthier and establish a good relationship with their primary care providers. Patient having access to their own personal health records reduces time spent with their health providers, and caregivers could go back to work knowing that their loved one could manage at home. Also, mortality for patients decreases because of increase in medication adherence and disease management.

The low readmission rate for care transition for discharged patients will also indicate they are helping to avoid the deterioration of patients' health status. Improving hospital quality performance increases overall savings and increases patient satisfaction scores.

### Ethical Considerations/Protection of Human Subjects

The University of Massachusetts, Amherst (UMass) Internal Review Board (IRB) approval was obtained prior to initiating the DNP project. The official IRB determination form was submitted as soon as the proposal was approved (Appendix E). All participants were protected by the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which, among other guarantees, protects the privacy of patients’ health information (Rothstein 2013; US
Department of Health and Human Services, 2013). Participants were coded using identification numbers with no name and no date of birth attached, and all data collection were placed in the secured locker of the DNP student's office at the hospital being used for the project. The determination of human subject research form is attached as Appendix F.

Additionally, the project was conducted by following the standard of care practice as required by the Joint Commission accreditation and the hospital's policy. All information that was collected as part of evaluating was kept confidential, and no potential patient identifier was used. The risk to patients participating in this project was not different from the risk they are currently receiving under the care of the participating hospital. The list of participants and their identifying numbers was kept in locked filing cabinets at the DNP student's office accessible only to her. All electronic files containing identifiable information was protected with a password to prevent access by unauthorized users, to which only the DNP student will have access.

**Conclusion**

Professional interpreter services are an essential communication tool for healthcare providers who deal with patients who have poor understanding of the English language. Karliner et al. validated with their 2007 study that cross-cultural communication improves healthcare quality and recommended that healthcare providers must ensure communication by using professional interpreters when needed. This project aimed to demonstrate the importance of using the interpreter services and the Teach-Back method to help patients’ understanding of their chronic disease and how to manage it. In doing so, it is expected to reduce hospitalization and readmissions for this CHF population. This project distinctly demonstrated that the DHFKS provides consistency in HF education and ensures the same educational direction throughout the
hospital setting. The effectiveness of the DHFKS among patients who speak only Spanish is dependent on how well they understand the benefit in their CHF management. Hence, the nursing staff is encouraged to provide professional interpreters to minimize the language barrier experienced by this patient population. Moreover, the literature indicates that when patients have a clear understanding about their disease effect and management, compliance is increased and maintained and leads to better outcome (Bischoff & Hudelson, 2010; González, Vega, & Tarraf, 2010; Karlner et al., 2007; Kirmayer et al., 2011).

Healthcare providers must be aware of the barriers created by ineffective communication and how they can pose a threat to patients’ health outcomes. The Hispanic community that speaks Spanish only is a rapidly growing population and may become particularly vulnerable because of their language barrier. Hence the need exists to ensure that these patients understand their HF illness and management. To reduce recidivism, it is important to provide patients whose native language is not English and who have low health literacy with tools to understand and manage their chronic cardiac disease. A professional interpreter should be made accessible to decrease adverse events such as medication error and frequent emergency room visits and admissions that can pose a significant financial burden on our healthcare system. Effective clinical communication will also enable patients to obtain easier access to quality healthcare, improve clinical outcomes, and reduce cost.

It is imperative for healthcare practitioners to assess patients’ understanding through questions and answers by adopting the Teach-Back method. The need also exists to streamline patients’ education based on their proficiency with reading, health literacy, comprehension, and cultural needs. Simple and effective tools are needed for providing patient education. These tools should be designed for all ages, races, educational and socioeconomic levels and implemented as
part of the hospital culture. This QI project showed that continuity and consistency in education with the use of professional interpreter services in this community after discharge with follow-up home visits and phone calls improved their outcome and reduced their hospital readmission events.

To my knowledge, evaluating the Spanish interpreter system in a pre- and posttest design using a comprehensive approach has not been defined in the literature. However, studies support the use and benefits of its use in the Spanish-speaking community. It may also be important for future studies to test longitudinal tracking of its effectiveness on this population in preventing readmission and hospitalization over time. Moreover, I believe this work will justify the future development of a larger trial performed in a randomized fashion to further assess the benefits of the professional interpreter system in this community.

