Heart Failure Readmissions

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Doctor of Nursing Practice

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Abstract

Background: Heart failure (HF) is a chronic and debilitating disease affecting nearly 6.6 million people, and it has the highest number of hospitalizations in the United States for individuals over the age of 65 years. Cardiac rehabilitation is a well-documented evidence-based intervention for patients with chronic heart diseases. Enrollment into a cardiac rehabilitation would reinforce teaching about heart failure, inclusive of medication reconciliation, symptom management, and all other components to improve quality of life. The evidence to be duplicated is that enrollment in a cardiac rehabilitation can prevent readmissions by enhancing the patient/family's retention and understanding of heart failure instructions that include symptom management, diet, exercise and medication reconciliation, resulting in fewer hospital readmissions leading to better health outcomes for patients; however, cardiac rehabilitations is grossly underutilized in primary care. Providers face many barriers which cause this gap between the evidence and clinical practice, such as a lack of understanding of the cardiac rehabilitation programs and the process for referral.

Conclusion: This DNP project indicated that there was need for education regarding the importance of CR discussions and referral to improve patient outcomes. Participants' knowledge and understanding of CR was associated with increase in CR discussions and referrals. Comparison of the pre and post-educational session was done. The pre-intervention questionnaire showed an average mean response of 2.6 and a post-intervention questionnaire showed an average mean response of 4.7.

Keywords: Cardiac rehabilitation, provider education, heart failure and quality improvement.

Heart Failure Readmissions

Introduction

According to Butler and Kalogeropoulos (2012), caring for heart failure (HF) patients is very costly and complex to healthcare organization. HF affects nearly 6.6 million people, and it has the highest number of hospitalizations in the United States for individuals over the age of 65 years. According to Ker (2017), heart failure is a global problem with an estimated 38 million people worldwide with a diagnosis of heart failure. As noted by Ker (2017), due to changes in lifestyle heart failure is also increasing in low- and medium-income countries. This is believed to be related to changes in lifestyle which favor the development of obesity, hypertension and diabetes mellitus. In addition, there is an estimated annual individual cost of more than $8000 (Smith et al., 2010). In the United States of America heart failure (HF) is one of the leading causes of readmission to the hospital and is linked to high rates of mortality and morbidity (Butler and Kalogeropoulos, 2012). According to Smith et al. (2010), HF is the leading cause of readmission among Medicare patients with a diagnosis of HF is one in almost every five Medicare readmissions. As stated by Smith et al. (2010), HF is common in people aged 65 years and older who have a higher chance of having other co-morbidities that are more likely to complicate this condition. In addition, an increase in the number of baby boomers reaching age 65 is likely to see a proportional increase in the number of patients diagnosed with HF (Smith et al., 2010).

In an era that organizations are making changes to reduce health care cost, it is of paramount importance for organizations to find ways to improve patient outcomes and reduce heart failure related costs. According to Shulan, Gao, & Moore (2013), the United States

government has increasingly encouraged hospitals to reduce preventable readmissions with the objective of improving healthcare quality and reducing costs that are associated with HF.

HF is one of the leading causes of readmissions that could possibly be reduced by the utilization of cardiac rehabilitation (Bell, 2009). As stated by Smith et al. (2010), hospitals sometimes due to time restrains often provide only general information about HF to discharge patients. In addition, hospital patient discharges may not be individualized to the patient's needs. According to (Meshgin, 2008), the literature suggested that readmission rates are high within the six months period after being discharged home from the hospital. The rate of HF readmission continues to be high despite the nurses providing HF education in hospital settings before discharge (Jacobs, 2011). HF patients need to be educated and coordinated so that care can be continued after being discharged from the hospital.

A possible strategy that will benefit HF patients is the inclusion of education and care coordination following discharge from the hospital as part of the organization's protocol for HF (Dunlay, Witt, Allison, Hayes, Weston et al., 2009). The literature strongly suggested that cardiac rehabilitation is a clinically important component in assisting in the self-care of HF. A cardiac rehabilitation program will provide the patients with needed guidance towards the goal of gaining independence in disease management and prevention of readmission. According to Conway (2015), patients often lack the motivation to exercise or monitor symptoms and health related measurements. Cardiac rehabilitation plays a significant role in management of HF patients with the goal to reduce readmissions and improve patient outcomes (Conway, 2015). HF is a complex disease and has an economic impact due to frequent readmissions and management of the disease (Dunlay et al., 2009). According to Bowers (2013), there are different strategies

such as disease management programs with a focus on cardiac rehabilitation and patient education which have been widely used to reduce the risk of patient readmissions.

Background

HF is a progressive complex disease; there is significant research that demonstrates that there is improvement of outcomes when HF patients are enrolled in cardiac rehabilitation. HF is characterized by deficiencies in which and the heart is unable to pump blood that is sufficient to meet the requirements of the body (Hobbs, 2016). The organs then fight to conserve fluid to correct the deficit as a result the body ends up with fluid accumulating in the legs, lungs, around the eyes and liver. An individual with HF will exhibit signs and symptoms that include a cough that is persistent, shortness of breath, edema, nausea, confusion, increased heart rate and fatigue (American Heart Association [AHA], 2010). As stated by the AHA (2010), HF is a chronic disease that is progressive in nature and cannot be cured, but there is treatment regimen that can be used to preserve heart functions and for the management of symptoms. There are different regimens for treatment of HF that includes management by pharmaceuticals, surgical procedures, lifestyle changes, and implantable devices (AHA, 2010).

Problem Statement

Healthcare organizations are in an era where there is tremendous pressure to reduce health care costs. Hospital readmissions are costly to organizations and HF is one of the leading causes of readmissions (Butler and Kalogeropoulos, 2012). Despite medical advances, HF continues to be a progressive chronic condition that is costly to organizations and management of symptoms to prevent readmission is paramount (Meshgin, 2008).

According to Inouye et al. (2015), approximately 550,000 new diagnoses of HF are made each year in the United States. There are notable improvements that have been made in the

treatment of patients diagnosed with HF. As stated by Inouye et al. (2015), the national average rate of hospital readmissions of patients with HF remains stagnant, with approximately one in four patients readmitted within 30 days of discharge. According to Centrella-Nigro (2016), patients with HF are often discharged with a variety of medications and lacking an understanding of medication regimen. This issue is one of the factors that causes readmissions for HF. This proposed project will be using evidence-based practice to develop a protocol which uses strategies such as cardiac rehabilitation referrals as one way to reduce readmissions. Heart failure continues to affect the older population due to the complexity of the disease and poor self-management of symptoms.

The underlying problem contributing to a high readmission rate among HF patients is the lack of referrals and transition to cardiac rehabilitation (Hobbs, 2016). According to Degavi and Bhupali (2015), cardiac rehabilitation has been used in numerous research studies and there was significant improvement in self-care behaviors, better knowledge of the disease and there was an overall reduction in readmissions in comparison to patients that did not participate in a cardiac rehabilitation program. There are also some problems with cardiac rehabilitation. Most classes are usually done in group sessions and at times there is limited resources and availability of sessions. There are barriers to accessing cardiac rehabilitation such as geographical location, assess to transportation to get to classes and some patients were denied coverage by their health insurance carrier (Degavi & Bhupali, 2015).

Purpose Statement

The aim of this Doctor of Nursing Practice (DNP) project is to develop a protocol to use in a clinic setting among office staff and providers to determine referral rates, patient follow through, and 30-day readmission rates.

Project Objectives

The objectives for this project will be: 1) Identify evidence-based information that will be included in the protocol for heart failure patients; 2) To present the evidence-based protocol to key stakeholders for review and approval of use in the clinic; 3) To identify cardiac rehabilitation referrals before the use of a protocol; 4) To implement the HF protocol within the clinic and monitor the cardiac rehabilitation referrals; 5) To evaluate the cardiac rehabilitation referrals post implementation of the protocol.

Project Question

The question that will be answered by this project: will a procedural protocol (I) improve the number of referrals in HF patients (O) in a clinic setting (P) over a period of three months (T).

Review of the Literature

A comprehensive search of HF, cardiac rehabilitation (CR), and HF education was completed using the ProQuest, Medline, Cochrane, and EBSCOhost and Cumulative Index of Nursing and Allied Health Literature (CINAHL). The Medical Subject Headings (MeSH) used were “cardiac rehabilitation” and “access,” or “provider education” and “heart failure readmission” These searches yielded 220 results and the results were then narrowed to include articles that have been published between the year 2008 to 2017, academic journals that were written in English and were available in full text. This also included articles that did not elaborate on the successful implementation of HF management based on current or past evidence-based practice. Those articles were excluded from this project literature review. This reduced the number of articles to 80, in which included 15 articles on the topics of CR barriers and access, and nine articles were noted to discuss interventions. To increase the number of

publications on these topics a more generalized search was completed using MeSH terms of "compliance to guidelines" and "intervention." This yielded an excess of 2000 articles that were narrowed down to 1,104 using the limiters. After applying the MeSH term "provider education" that drastically reduced the number of articles to 10 articles. Titles and abstracts from the articles were then reviewed and included if they identified barriers or were investigating the number of referrals and access of heart failure patients to CR. In addition, articles that showed improved adherence to intervention guidelines by provider and staff towards a chronic condition with similar barriers such as heart failure. This resulted in a total of five research studies using this criterion. The Johns Hopkins Nursing Evidence-based Practice Rating Scale was used to further scrutinize the results.

