Pre-Procedural Patient Education Protocol for Cardiac Catheterization Patients

Ben Jay Bautista

Rutgers School of Nursing

DNP Chair: Darcel M. Reyes, PhD, ANP-BC
DNP Team Members: Rodolfo Sangalang, DNP, RN
Prema Noronha, DNP, APN, FNP-C
Date of Submission: April 25, 2021
# Table of Contents

Abstract ........................................................................................................... 5

Introduction ....................................................................................................... 6

Background ......................................................................................................... 6
  CAD Pathology ............................................................................................... 7
  CAD Epidemiology ......................................................................................... 7
    Global ........................................................................................................... 7
    National ....................................................................................................... 8
    State and Local ............................................................................................ 8
  CAD Burden ................................................................................................... 8
  Patient Education Benefit ............................................................................. 9

Needs Assessment .............................................................................................. 10

Problem and Purpose Statement ...................................................................... 10

Clinical Question .............................................................................................. 11

Aims and Objectives .......................................................................................... 11

Review of Literature ........................................................................................ 12
  Health Literacy and Self-Care Practices ....................................................... 12
  Post-Procedure Complications Prevention ..................................................... 13
  Patient Education .......................................................................................... 13
    Educational Brochures ................................................................................ 14
    Teach-Back Method ...................................................................................... 15

Theoretical Model ............................................................................................. 16

Kurt Lewin’s Change Theory ............................................................................ 16
Theory Application ........................................................................................................... 16

Unfreezing Stage ........................................................................................................... 16

Moving Stage ................................................................................................................ 17

Refreezing Stage ............................................................................................................ 17

Methodology .................................................................................................................. 17

Project Design .............................................................................................................. 17

Project Setting .............................................................................................................. 18

Project Population ...................................................................................................... 18

Subject Recruitment .................................................................................................. 18

Consent Procedure ..................................................................................................... 19

Risks, Harms, and Ethics Considerations ................................................................... 19

Subject Costs and Compensation ............................................................................. 19

Study Intervention ..................................................................................................... 19

Project Outcomes ..................................................................................................... 20

Data Collection Tool ................................................................................................. 20

Project Timeline ........................................................................................................ 21

Project Budget .......................................................................................................... 21

Evaluation Plan ........................................................................................................... 21

Data Analysis Plan .................................................................................................... 21

Data Maintenance / Security ..................................................................................... 22

Findings ...................................................................................................................... 22

Discussion ................................................................................................................... 22

Recommendation ....................................................................................................... 23
Abstract

Purpose: Varying LHC patient education practices without supporting implementing tools lead to inconsistent nursing practice in the CCL department. Research has shown that a brochure and teach-back method reinforces essential information delivery. This quality improvement project aims to expand the current patient education protocol of the LHC procedure using a brochure and teach-back method.

Methods: Bedside CCL nurses were oriented on how to use the brochure and teach-back method. Bedside CCL nurses were monitored and supported while implementing the PPEP protocol to educate LHC patients. A PPEP protocol survey was then collected.

Results: Bedside CCL nurses agreed that the use of brochure and teach-back method identifies and reinforces patients’ knowledge gaps (97%), is useful in the patient education process (93%), and improves nursing productivity (100%).

Implications: PPEP protocol implementation enhances nurses’ patient education practice of early prevention, detection, and treatment of risk factors. The use of brochure and teach-back method can be applied to explain other health conditions, elective procedures, or treatment recommendations in multiple healthcare settings.
Pre-Procedural Patient Education Protocol for Cardiac Catheterization Patients

Coronary artery disease (CAD) is preventable. CAD occurs when there is narrowing in the coronary arteries and the supply of oxygenated blood around the heart is compromised. According to the American College of Cardiology (ACC) patients are usually unaware they have CAD until they experience symptoms of chest pain or shortness of breath (ACC, 2019). It is a slow-developing disease that primarily occurs in the fourth decade of life. However, it can also occur earlier (Benjamin, et al., 2018). CAD complications usually lead to much primary care or emergency care visits.