Using a PSI at this facility will improve patient healthcare quality, the rate of readmission and patient’s satisfaction. It is therefore imperative that the hospital replicate this QI project by using a large sample of Spanish-speaking patients with chronic disease. Stakeholders should involve clinical coordinators, nurse managers, and staff nurses to lead the project. They must train more Spanish interpreters and get more interns from the nursing schools to volunteer with the follow-up phone calls. This could be done by consulting the DNP student to facilitate and provide guidance for the project completion and Publication.
References


“Teach-Back” and pictorial image educational strategies on knowledge about diabetes and medication/dietary adherence among low health literate patients with type 2 diabetes. Primary Care Diabetes, 7(2) 111–118.


Appendix A

Elements of the Chronic Care Model

1. Facilitated community support (CS) to meet the needs of patients
2. Facilitated unpaid/informal family support (FS) to meet the needs of patients
3. Self-management support (SMS) to meet the needs of patients
4. Health system (HS) improvement to meet the needs of healthcare providers
5. Delivery system design (DSD) to meet the needs of healthcare providers
6. Enhanced healthcare professional case management (CM) support to meet the needs of patients
7. Decision support (DS) to meet the needs of healthcare providers
8. Clinical information systems (CIS) to meet the needs of healthcare providers

(Davy et al., 2015).
### Appendix B

**Patient Educational Tool: The Dutch Heart Failure Knowledge Scale**

(Moser, Van Velddhuisen, & Van der Wal, 2005)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How often should patients with severe heart failure weigh themselves?</td>
</tr>
<tr>
<td></td>
<td>□ every week</td>
</tr>
<tr>
<td></td>
<td>□ now and then</td>
</tr>
<tr>
<td></td>
<td>□ every day</td>
</tr>
<tr>
<td>2</td>
<td>Why is it important that patients with heart failure should weigh themselves regularly?</td>
</tr>
<tr>
<td></td>
<td>□ Because many patients with heart failure have a poor appetite</td>
</tr>
<tr>
<td></td>
<td>□ To check whether the body is retaining fluid</td>
</tr>
<tr>
<td></td>
<td>□ To assess the right dose of medicines</td>
</tr>
<tr>
<td>3</td>
<td>How much fluid are you allowed to take at home each day?</td>
</tr>
<tr>
<td></td>
<td>□ 1.5 to 2.5 liters at the most</td>
</tr>
<tr>
<td></td>
<td>□ As little fluid as possible</td>
</tr>
<tr>
<td></td>
<td>□ As much fluid as possible</td>
</tr>
<tr>
<td>4</td>
<td>Which of these statements is true?</td>
</tr>
<tr>
<td></td>
<td>□ When I cough a lot, it is better not to take my heart failure medication</td>
</tr>
<tr>
<td></td>
<td>□ When I am feeling better, I can stop taking my medication for heart failure</td>
</tr>
<tr>
<td></td>
<td>□ It is important that I take my heart failure medication regularly</td>
</tr>
</tbody>
</table>
5 What is the best thing to do in case of increased shortness of breath or swollen legs?
- Call the doctor or the nurse
- Wait until the next checkup
- Take less medication

6 What can cause a rapid worsening of heart failure symptoms?
- A high-fat diet
- A cold or the flu
- Lack of exercise

7 What does heart failure mean?
- That the heart is unable to pump enough blood around the body
- That someone is not getting enough exercise and is in poor condition
- That there is a blood clot in the blood vessels of the heart

8 Why can the legs swell up when you have heart failure?
- Because the valves in the blood vessels in the legs do not function properly
- Because the muscles in the legs are not getting enough oxygen
- Because of accumulation of fluid in the legs

9 What is the function of the heart?
- To absorb nutrients from the blood
- To pump blood around the body
- To provide the blood with oxygen
10 Why should someone with heart failure follow a low-salt diet?
   - Salt promotes fluid retention
   - Salt causes constriction of the blood vessels
   - Salt increases the heart rate

11 What are the main causes of heart failure?
   - A myocardial infarction and high blood pressure
   - Lung problems and allergy
   - Obesity and diabetes