Results of Literature Reviewed

Heart failure rehabilitation has proved to be effective in reducing readmissions and improving patient outcomes, yet the rate of referral and provider education among primary care clinics continues to be low with very little understanding of cardiac rehabilitation (Conway, 2015; Centrella-Nigro, 2016; Degavi & Bhupali, 2015; Dunlay et al., 2009; Johnston et al., 2013; Meshgin, 2008). Insufficient knowledge of the referral process was reported as one of the reasons why healthcare providers and staff had low referral rates to cardiac rehabilitation (Degavi & Bhupali, 2015). The study by Degavi & Bhupali (2015), on knowledge regarding cardiac rehabilitation among staff was done at the Heart foundation of KLE's Dr. Prabhakar Kore Hospital and MRC, Belgaum. This study assessed the knowledge of staff regarding (CR), evaluated the effectiveness of planned teaching program on knowledge regarding (CR) among staff. In addition, the study was done to find an association between the pre-test knowledge scores regarding CR with selected socio-demographic variables among staff nurses working in

ICCU of Heart foundation of KLE's Dr. Prabhakar Kore Hospital and MRC, Belgaum. The study by Degavi & Bhupali (2015), used the conceptual framework method that was based on Ernestine Wiedenbach's helping art of clinical nursing theory. The study showed that planned teaching programme (PTP) is an effective teaching strategy that led to improved knowledge regarding cardiac rehabilitation among staff nurses by comparing the pre-test and the post-test after the intervention. The study demonstrated that referral to CR was demonstrated to be provider awareness of accesses and benefits.

In a study by (Meshgin, 2008), there is a positive relationship between cardiac rehabilitation knowledge and CR referrals. There are studies that have been done to find ways to improve the rate of referral of heart failure patients to CR. According to Meshgin (2008), several studies found that heart failure patients that participated in CR had a very low risk of being readmitted within 30-days of being discharged from the hospital. In a quality, experimental study that was done by Meshgin (2008), randomized enrollment of cardiac and cardiac surgical patients to enroll or not to enroll in cardiac rehabilitation programs. In this study 308 cardiac patients enrolled 110 were in the treatment group, and 198 were in the control group. All 110 patients in the treatment group participated in cardiac rehabilitation and 198 in the control group did not participate in CR program. In a year period, six percent of patients in the CR program were readmitted in comparison to 19% of people who did not participate in CR were readmitted (Meshgin, 2008).

The benefits of CR are well substantiated yet referral and attendance rates remain low, a study by (Bahieh, Majid, Maryam, & Hooman, 2011) reported reasons for under-utilization of CR programs despite the positive impact of CR on quality of life and mortality.

Most people who could benefit from CR fail to participate because there is lack of referral from the physician which is a common reason that patients gave for not seeking CR (Bahieh et al., 2011).

In a study by Bahieh et al. (2011), the objective was to compare factors affecting CR referral by providers using a cross-sectional survey of 122 cardiologists that included 89 general cardiac specialists and 33 fellows in cardiology that came from 11 major cardiology training centers in Iran. They were asked to respond to 14- item investigator generated survey that examined their knowledge and attitudinal factors affecting cardiac rehabilitation. The results reported 90.7% of the physicians reported that less than 15% of patients are referred to CR centers. In addition, one of the main factors affecting the low referral rate was noted as limited general knowledge about CR programs (79.5%), includes program benefits, methods of reimbursement and attributes. Other factors reported include unavailability of cardiac rehabilitation centers, lack of insurance coverage and low physicians' fee (Bahieh et al., 2011). This study showed lack of provider knowledge and attitudes towards CR programs is the potential threat for prevention of cardiac rehabilitation in some societies (Bahieh et al., 2011).

Additional reviewed articles on studies regarding referral rates and provider knowledge on other chronic conditions such as chronic obstructive pulmonary disease (COPD) were also part of this literature review. There is also substantial information that showed the benefits of pulmonary rehabilitation, yet providers also reported lack of knowledge on pulmonary rehabilitation, the referral process and insurance coverage (Johnston, Young, Grimmer, Antic, & Frith, 2013). According to Johnston et al. (2013), healthcare providers lack an understanding regarding pulmonary rehabilitation and require more knowledge and understanding regarding pulmonary rehabilitation (PR) and how to increase referral rates and therefore attendance.

In comparison, there are common barriers to low referral rates on cardiac rehabilitation and pulmonary rehabilitation. This project will assume the interventions that have been used in PR with the goal of increasing CR referral rate. Cardiac rehabilitation has similar benefits in comparison to those of pulmonary rehabilitation that also reports being underutilized due to lack of understanding and provider knowledge.

In an effort to increase CR referral rates a study by Dahhan et al. (2015) implemented a formal cardiac rehabilitation referral system in addition to providers education. The intervention was a formal referral that providers were required to document the reasons for not referring a patient to CR after a percutaneous coronary intervention (PCI). In this study, a lecture on the benefits of cardiac rehabilitation was created and how to place a referral for a patient to enroll in a cardiac rehabilitation. It was noted that the rate of referral per eligible 375 patients increased from 17.6% to 88.96% over a period of six months. The intervention showed with adequate provider knowledge regarding cardiac rehabilitation and referral methods there is a notable increase in referral rates to (CR).

In a separate study by Gravely-witte et al. (2010), it was also noted that despite established benefits of CR, evidence shows that referral to CR and subsequent enrollment is disconcertingly low. It is reported that an average of 18.7% of cardiac patients in the United States received outpatient CR after hospital discharge (Gravely-witte et al., 2010). As stated by Gravely-witte et al. (2010), the reasons for low rates of cardiac rehabilitation utilization are multifactorial that includes health care provider, health-system, and patient level factors. Eligible patients reported lack of cardiac rehabilitation referral as the most common reason when asked why they did not attend CR (Gravely-witte et al., 2010). Referral for CR is dependent upon a provider initiating a referral and clearly there is wide variation in referral given that the

rates of CR utilization ranges between 5.2% to 42% in the United States (Gravely-witte et al., 2010). It is paramount to address these disparities in care by introducing systematic strategies to promote CR referrals.

Provider education regarding CR can be a sure way to improve CR referral rates in addition to using reminder systems to initiate discussions regarding CR. Provider awareness of CR's benefits is a major facilitator in CR referral. The significance of low CR referrals rates has prompted the DNP student to review extensive literature beyond CR referral to find ways to improve CR referral rates in primary care settings. It was found that provider education and discussion regarding CR is of paramount importance to improve CR referral rates. Helping HF patients get to CR programs is clinically important to help restore their health, by decreasing morbidity and mortality yet improving quality of life. It is very important that CR awareness be heightened among providers and the importance of CR endorsement.

Description of Project Design

The intended aim of this project is to implement a protocol that will be used to enhance the referral of patients with HF to cardiac rehabilitation. A QI design is significant for this project since the goal is to improve patient outcomes (Moran et al., 2016). The QI design in this project will be focusing on the development of a HF protocol and will also include a training seminar for providers and staff. The training session will review the protocol and include information on how to use the reminder form (Appendix F) to increase the referral rate of heart failure patients to enroll and participate in the cardiac rehabilitation program. This DNP project is influenced on the change theory principles by Lewin and is incorporated along with the PDSA method. Using the Lewin's theory format of group dynamics, the project leader's goal is to bring change regarding cardiac rehabilitation referrals and the new group expectations will be to

complete a referral for patients with heart failure that meet the criteria for rehabilitation. This project will use Plan-Do-Study-Act (PDSA) framework cycle (Appendix A). The PDSA cycle is summarized in three simple questions in which this project will be trying to achieve. These questions include: 1) what is the project trying to achieve; 2) how will one know if there is improvement; and lastly what changes can be made for improvement? (Donnelly & Kirk, 2015). The PDSA cycle involves repeated rapid small-scale tests of change, carried out in sequence or in parallel, to see whether and to what extent the changes work, before implementing and the leader acts to ensure sustainability (Donnelly & Kirk, 2015). Compliance rates from heart failure readmissions and the number of referrals to cardiac rehabilitation will be analyzed and compared between pre- and post-intervention. In addition, retrospective chart audits will be done to analyze factors that led to readmissions and the reasons why cardiac rehabilitation referral was not done. The project design for the protocol implementation will be as follows:

a) During the pre-implementation 15 patient charts audits will be done. Identifying records of readmissions, identifying if any cardiac rehabilitation referrals were done and reasons for not attending cardiac rehabilitation. The inclusion criteria will include adult both male and female adult patients who have a diagnosis of HF and have attended the clinic for more than 6 months.

b) Implementation will include teaching providers how to make cardiac rehabilitation referrals for patients who have a diagnosis of HF using the New York Heart Association (NYHA) classification or who meet the screening tool by the Kansas City Cardiomyopathy Questionnaire (KCCQ) (Appendix D).

c) Post implementation, 15 patient charts audits will be conducted and information regarding recent hospital readmissions, cardiac rehabilitation referral and participation

will be collected. The number of HF readmissions and referrals to cardiac rehabilitation will be compared between pre-implementation and post implementation of the heart failure protocol. The inclusion criteria will include all adult patients with a diagnosis of HF and attended the clinic during the implementation phase and were seen by a provider.

The findings will be presented to the stakeholders and the results will then be used to determine ongoing use of the protocol as a standard of practice in the clinic for the referral of HF patients to cardiac rehabilitation. Any information that will be identified during the project implementation will be used to improve future operations.