The left heart catheterization (LHC) procedure is the definitive diagnostic procedure to identify CAD. LHC expands narrowed coronary arteries using a balloon or a metal stent to optimize cardiac function (ACC, 2019). LHC is an outpatient procedure performed in the cardiac catheterization laboratory (CCL). Patients may stay in the hospital for observation or may have a coronary artery bypass graft surgery depending on the LHC outcome.

Elective or emergent procedures and surgeries can be overwhelming for the patient and their family. Feelings of uncertainty, anxiety, and vulnerability may develop because the patient and family are unfamiliar with the disease, the management, and its prevention strategies (Mohammed, 2016). Bedside nurses have direct access to patients and their families. Nurses can teach them the necessary self-care practices to maintain health, prevent avoidable outcomes, strengthen patients’ competency to manage their CAD, and delay worsening of symptoms (Elhy et. al., 2017; Zhang et al., 2017). This proposal describes a pre-procedure patient education protocol using a brochure and the teach-back method to improve bedside CCL nurses’ ability to identify patients’ knowledge gaps in CAD management and post-LHC self-care practices.

Background
CAD Pathology

Multiple factors contribute to the development of CAD. Age, sex, race, and family history are non-modifiable factors. Modifiable risk factors include hypertension, high cholesterol, cigarette smoking, diabetes, unhealthy diet, physical inactivity, stress, overweight, and obesity (Healthy People, 2020). Approximately 15.5% of American adults are smokers, 39.6% of adults, and 18.5% adolescents are obese; 28.5% of American adults have low-density lipoprotein (LDL) cholesterol greater than or equal to 130 mg/dl (ACC, 2019). Data from the ACC indicated that approximately 45.6% of American adults have hypertension, approximately 9.8% adults have diabetes, approximately 3.7% adults have undiagnosed diabetes, and only 22.5% adults participated in the recommended exercise program (ACC, 2019).

Coronary arteries supply oxygenated blood to the heart. Cholesterol plaques or atherosclerosis can build up within the linings of coronary arteries as people age. Compromised coronary circulation leads to alarming symptoms such as chest pain, shortness of breath, dizziness, weakness, numbness of arms and neck, nausea, or vomiting (Centers for Disease Control and Prevention [CDC], 2019). The severity of symptoms depends on how diseased the coronary artery is and the number of coronary arteries involved. CAD can affect anyone and untreated, it can progress to more severe health complications such as angina, myocardial infarction, heart failure, and various cardiac arrhythmias (Benjamin, et al., 2018).

CAD Epidemiology

Global

Coronary artery disease is a leading cause of death globally, representing 31% of all global deaths or an estimated 17.9 million deaths in 2016 (World Health Organization, 2017). Physical, social, and political influences contribute to the development of CAD. Limited access
to a healthy lifestyle, affordable healthcare, or accurate information in local settings escalates CAD incidence (Healthy People, 2020). In countries with advanced healthcare systems, it is estimated that 29% of women and 48% of men have heart disease (Benjamin, et al., 2018).

**National**

In the United States, approximately 16.5 million individuals age 20 years and older have CAD (Benjamin, et al., 2018). Approximately 1,055,000 individuals had symptoms related to CAD complications in 2019 (ACC, 2019). Nearly 6.2 million American adults had heart failure between the years 2013 to 2016. Approximately 5.3 million Americans had atrial fibrillation and approximately 840,768 Americans died related to CAD complications in 2016 (ACC, 2019). On average, a U.S. citizen dies from myocardial infarction (MI) approximately every 40 seconds (ACC, 2019).

**State and Local**

The State of New Jersey Department of Health (NJDOH) reported that 18,649 New Jersey (NJ) residents died of heart disease in 2015 (NJDOH, 2017). Heart disease was the number one cause of death among NJ residents between the years 2000 to 2018. To address the high death rate related to heart disease, the Healthy New Jersey 2020 initiative partnered with public and private healthcare sectors, worksite, and community groups to promote self-management skills and improve health outcomes among NJ residents (NJDOH, 2017). The NJ DOH launched a statewide worksite wellness program in 2012 and assisted NJ employers with creating policies and environmental interventions to reduce the risk of heart disease, stroke, and obesity among employees (NJDOH, 2017).