12 Which statement about exercise for people with heart failure is true?
   - It is important to exercise as little as possible at home to relieve the heart
   - It is important to exercise at home and to rest regularly between
   - It is important to exercise as much as possible at home

13 Why are water pills prescribed to someone with heart failure?
   - To lower the blood pressure
   - To prevent fluid retention in the body
   - Because then they can drink more

14 Which statement about weight increase and heart failure is true?
   - An increase of over 2 kilograms in 2 or 3 days should be reported to the doctor at the next checkup
   - In case of an increase of over 2 kilograms in 2 or 3 days, you should contact your doctor or nurse
   - In case of an increase of over 2 kilograms in 2 or days, you should eat less
15 What is the best thing to do when you are thirsty?

- Suck an ice cube
- Suck a lozenge
- Drink a lot
Appendix C

Spanish Translation of DHFKS

Questionario Del Paciente

1. Con qué frecuencia deben los pacientes con insuficiencia cardíaca tomar su peso?
   - cada semana
   - de vez en cuando
   - cada día

2. Por qué es importante que los pacientes con insuficiencia cardíaca se deben pesar regularmente?
   - porque muchos pacientes con insuficiencia cardíaca tienen una falta de apetito
   - para comprobar si el cuerpo está reteniendo líquido
   - para evaluar el derecho de dosis de medicamentos son

3. Cuánto líquido puedes tomar en casa cada día?
   - 1,5 a 2,5 litros lo máximo
   - como poco líquido como sea posible
   - como mucho líquido como sea posible

4. Cuál de estas afirmaciones es verdadera?
   - cuando toso mucho, es mejor no tomar mis medicamentos de la insuficiencia cardíaca
   - cuando me siento mejor, puedo dejar de tomar mi medicamento para la insuficiencia cardíaca
   - es importante tomar mi medicamento para insuficiencia cardíaca regularmente

5. Cuál es la mejor cosa que hacer en caso de mayor dificultad para respirar o hinchazón de las piernas?
   - Llame al médico o la enfermera
   - Espera hasta la siguiente cita
   - Tomar menos medicament
6. ¿Qué puede causar un rápido empeoramiento de los síntomas de insuficiencia cardíaca?
   ● un alto contenido de grasa de la dieta
   ● un resfriado o la gripe
   ● la falta de ejercicio

7. ¿Qué es la insuficiencia cardíaca?
   ● que el corazón es incapaz de bombear suficiente sangre alrededor del cuerpo
   ● que alguien no está haciendo suficiente ejercicio y está en mal estado
   ● que hay un coágulo de sangre en los vasos sanguíneos del corazón

8. Por qué pueden las piernas se hinchar para arriba cuando usted tiene insuficiencia cardíaca?
   ● porque las válvulas en los vasos sanguíneos en las piernas no funcionan correctamente
   ● porque los músculos de las piernas no reciben suficiente oxígeno
   ● debido a la acumulación de líquido en las piernas

9. ¿Cuál es la función del corazón?
   ● para absorber los nutrientes de la sangre
   ● para bombear la sangre alrededor del cuerpo
   ● para proporcionar oxígeno a la sangre

10. Por qué alguien con insuficiencia cardíaca debe seguir una dieta baja en sal?
    ● sal promueve la retención de líquidos
    ● sal causa constrictión de los vasos sanguíneos
    ● sal aumenta la frecuencia cardíaca

11. Cuáles son las principales causas de la insuficiencia cardíaca?
    ● un infarto de miocardio y problemas de hipertensión
    ● arterial pulmonar y alergias
    ● obesidad y diabetes
12. ¿Qué afirmación sobre ejercicio para personas con insuficiencia cardíaca es cierto?

- es importante ejercer lo menos posible en casa con el fin de aliviar el corazón
- es importante tener en casa y descansar regularmente entre
- es importante tener lo más posible en casa

13. Por qué se prescriben diuréticos para alguien con insuficiencia cardiaca?

- para bajar la presión arterial
- para evitar la retención de líquidos en el cuerpo
- porque luego se puede beber más

14. ¿Qué afirmación sobre el aumento de peso y la insuficiencia cardíaca es cierto?