Population of Interest and Setting

The population of interest include three physicians and two nurse practitioners. The clinic that will be used is in the south west area of Arlington City, and it services most of the population of an older neighborhood within this section of the city. The population in this section of the city is generally of lower socioeconomic means. Currently Arlington has a population of almost 392,000 with a median household income of $53,000 and 17% are living below poverty in this town (Data USA, 2015). This clinic offers a full range of services at this site, services that include physical exams, dualenergy x-ray absorptiometry scans, lab draws, echocardiograms, Department of Transportation physical exams, spirometry testing, vision and hearing exams, chiropractic services, physical and occupational therapy. A cardiac rehabilitation program is located about 10 miles from the clinic in Irving, Texas.

Stakeholders

The stakeholders at the clinic include the clinic owners, office manager, clerks, administrator and board of trustees. This group of people are influential to the intervention of this project because of common interest in the ongoing quality of patient care at the clinic. The clinic

owners, and the board of trustees provided approval of the project implementation at the clinic and will be notified of all elements of the project. This communication will help to ensure compliance of the project within the organization's policies. The project leader will be updating the stakeholders on a weekly basis to ensure adherence with facility standards.

Recruitment Methods

Providers

The project participations will be the three physicians and two nurse practitioners who work at this clinic. The participation in the project by these groups will be mandatory as this is a QI project. The project will only use clinic employees; contract employees will not be included as participants in this project. The project leader will interact with providers and staff at the clinic about the project during staff meetings. In addition, the project leader will meet with staff and providers to determine the concerns with HF readmissions and CR referrals. This will then be followed by a series of weekly meetings with staff and providers to determine the cardiac rehabilitation monitoring and referrals process. In addition, how to obtain insurance authorization prior to cardiac rehabilitation referrals will be addressed in these weekly meetings with staff and providers.

Patient Charts

The data for this project will be collected from at least 15 patient charts pre-implementation of the protocol and 15 patient charts post implementation of the protocol. The inclusion criteria will include patients who have a diagnosis of HF using the New York Heart Association (NYHA) classification or the screening tool by the Kansas City Cardiomyopathy Questionnaire (KCCQ) (Appendix D). The exclusion criteria will include patients who do not have a diagnosis of HF using the New York Heart Association (NYHA) classification or who do

not meet the screening tool by the Kansas City Cardiomyopathy Questionnaire (KCCQ) (Appendix D). The number will be reasonable to provide meaningful data for analysis for a QI project. The pre and post implementation charts will be assessed for recent readmission to the hospital or if any referrals to CR had been placed in the last six months. Charts that are not included in the selection are patients that are new to the clinic and do not have a diagnosis of HF.

Tools/Instrumentation

This DNP project outcomes will be measured by using the pre- and post-questionnaires that will be developed for use before the training sessions and after the provider training session (see Appendix A). The pre-and post-questionnaire consists of 8 questions that are developed by the project leader. The questions will assess provider knowledge from, strongly disagree, disagree, neutral, agree and strongly agree. The tool was created at a comprehension level that is equivalent to an eighth grader and was rated highly by four experts who are highly experienced in this project or have a commanding resume in cardiology. Experts included project mentor, content expert, director and owner of cardiology group and project instructor all rated the items on a four-point scale of relevance. Then, for each item, the item (CVI) (I-CVI) is computed as the number of experts giving a rating of 3 or 4, divided by the number of experts-the proportion in agreement about relevance. The content validity index is calculated using the following formula: CVR = [(E-(N/2)) / (N/2)] with E representing the number of judges who rated the item as essential and N being the total number of judges. The mean total of all the means was 3.34 indicating that all the questions were essential. The calculation is as follows: CVR for Items 1,2,3,4,5,7,8 all scored as [(4-(4/2)) / (4/2)] = 2/2 = 1. Item 6 [(3-(4/2)) / (4/2)] = 1/2 = 0.5 Content validity study revealed that this instrument enjoys an appropriate level of content validity. The questionnaires will be used at the beginning of the training session and at the end of

the training session. This will be used to measure participant knowledge of the cardiac rehabilitation and referral process following the training session.

The project leader will then compare the data collected from the chart pre-and post-implementation of the protocol and determine barriers to the protocol. This data comparison will determine effectiveness of the intervention. The training session will include a PowerPoint presentation, a screening tool kit for HF by the NYHA and KCCQ (Appendix D) and will be used to improve the provider's understanding of the screening process. In addition, cardioSmart, an eight-question quiz (Appendix C) will be given as part of the training session to enhance provider knowledge of cardiac rehabilitation. CardioSmart is part of the American College of Cardiology's commitment to patient-centered care (CardioSmart, 2017). The program is based, on the growing body of evidence suggesting that the patient experience of care along with medical outcomes can be improved when people become more knowledgeable and engaged in personal health management and care through rehabilitation (CardioSmart, 2017).

Data Collection Procedures

This doctoral project will include an analysis of the organization's operational data that is routinely collected as a component of its quality improvement measurement. The information that will be included are the rates of HF patient admissions and readmissions to the hospital. with This information will be measured and compared between pre-implementation, and the post-implementation of the heart failure protocol. The organization currently collects routine data on all hospital admissions including the cause for admission, and diagnosis at discharge. The EP program data analyst extracts the data that pertains specifically to the patients who are being followed in the clinic. The analysis is subsequently presented to the office manager in database format.

In addition, CR referral numbers in the last six months before the start of the project will be obtained from the office manager. The project leader will collect data during meetings with the providers and take notes pertaining to the project during conversations with doctors and nurse practitioners. Discussions with MDs and NPs will be documented in discussions and referrals will be tracked using a checklist (see Appendix F). The project leader will then complete basic statistical methods, using a computer statistical software (SPSS) to perform statistical analysis of the outcomes data. A paired t-test will be used to look at whether it resulted in an increase at all after the protocol and will report any magnitude of improvement.

Staff Knowledge Levels

According to Roger et al. (2011), the benefits of cardiac rehabilitation are greatly under-appreciated in the medical community and greater efforts are needed to educate healthcare providers regarding the benefits of cardiac rehabilitation. Providers are failing to routinely refer patients to cardiac rehabilitation because of a lack of provider knowledge and education concerning cardiac rehabilitation benefits (Roger et al., 2011). It is important that providers receive the knowledge and education of cardiac rehabilitation to better manage the patient with a diagnosis of HF.

Three physicians and two nurse practitioners will complete a pre-questionnaire and then will be followed by a training session that includes a PowerPoint presentation. A screening tool kit KCCQ (Appendix D) which showed acceptable reliability and cross-sectional validity will be used to improve provider's understanding of the screening process. In addition, an eight-question quiz, cardioSmart (Appendix C); will be given as part of the training session to enhance providers knowledge of cardiac rehabilitation. CardioSmart is part of the American College of Cardiology's commitment to patient-centered care (CardioSmart, 2017). The program is based,

in part, on the growing body of evidence that suggested patient care experience, along with medical outcomes could be improved when people become more knowledgeable and engaged in personal health management and care through rehabilitation (CardioSmart, 2017). These tools will be used by the project leader to educate the providers at the clinic regarding CR. In addition, the training session will also include previously stated barriers to referral, research studies were presented to exhibit the known benefits of CR on the health and quality of life of HF patients. The DNP leader will also be identifying the location of the CR facilities within the 10 miles range, phone numbers and addresses which will be provided during the training session.

Pre-and Post-Knowledge Test

The pre-and post-questionnaire will consist of 8 questions developed by the project leader (Appendix B). The pre- questionnaire will be given before the training session to assess and measure the participant knowledge of CR and the referral process. Following the training session, a post- questionnaire will be given to assess provider knowledge about CR using a scale from 1, strongly disagree, 2 disagree, 3 neutral, 4 agree, 5 strongly agree. The same scale will be used before and after the training session. A mean and median response will be measured prior to the training session and after the training session. After the training session providers will then be asked if they felt prepared to place a CR referral. After the intervention, all five providers will be asked to complete an educational evaluation survey (Appendix E).

Intervention/Project Timeline

The project leader aims to successfully implement a QI project from March 7, 2018 and finish prior to June 15, 2018 (see Appendix G) as follows:

Phase 1: Implementation

March 7, 2018 to March 14, 2018 (Week 1).

- Recruitment process and identification of participants to participate in the QI project to reduce heart failure readmissions.
- Meet with the participants (providers) on their previously scheduled meeting day and introduce the project.

March 14, 2018 to April 1, 2018.

- Meeting with stakeholder
- Meet with the participants
- Pre-test questionnaire (see Appendix B).
- The reviewing of existing CR referrals.
- Training section (see Appendix C).
- Training survey (see Appendix E).
- Review of barriers and facilitation to referrer patient to CR.
- Planning for improvement in the referral process.

April 2, 2018 to May 1, 2018 (Week 7-10)

- Meeting with stakeholders to provide an update of QI project.
- Post-test questionnaire (see Appendix C).
- Data collection will be done in week two at the beginning of the QI project before the intervention and in week 10 at the end of the project.
- Data analysis
- Meet with the participants (providers) on their previously scheduled meeting day.

June 2, 2018 to June 11, 2018 (Week 11-12).

- Written evaluation of the QI project.
- Power Point presentation to the Stakeholders and Touro University.

Ethics and Human Subjects Protection

This is a QI project, and there is a minimal risk involved to the participants of this project. The clinic facility will grant permission and any needed IRB approval for the project. Per IRB guidelines, the project will be expected to meet exempt status because the activity involves no more than a minimal risk to the participants at the clinic. There is no compensation for participation in this project. This QI project is based on data collected through pre and post implementation review of patient charts. In addition, the project leader will not have interactions with the patients for this project and will be only interacting with primary care providers. Nevertheless, the Health Insurance Portability and Accountability Act (HIPAA) will be followed to ensure and respect the privacy, anonymity, and confidentiality of all the charts reviewed. The project leader will obtain data from the office manager and will ensure that data provided does not have any information that can be linked to a patient. The project leader will not accept any data from the office manager with any patient identifiers in concordance with HIPAA laws and the Standards of Care in the primary care setting. Data project analyses will be saved in a secure storage account, a HIPPA compliant online storage vendor. Data that will be collected during the project will be secured by the office manager and made accessible only to the project leader and the project mentor. Patients will not be faced with any additional risk compared to their usual heart failure care as providers will be discussing and placing referrals to clinically appropriate heart failure patients to cardiac rehabilitation.

Plan for Analysis/Evaluation

As stated, the intention of this project is to incorporate a time sensitive intervention that enables primary care providers to discuss and recommend CR referrals to patients with a diagnosis of HF. The opportunity to participate in the quality improvement project will be mandatory to three doctors and two nurse practitioners at the primary care clinic. A quantitative approach will be used when collecting and analyzing data for this project, participants will be given a pre-test questionnaire and a post-test questionnaire (see Appendix B). The intention is to determine, if any, the impact on providers with a low cost, time efficient, evidenced based intervention that will increase CR discussions and referral. This project will use a non-parametric statistical analysis on data that will be obtained from the pre-test questionnaire and the post-test questionnaire. A non-parametric test is suitable for this study because of a very small sample size. A paired t-test will be used to determine if there is an increase in scores after the implementation of the protocol and the magnitude of improvement. As anticipated this analysis will be based on a very limited sample size (n=5) and therefore the results will be considered as such. At the completion of this project the statistical significance is expected to show an observable difference between the pre-intervention and the post-intervention CR referral rates. This information will be transferred to charts and tables to allow for ease of data comprehension. Due to the provider sample size of five, normal distribution will not be assumed as this group does not represent the population.

Analysis of the Project

This project is aimed at achieving a heart failure protocol that will be used to improve the outcomes of heart failure patients at a primary care clinic. The project leader in this project hoped to overcome the difficulty of changing provider's usual practice by introducing a quality

improvement (QI) intervention tool to influence the provider's decision whether to make a cardiac rehabilitation referral during a patient visit. The project leader's efforts were aimed at making cardiac rehabilitation a valid and important intervention that providers can use to improve patient outcomes.

The project leader was able to look at the organization's operational data that was presented by the office manager, this data is routinely collected as a component of its quality improvement measurement. The database contains information that includes a diagnosis of HF, patient admissions or readmissions to the hospital and the list of different referrals that were made during the last 10 weeks. The project leader analyzed data for this project, by using data obtained from 15 patient charts randomly chosen with a diagnosis of HF prior to meeting and educating the providers regarding cardiac rehabilitation. The following results were obtained and analyzed. In the 10 weeks prior to this QI project implementation, the providers at the clinic had not referred any patients to cardiac rehabilitation and there was no documentation that discussions about referral to cardiac rehabilitation was held with HF patients. Results showed documentation encouraging diet and exercise on most of the charts. These results highlighted that there was a need for education regarding the importance of CR discussions and referral to improve patient outcomes. However, the results of cardiac rehabilitation discussion and referral form completed by providers will be analyzed at the completion of this project. During the intervention period, the project leader will continue providing support to providers for a smooth transition during the implementation process.

The project leader had the first meeting with providers on Thursday March the 8$^{th.}$ and gave all five providers handouts of an 8 questions pre-test questionnaire (see Appendix B) that was taken before the teaching started. All providers were able to complete the questionnaires

and returned the completed questionnaires to the project leader to be analyzed at the completion of the intervention. Providers were educated using PowerPoint presentation that focused on increasing awareness and knowledge, practice quiz with rationale and handouts were given to enhance their understanding of cardiac rehabilitation. The final day of the educational session was March the 22nd an 8 questions post-test questionnaire (see Appendix B) was taken by all providers and returned to the project leader. The results from the pre-test questionnaire and the post-test questionnaire to determine if knowledge improved post-educational intervention were placed in a table form for easy presentation (see figure 5) and results were analyzed by the project leader as detailed below.

Providers rated their current knowledge about cardiac rehabilitation on a 5-point scale from 1, Strongly disagree through 5, Strongly agree both before and after the educational session. Prior to the educational session intervention, the mean response for the questionnaires was 2.6 and median was 3. This showed lack of knowledge among providers regarding CR before the educational session. The results after the educational session showed a significant improvement, the mean response increased to 4.8 and the median showed an increase from 3 to 5. Questions 2, rated the provider's knowledge about cardiac rehabilitation insurance coverage on the same scale. The mean response before the educational session was 2.2 and the median was 2. This showed lack of knowledge among providers regarding insurance coverage. Results after the educational session showed that there was a notable improvement, the mean increased to 4.4 and the median increased to 4 from 2 signifying the impact of provider education regarding insurance coverage (see Figure 1).

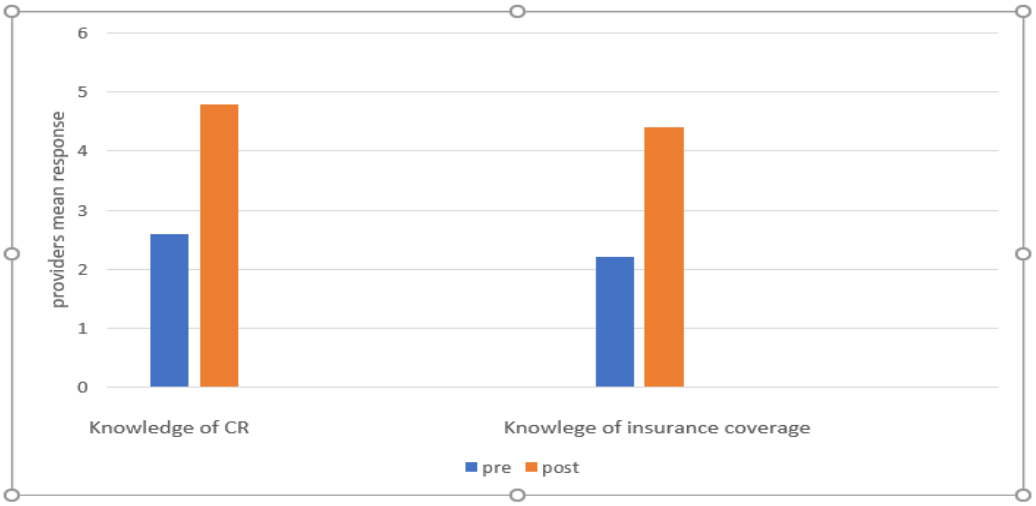

Figure 1. Comparison of the pre- and post-educational session provider knowledge of CR and insurance coverage.

Question 3, The providers were asked if they know how to place a referral to CR. Prior to the educational intervention, the mean response for the questionnaire was 2.4 and median was 2, provider lacked knowledge on the proper steps to complete a referral to CR. The results after the educational session showed a significant improvement, the mean response increased to 4.8 and the median increased to 5. The improvement noted was largely due to the information provided during the educational session. The project leader identified a couple of locations, addresses and telephone numbers that can be used and the documentation required to complete a referral. Question 4, this question asked the providers if they were prepared to discuss cardiac rehabilitation with patients. Prior to the educational session, the mean response for the questionnaire was 2.6 and median was 3. The results after the educational session showed an improvement, the mean response increased to 4.6 and the median increased to 5 (see figure 2). which showed the impact of the educational session as it highlighted the screening process and the discussion technique before making a CR referral.

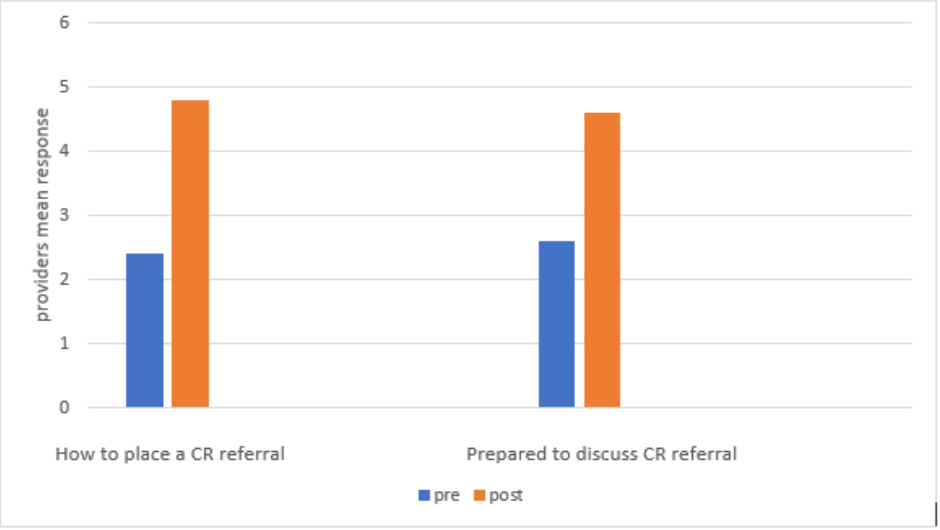

Figure 2. Comparison of the pre and post-educational session, question assessed provider knowledge of how to place a CR referral and their preparedness to discuss and complete a CR referral.