- un aumento de más de 2 kilos en 2 o 3 días debe ser reportado al médico en el próximo chequeo
- en caso de un aumento de más de 2 kilos en 2 o 3 días, debe comunicarse con su médico o enfermera
- en caso de un aumento de más de 2 kilos en 2 o en días, usted debe comer menos

15. ¿Qué es lo mejor que puede hacer cuando tienes sed?

- Chupar un cubito de hielo
- chupar una pastilla
- beber mucho
**Appendix D**

**Wilcoxon Signed-Rank Test Results**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative Ranks</strong></td>
<td>17</td>
<td>9.00</td>
<td>153.00</td>
</tr>
<tr>
<td><strong>Positive Ranks</strong></td>
<td>0</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Ties</strong></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Number of admissions after the Teach-Back intervention < Number of admissions before the Teach-Back intervention

b. Number of admissions after the Teach-Back intervention > Number of admissions before the Teach-Back intervention

c. Number of admissions after the Teach-Back intervention = Number of admissions before the Teach-Back intervention

**Test Statistics**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-3.879b</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed-Rank Test

b. Based on positive ranks.
### Hypothesis Test Summary

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median of differences between related-Number of admissions before the Teach-Back intervention and Number of admissions after the Teach-Back intervention equals 0.0</td>
<td>Wilcoxon Signed Rank</td>
<td>0.00</td>
<td>Reject the null hypothesis.</td>
</tr>
</tbody>
</table>

Asymptotic significances are displayed. The significance level is .05.
Appendix E
IRB Approval Letter

October 9, 2017

Lucy Ankrah MA, MSN, APN-BC
Doctor of Nursing Practice (DNP) Student
University of Massachusetts Amherst

RE: Using a Professional Language Interpreter during Discharge to promote Self-Care Management for Spanish-Speaking Patients with Congestive Heart Failure (CHF): A Quality Improvement Project

Dear Ms. Ankrah,

I have reviewed your proposal to conduct a research study at Trinitas Regional Medical Center (TRMC), titled, "Using a Professional Language Interpreter during Discharge to promote Self-Care Management for Spanish-Speaking Patients with Congestive Heart Failure (CHF): A Quality Improvement Project." The Principal Investigator for this study has been identified as you, Lucy Ankrah, who will be working under the direction of Diane Rees as your Study Supervisor, and the assistance of Mary McTigue, MSN, RN, and Vice President/Patient Care Services/Chief Nursing Officer.

Your submission states the purpose of the study is to improve self-care management in Spanish speaking patients with Congestive Heart Failure and intended to reduce readmission in this population.

The subjects will be selected anonymously, while ensuring the HIPPA policy is followed. You are requesting to recruit Spanish Patients admitted with Congestive Heart Failure, educate them twice before discharge and follow up with four weekly phone calls after discharge.

I have done an expedited review and grant approval from October 9, 2017 – October 9, 2018. If the study and analysis extends beyond this period, you must contact the TRMC IRB in advance to request an extension. The TRMC IRB also requests a copy of your final results for our records.

Respectfully,

[Signature]

William McHugh, MD
Institutional Review Board
Appendix F

Key Stakeholder Commitment Letter

October 16, 2017

To Whom It May Concern

I am writing this letter on behalf of Lucy Ankrah your student who is in her final year of the DNP Program. My name is Mary McClure and I am the VP, Patient Care Services and Chief Nursing Officer at Trinitas Regional Medical Center and would like to acknowledge the support of Ms. Ankrah’s Quality Improvement Project.

Ms. Ankrah’s QI project entitled: Using a professional language interpreter during discharge to promote self-care management for Spanish-speaking patients with Congestive Heart Failure (CHF) has already received an IRB review and approval from Trinitas Regional Medical Center. We are glad to inform you that we will collaborate with and support Ms. Ankrah fully with her project in order to meet the high standard of our healthcare environment.

This letter serves as a "Key Stakeholder” commitment letter for Mrs. Ankrah to use in her Capstone Scholarly Project Proposal.

Mary McClure, RN, MA, CENP
VP, Patient Care Services & Chief Nursing Officer
Trinitas Regional Medical Center

Lucy Ankrah
DNP Student