Question 5, Using the same scale providers were asked if the referral process can be initiated by a patient. Prior to the educational session, the mean response for the questionnaire was 2.2 and median was 2. The results after the educational session showed an improvement, the mean response increased to 4.8 and the median increased to 5. Before the educational session providers were not sure if patients can initiate CR referral. The educational session identified that patients can initiate CR referral for their own good. Question 6, this question asked if attending CR reduced the risk of readmissions. Prior to the educational session the mean response for the pre- test questionnaires was 3.2 and the median was 3. The results after the educational session showed an improvement, the mean response increased to 5 and the median as well increased to 5 (see figure 3).

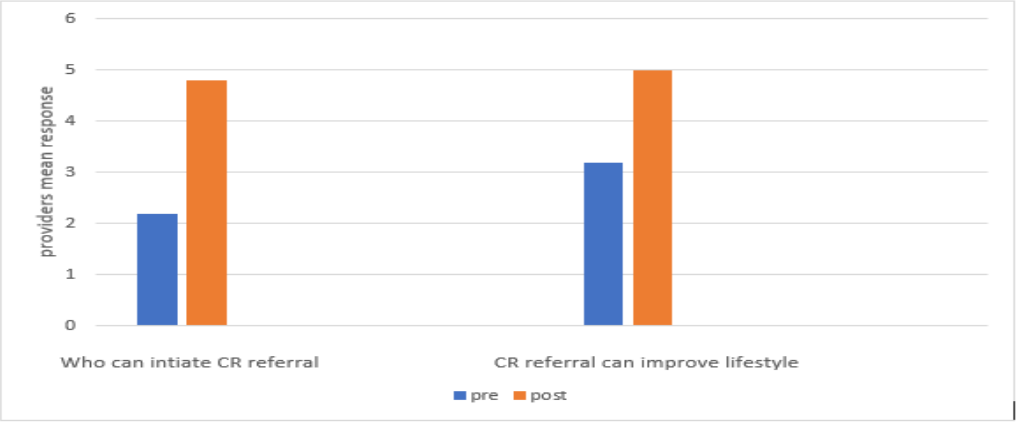

Figure 3. Comparison of the pre- and post-educational session on provider's knowledge of who can initiate a CR referral and how CR referral can improve lifestyle.

Question 7, The most common reason for not getting a CR referral is because providers lack knowledge regarding CR. Prior to the educational session the mean response for the pre-test questionnaire was 2.2 and the median was 2. The results after the educational session showed an improvement, the mean response increased to 4 and the median increased as well to 4, which showed the impact of the educational session as it highlighted the importance of CR Question 8, This question asked if CR helps patients control symptoms of HF. Prior to the educational session the mean response for the pre- test questionnaire was 3.6 and the median was 4. The results after the educational session showed an improvement, the mean response increased to 5 and the median increased to 5 (see figure 4). Although the pre- test score was high 3.6 it showed that providers increased their understanding after the educational session.

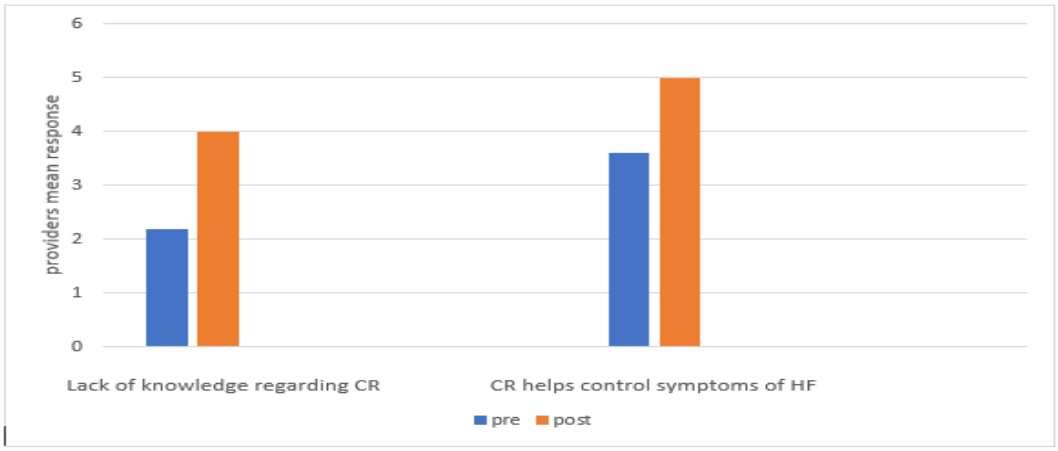

Figure 4. Comparison of the pre- and post-educational session on provider's level of knowledge regarding CR and providers knowledge of how CR helps to control symptoms.

	QUESTION	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
PROVIDER 1	Pre-score	3	2	2	2	2	3	2	4
	Post-score	5	4	5	5	5	5	4	5
PROVIDER 2	Pre- score	2	2	2	3	2	3	3	3
	Post-score	5	4	5	5	5	5	4	5
PROVIDER 3	Pre-score	3	2	3	3	3	3	2	4
	Post score	5	4	4	4	5	5	4	5
PROVIDER 4	Pre-score	3	3	2	3	2	4	2	4
	Post score	4	5	5	4	4	5	3	5
PROVIDER 5	Pre-score	2	2	3	2	2	3	2	3
	Post score	5	5	5	5	5	5	5	5
MEAN	Pre-score	2.6	2.2	2.4	2.6	2.2	3.2	2.2	3.6
	Post score	4.8	4.4	4.8	4.6	4.8	5	4.0	5.0
MEDIAN	Pre-score	3	2	2	3	2	3	2	4
	Post score	5	4	5	5	5	5	4	5

Figure 5. Summary of the participants responses pre-educational intervention score, post educational intervention score, mean and median.

Post Educational Survey

Question 1. Asked the providers if CR educational session increased their knowledge about CR referral and recommendations for heart failure patients. After analyzing the results, it showed that 80% of the providers strongly agree and 20% of the providers chose to agree that the educational session increased their knowledge about referral and recommendations for HF patients (see figure 6).

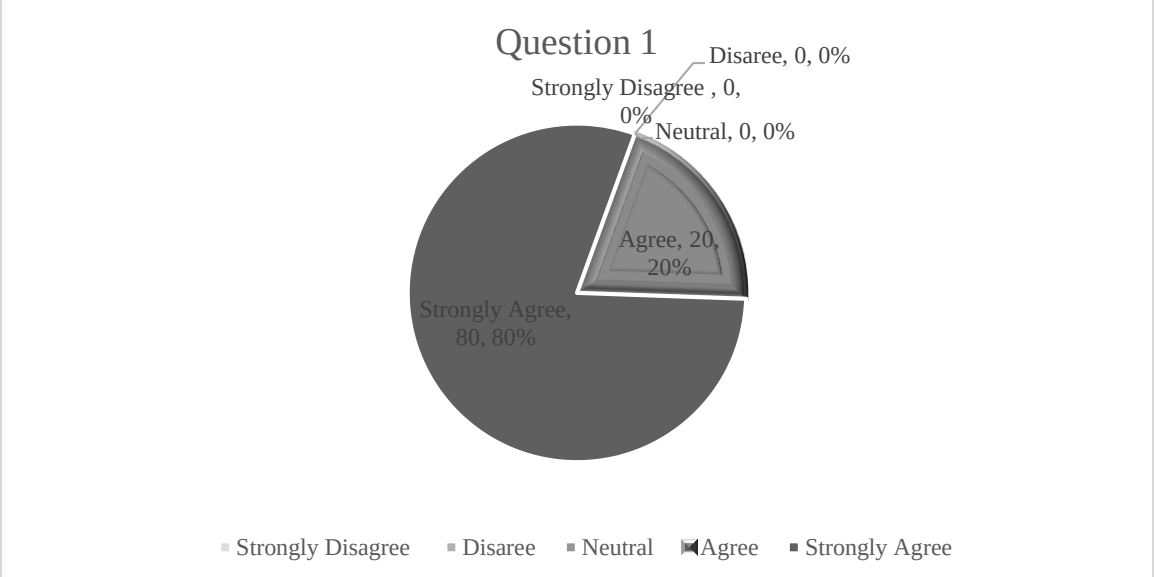

Figure 6.

Question 2, This CR educational session changed some of my attitudes about CR recommendations and referrals. The results analyzed showed that 80% of the providers strongly agree and 20% of the providers chose to agree that the educational session increased their knowledge about referral and recommendations for HF patients (see figure 7).

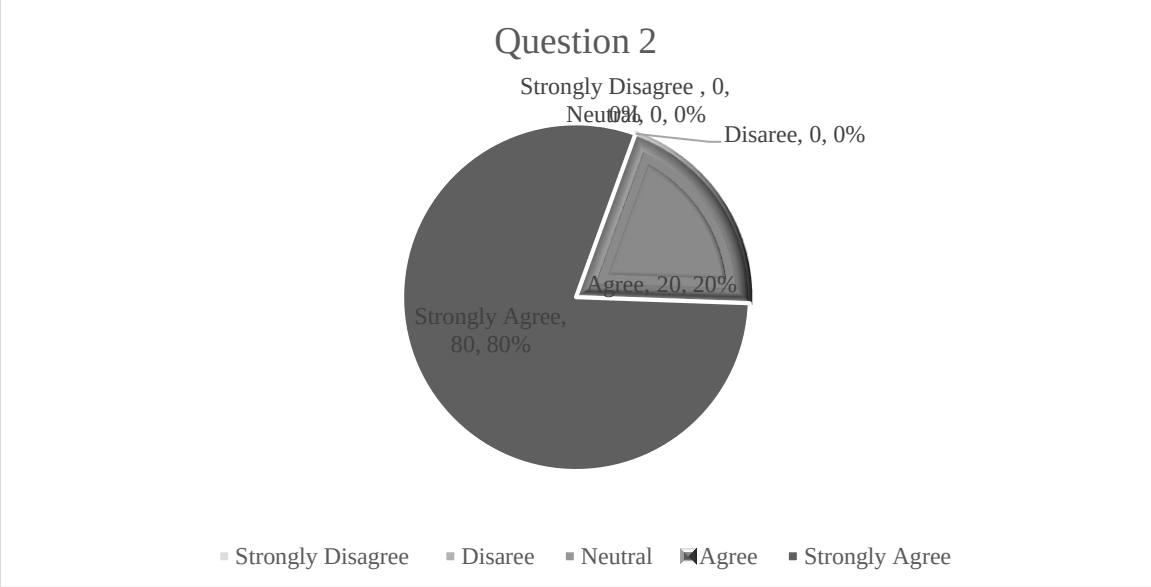

Figure 7.

Question 3. This training session could be valuable to the community and patients for increasing an understanding about the importance of earlier CR referral. showed that 60% of the providers strongly agree and 40% of the providers chose to agree that the educational session increased their knowledge about referral and recommendations for HF patients (see figure 8).

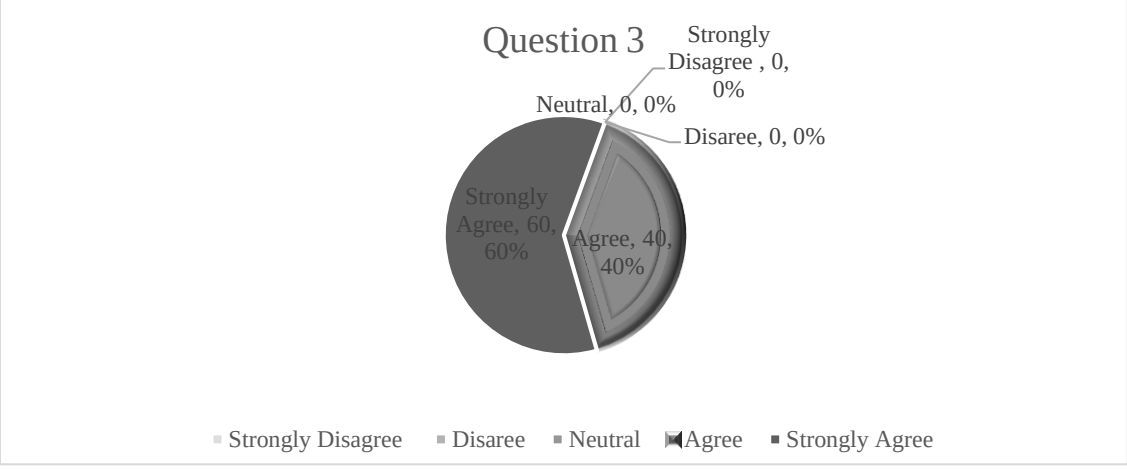

Figure 8.

Question 4. This training session will likely affect the way in which I make CR referrals and recommendations. The analysis showed that 60% of the providers strongly agree and 40% of the providers chose, agree that the educational session increased their knowledge about CR referral and recommendations for HF patients (see figure 9).

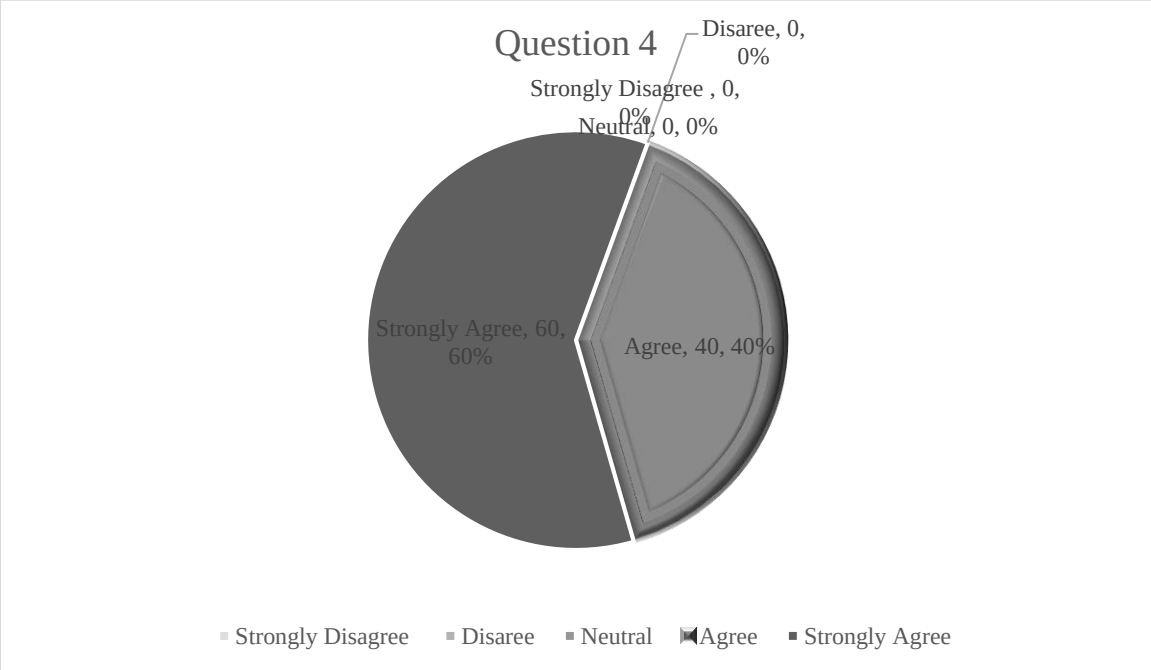

Figure 9.

Question 5. The last question of the survey asked the providers if the training session will likely help the way in which they communicate the importance of CR referrals to the patients with HF they care for. The results showed that 60% of the providers strongly agree and 40% of the providers chose to agree that the educational session increased their knowledge about referral and recommendations for HF patients (see figure 10).

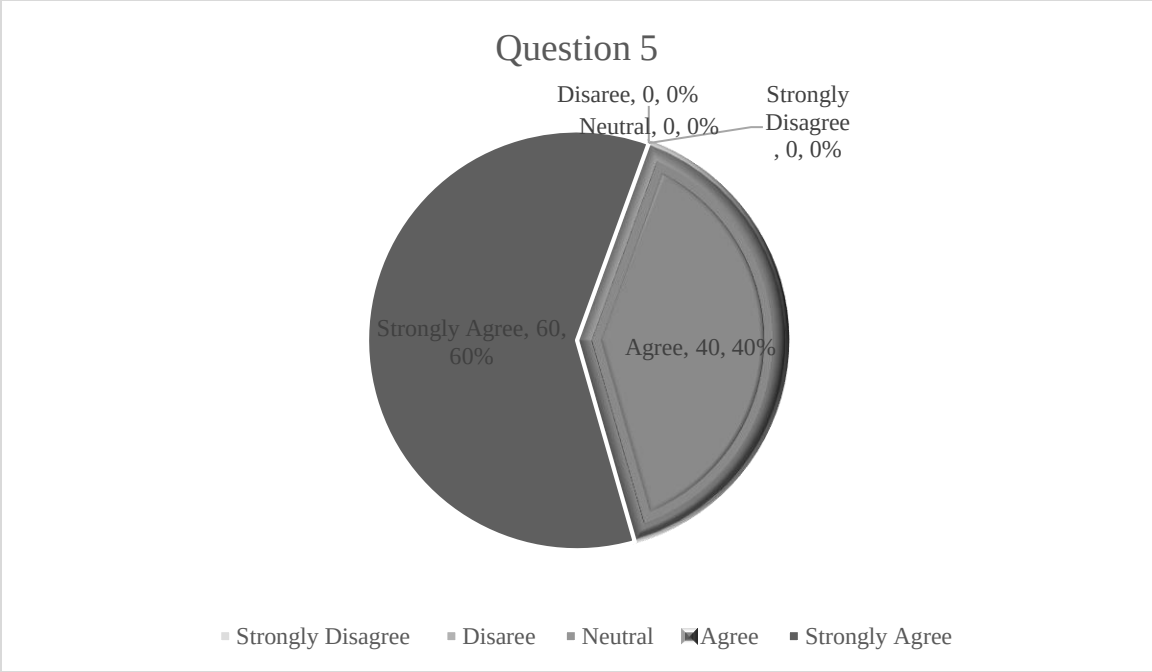

Figure 10.

Discussion of Findings

The data indicated there was a favorable response from the providers at the clinic site. The findings indicated that the providers appreciated CR as an intervention that can be used for HF patients and will increase patient compliance with treatment of HF. The project findings showed there was an importance for an ongoing monitoring of patient CR discussions and updating of the referral list which is completed by providers on a weekly basis. The findings indicated there were an improved overall understanding of CR and the referral process following the education intervention and a demonstrated ability to screen patients with HF using the NYHA and the KCCQ tools. In addition, the findings indicated that the provider had preparedness and enthusiasm to hold discussions with patients and complete referrals to CR.

The project findings suggested that provider education is an important intervention to highlight evidence-based treatments that are currently underused. According to Gravely-Witte et al. (2010), the referrals made to CR are dependent upon a provider initiating a referral and there

are wide variations in the referral rates of CR utilization, which may range between 5.2% to 42% in the United States. As a result, following the project implementation it was expected to show findings that indicated an improvement in CR referral rates by providers. This was achieved by five providers who attended three educational sessions that were held at the clinic. The sessions included discussion on the improvement of CR referrals. The educational sessions included evidence based educational materials, such as a PowerPoint presentations and handouts which were intended to enhance participant understanding of the CR evidence-based protocol. To increase knowledge of screening patients with HF, five providers received education regarding the screening process of heart failure patients using evidence-based tools that includes the NYHA and the KCCQ-12 screening tool. An assessment of current knowledge and practices was completed using a pre-test questionnaire and a post-test questionnaire which showed a significant increase in provider level of understanding regarding CR.

The inclusion of the stakeholders' support for this QI project was of paramount importance for its success. Meetings were conducted with the stakeholders to communicate and update the goals of this project which included, (a) a timely completion of the intervention (b) results of timely meetings with participants to provide resources as well as reviewing the recruitment process and identification of participants needed for the project. The stakeholder meetings were successful and influential to the implementation of the project intervention and resulted in compliance of the project within the organization's polices.

The database contained information from patient chart audits which included a diagnosis of HF, patient admissions or readmissions to the hospital and the list of different referrals that were made during the last 10 weeks. The data was analyzed and obtained from 15 patient charts by random selection. Pre-implementation, the chart audit showed that there were no provider

referrals of patients to CR and no documentation of discussion of CR with HF patients. However, the findings showed documentation that encouraged diet and exercise were included in the patient records. These findings indicated that there was a need for education regarding the benefits of CR discussions and referral as a strategy to improve patient outcomes.

The project used the Lewin's organizational change theory of unfreezing, moving, and refreezing to change the outcomes of patients with HF. Pre-implementation there were five participants that completed a pre-test questionnaire (see Appendix B). The data was analyzed, and the results indicated that all participants lacked an understanding of the CR referral process. Post implementation the findings showed that the participants correctly demonstrated documentation of the CR reminder form. All participants reported an understanding of the importance of utilizing the form. Post implementation of the intervention the participants completed a post-test questionnaire (see Appendix B). The findings showed that all participants completed the questionnaire (see Appendix E). The findings showed that there was a significant increase in knowledge regarding CR among participants after the educational sessions (see figure 5).

A post implementation chart audit of 15 patient records which included a diagnosis of heart failure when compared to the pre-implementation chart audit of 15 patient records indicated that there was a lack of a knowledge and understanding of CR and showed that most participants did not provide discussion of CR to patients and did not order CR referrals. The literature showed that researchers have agreed that CR referrals are expected to increase after providing education to participants. The literature showed that provider awareness of CR benefits is a major facilitator in CR and patient referrals (Dahhan et al., 2015). In addition, the literature indicated that providers often require more information and training on the services

provided by CR and referral placement (Grace et al., 2014; Dahhan et al., 2015; Degavi, & Bhupali, 2015).

The overall results from this project indicated that providers did not have enough knowledge regarding CR, and that there were no referrals done at the clinic in the last 6 months. In comparison of the pre-test questionnaire and the post-test questionnaire the results showed a significant improvement in provider knowledge, attitude and willingness to discuss and referrer patients to CR. In a study that was done by Johnson et al. (2010) to determine which heath care provider recommendations were associated with CR attendance. The response rate showed that primary care providers were less likely to make a CR referral. According to Johnson et al. (2010), recommendations for CR from other health care providers were statistically significantly better associated with attendance than primary care providers yet they see most patients with HF. These findings are consistent with what this project has identified thus far that there is lack of knowledge and discussion regarding CR among primary care providers. In a different study that was done by Blackburn et al. (2000), it identified that providers lack of knowledge, lack of interest in cardiac rehabilitation, and perceived inconvenience of cardiac rehabilitation were the primary reasons patients did not enroll. As noted by Blackburn et al. (2000), one of the main reasons patients failed to attend a structured CR program was reportedly because their providers said it was not needed, which shows lack of understanding regarding the benefits of CR.

Significance/Implications for Nursing

Multiple controlled trials and meta-analyses have confirmed the proven benefits of CR with regards to mortality and to a lesser extent, morbidity (Grace et al., 2014). According to Dunlay et al. (2009), providers play an important role in CR referral and enrollment. Despite established benefits and recommendations, cardiac rehabilitation enrollment rates are

pervasively low (Grace et al., 2014). There is strong evidence supporting CR and its role in secondary prevention of readmissions of HF patients. Primary care providers are essential to reduce the rate of readmission of patients with heart failure. According to Grace et al. (2014), avoidable readmissions of heart failure patients are frequent, potentially harmful, and expensive. These re-admissions represent significant waste and inefficiency in the current healthcare delivery system in primary care settings.

The high frequency of unplanned patient re-admissions reflects deficiencies in utilization of CR (Dunlay et al., 2009). The goal of this QI project was to contribute towards the improvement of patient outcomes and decrease the number of episodic and urgent office visits and the number of hospital readmissions of HF patients. It is the role of healthcare providers to find areas of improvement within the organization such as increasing CR referrals to reduce mortality and morbidity. According to Dunlay et al. (2009), the lack of CR referrals is due to multifactorial reasons such as, but are not limited, and include the: the lack of provider endorsement due to lack of awareness of its benefits, lack of knowledge of rehabilitation referral process, lack of time, not sure of rehabilitation location and provider attitudes toward CR (Dunlay et al., 2009). The aim of this project was to improve provider discussions and increase the number of referrals of HF patients to CR. The literature showed that the role of provider endorsements in promoting patient enrollment should be optimized and exploited (Grace et al., 2014). This project is of significance to the clinic setting due to the potential impact it has on the outcomes of patients with a diagnosis of HF. The known life-saving benefits of cardiac rehabilitation are overwhelmingly positive and cannot be ignored (Grace et al., 2014; Dahhan et al., 2015; Degavi, & Bhupali, 2015).

Limitations

There were several limitations of this project. The project sample size of five participants was small and may have limited the results of the project. Additional limitation was that there was a discrepancy noted in some of the charting, two of the participants reported the CR form was not completed. In addition, the documentation by participants did not include provider thoughts and discussions regarding the referrals. Obtaining patient's thoughts directly by interaction may determine how to best approach the discussion from a provider's perspective. In future projects, finding more information regarding the patient perspective may be of importance to tailor the patient needs.

The other major limitation to this project is that it is not generalizable. The focus was on a small primary care practice in an under-served area in Arlington Texas with five participants. The sample size was too small to conduct higher testing to analyze the statistical significance of the results. In addition, the community of interest was restricted to one primary care clinic. Since this was a QI project all participants at the site were mandated to participate in the project. There may have been more participants if the project was opened to additional community settings and providers were able to volunteer to be included in the project.

This project relied on participant self-reporting and documentation of the CR reminder form to track individual CR discussions and referrals throughout the project. The participants may have become too busy or distracted during office hours to track each discussion and document appropriately even though the project included an end of day follow up to allow each participant to include the information. These reminders were of assistance to the participants to remember and complete the CR discussions forms. In addition, another limitation of this project was the short time frame of the project. A longer follow-up period may have contributed an

improvement of self-perceived confidence level, it would be beneficial to further understand the sustainability of this change as well. Another limitation of this project showed a significant increase in participants knowledge when the pre-test and post-test results were compared. However, it is not clear what exactly was most effective for improving these findings. The findings of this QI project-suggested that a combination of educational sessions that included PowerPoint presentations, discussions and demonstration techniques as well as interactions with other participants resulted in improvement of participants knowledge. A structured communication tool may be helpful in the future to guide CR referral and discussions with patients.

Dissemination

Disseminating scholarly work shares experiences to enhance practice and healthcare outcomes. A team effort and collaborative engagement in dissemination is paramount. As an active member of the North Texas Nurse practitioner association, the dissemination of the project findings at one of the monthly meetings is an appropriate strategy to share this information. In addition, the project findings will be shared as a manuscript and sent to the Journal of Nurse Practitioner which is a peer-reviewed nursing journal for nurse practitioners with hopes to be published. In addition, the use of electronic communications or social media will be used to reach the desired target audience and all that are interested in the project findings and learning more about CR and the referral process.

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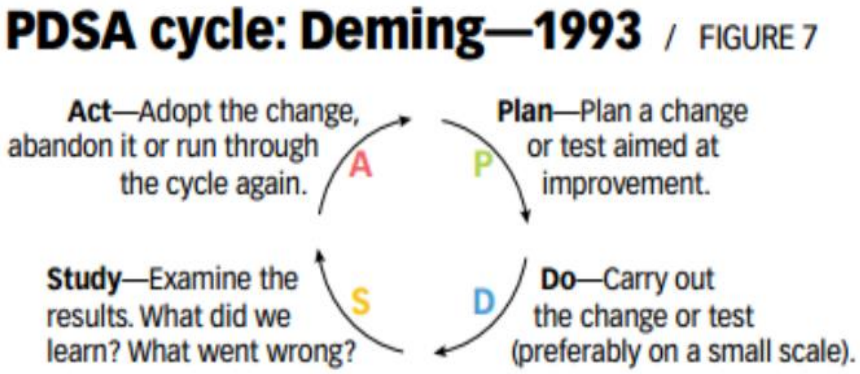
Appendix A



Appendix B

Pre-Test and Post -Test Questionnaire

Legend:

Strongly disagree, disagree, neutral, agree, and Strongly agree

1. I have a strong knowledge of cardiac rehabilitation.
   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

2. I have a strong knowledge of cardiac rehabilitation insurance coverage.
   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree
   5 Strongly agree

3. I know how to place a referral to Cardiac Rehabilitation.
   1 Strongly disagree
   2 Disagree
   3 Neutral
   4 Agree-

5 Strongly agree

4. I am prepared to discuss cardiac rehabilitation with patients.
1 Strongly disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly agree

5. Cardiac rehabilitation and referral process can be initiated by a patient.
1 Strongly disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly agree

6. Attending cardiac rehabilitation can assist patients make the right lifestyle changes to decrease your risk of readmission.
1 Strongly disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly agree

7. The most common reason for not getting a CR referral is because the providers lack of knowledge -about cardiac rehabilitation.
1 Strongly disagree
2 Disagree
3 Neutral
4 Agree-
5 Strongly agree

8. Cardiac rehabilitation helps patients control symptoms of cardiac failure. -
1 Strongly disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly agree

Appendix C

Training Session Quiz

CardioSmart
American College of Cardiology

Quiz: Cardiac Rehabilitation

1. Cardiac rehabilitation programs are centered on _____.

- A. Nutrition
- B. Exercise
- C. Stress Reduction
- D. Medication management

Check My Answer »

2. The type of exercise in cardiac rehab is mostly muscle-strengthening so as to not stress your recovering heart.

- A. True
- B. False

Check My Answer »

3. Cardiac rehabilitation is designed only for those heart patients who have recently had surgery.

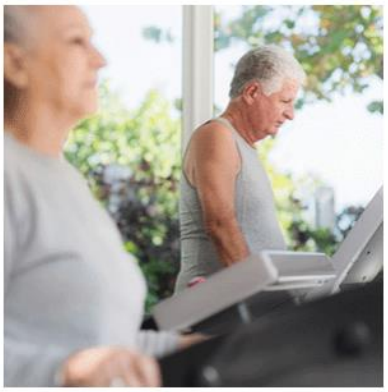
- A. True
- B. False

Check My Answer »

4. Cardiac rehab programs typically last _____.

- A. One month
- B. Six weeks
- C. Three months
- D. Six months

Check My Answer »



5. One in __ patients who have been referred to cardiac rehab actually attend the program.

- A. Two
- B. Four
- C. Six
- D. Ten

Check My Answer »

6. If your doctor does not refer you to cardiac rehab, that means you are not eligible for the program.

- A. True
- B. False

Check My Answer »

7. Your cardiac rehab team may include a psychologist.

- A. True
- B. False

Check My Answer »

8. The goal of cardiac rehab is to help you:

- A. Regain strength
- B. Prevent future heart events
- C. Stay out of the hospital
- D. Have greater control over your health
- E. All of the above

Check My Answer »

https://www.cardiosmart.org/

Answers Key

1. B. Exercise. Cardiac rehab is a supervised exercise program that also provides education about nutrition, medication use and heart-healthy behaviors.
2. False. Generally, your exercise routine will include both aerobic exercise, like walking or cycling, and muscle-strengthening activities.
3. False. Those with heart failure or other heart disease, or who have experienced a heart attack, may be eligible for cardiac rehab.
4. C. Cardiac rehab is typically a three-month medically supervised program.

5. B. Four. Unfortunately, a recent study found that three out of four patients who are referred to a cardiac rehab program do not attend.
6. False. Make sure you double check with your doctor about cardiac rehab. A recent study found that one in three patients who are eligible do not receive a referral to cardiac rehab from their doctor.
7. True. Emotional health is an important aspect of recovery and feeling your best, so you will receive counseling on mental health issues ranging from stress reduction to depression and anxiety, if necessary.
8. E. All of the above. Cardiac rehabilitation programs lower the chances of a future cardiac event, reduce risk of death or hospitalization, help with blood pressure and control cholesterol and improve overall health and well-being.

Appendix D

Kansas City Cardiomyopathy Questionnaire (KCCQ-12)

The following questions refer to your **heart failure** and how it may affect your life. Please read and complete the following questions. There are no right or wrong answers. Please mark the answer that best applies to you.

1. **Heart failure** affects different people in different ways. Some feel shortness of breath while others feel fatigue. Please indicate how much you are limited by **heart failure** (shortness of breath or fatigue) in your ability to do the following activities over the past 2 weeks.

Activity	**Extremely** Limited	**Quite a bit** Limited	**Moderately** Limited	**Slightly** Limited	**Not at all** Limited	Limited for other reasons or did not do the activity
a. Showering/bathing	O	O	O	O	O	O
b. Walking 1 block on level ground	O	O	O	O	O	O
c. Hurrying or jogging (as if to catch a bus)	O	O	O	O	O	O
	1	2	3	4	5	6

2. Over the past 2 weeks, how many times did you have **swelling** in your feet, ankles or legs when you woke up in the morning?

Every morning	3 or more times per week but not every day	1-2 times per week	Less than once a week	Never over the past 2 weeks
O	O	O	O	O
1	2	3	4	5

3. Over the past 2 weeks, on average, how many times has **fatigue** limited your ability to do what you wanted?

All of the time	Several times per day	At least once a day	3 or more times per week but not every day	1-2 times per week	Less than once a week	Never over the past 2 weeks
O	O	O	O	O	O	O
1	2	3	4	5	6	7

4. Over the past 2 weeks, on average, how many times has **shortness of breath** limited your ability to do what you wanted?

All of the time	Several times per day	At least once a day	3 or more times per week but not every day	1-2 times per week	Less than once a week	Never over the past 2 weeks
O	O	O	O	O	O	O
1	2	3	4	5	6	7

5. Over the past 2 weeks, on average, how many times have you been forced to sleep sitting up in a chair or with at least 3 pillows to prop you up because of **shortness of breath**?

Every night	3 or more times per week but not every day	1-2 times per week	Less than once a week	Never over the past 2 weeks
O	O	O	O	O
1	2	3	4	5

6. Over the past 2 weeks, how much has your **heart failure** limited your enjoyment of life?

It has **extremely** limited my enjoyment of life	It has limited my enjoyment of life **quite a bit**	It has **moderately** limited my enjoyment of life	It has **slightly** limited my enjoyment of life	It has **not limited** my enjoyment of life at all
O	O	O	O	O
1	2	3	4	5

7. If you had to spend the rest of your life with your **heart failure** the way it is right now, how would you feel about this?

Not at all satisfied	Mostly dissatisfied	Somewhat satisfied	Mostly satisfied	Completely satisfied
O	O	O	O	O
1	2	3	4	5

8. How much does your **heart failure** affect your lifestyle? Please indicate how your **heart failure** may have limited your participation in the following activities over the past 2 weeks.

Activity	**Severely** Limited	Limited **quite a bit**	**Moderately** limited	**Slightly** limited	**Did not** limit at all	Does not apply or did not do for other reasons
a. Hobbies, recreational activities	O	O	O	O	O	O
b. Working or doing household chores	O	O	O	O	O	O
c. Visiting family or friends out of your home	O	O	O	O	O	O
	1	2	3	4	5	6

Post Training Survey

Appendix: E

Legend:

Strongly disagree, disagree, neutral, agree, and Strongly agree

1. This Cardiac rehabilitation training session increased my knowledge about CR referral and recommendations for heart failure patients.

   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

2. This CR training session changed some of my attitudes about CR recommendations and referrals.

   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

3. This training session could be valuable to the community and patients for increasing an understanding about the importance of earlier CR referral.

   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

4. This training session will likely affect the way in which I make CR referrals and recommendations.

   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

5. This training session will likely help the way in which I communicate the importance of CR referrals to the patients with heart failure for whom I care for.

   1 Strongly disagree
   2 disagree
   3 neutral
   4 agree-
   5 Strongly agree

Appendix F

Cardiac Rehabilitation Reminder Referrals Tool

DATE	Provider Initials	Discussion about CR	Referral placed	Referral not placed	Reason not placed

Appendix G

Timeline Work Plan

TASK	MAR	APR	MAY	JUN
	2018	2018	2018	2018
Meeting with stakeholders Recruitment of Participants Pre- Test	X X X			
Training Session Quiz Training survey Development of Interventions Meeting with stakeholders		X X X		
Data Collection Meeting with Stakeholders Participants			X X	
Data Analysis Meeting with Stakeholders Post test			X X	

Written Evaluation of the Project Power Point Presentation to Stakeholders and Touro University				X X