**CAD Burden**
CAD carries a financial burden. According to Healthy People 2020, managing heart disease accounted for approximately $320 billion in the United States' annual healthcare budget. The CDC reported that $131 billion was lost on job productivity, $170 billion was lost from smoking, and $117 billion was lost from lack of exercise annually (CDC, 2019). Furthermore, LHC can cost $57,494, percutaneous coronary intervention can cost $84,813, and coronary artery bypass graft surgery can cost $168,541 (ACC, 2019). Controlling the CAD risk factors helps maintain optimal health and may increase healthcare savings.

**Patient Education Benefit**

Healthy People 2020 goal is to improve Americans’ overall health and quality of life through early prevention, detection, and treatment of risk factors. Chronic diseases such as CAD require specific risk reduction strategies to avoid worsening symptoms. High-quality patient education can reinforce existing knowledge or confirm misconceptions that can influence how a person minimizes disease progression (Hong et al., 2019). An informed patient is capable of making appropriate decisions, participate actively in the decision-making process, and adhere to healthcare recommendations (Wittink & Oosterhaven, 2018).

LHC interventions may result in many post-procedural complications. Patients undergoing LHC may experience post-procedural pain, discomfort, bleeding, death, or disability. Unexpected LHC complications are distressing and worrisome to patients and their families. Pre-procedure education mentally prepares patients on how to recognize, report, or seek immediate treatment. The time spent preparing patients for a procedure and its aftermath can reduce patients’ fear and anxiety about post-procedural complications (Alsaffar et al., 2016). This quality improvement project will standardize the patient education process to improve patients’ knowledge about CAD management and post-LHC self-care practices.


**Needs Assessment**

The co-investigator performed a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to determine the readiness of the CCL bedside nurses to improve patient education protocol.

**Strengths of the organization:**
- Magnet designated facility.
- Implements multiple evidence-based quality improvement projects.
- Motivated, supportive, and well-informed nurses.

**Weaknesses of the organization:**
- Disorganized and inconsistent patient education protocol that is not comprehensive.
- No evaluation method to assess patient knowledge.
- Patient education is usually given post-procedure.
- Insufficient available printed material to reinforce patient education.

**Opportunities afforded by the project:**
- Standardize patient education protocol.
- Enhance customer service, practice standards, and competitiveness.

**Threats to the project:**
- Fast-paced and a busy CCL department.
- 10-20 high-risk procedures per day. Emergency cases.
- Unfavorable patient outcomes or post-procedure complications.
- Uncooperative patients or nurses.
- Inadequate staff.

**Problem and Purpose Statement**
The lack of personal knowledge about CAD management and the uncertainty of post-LHC outcomes can distress patients and their families. The anxiety worsens when post-procedural complications occur. Patients and families usually rely on healthcare providers for support and information. However, a CCL department's busy environment may not be conducive to the patient education process. Busy bedside CCL nurses cannot provide consistent patient education while handling multiple high-risk procedures and emergency cases. Post-procedural patient education may not adequately prepare patients. Busy bedside CCL nurses may not provide sufficient tools to emphasize important patient education information. This DNP project will implement a standardized pre-procedural patient education protocol (PPEP) using a brochure and teach-back method to educate patients about CAD management and post-LHC self-care practices. The proposed PPEP will allow nurses to reinforce patient knowledge while patients wait to complete their LHC procedure.

**Clinical Question**

For busy bedside CCL nurses, will a standardized pre-procedural patient education protocol (PPEP) consisting of a brochure and a teach-back method identify patients’ knowledge gaps about CAD management and post-LHC self-care practices?

P – Bedside cardiac catheterization laboratory nurses.

I – Implement a PPEP protocol consisting of a brochure and teach-back method.

C – Traditional post-procedure patient education protocol.

O – Identify patients’ knowledge gap in CAD management and post-procedural self-care practices.

T – 1 month

**Aims and Objectives**
This quality improvement project aimed to implement a PPEP using a brochure and the teach-back method while maintaining bedside CCL nurses’ productivity. The following objectives facilitated in achieving this aim:

1. Conduct an educational session with the CCL nurses to teach them how to use the patient education brochure and teach-back method.

2. Implement the PPEP protocol.

3. Evaluate the PPEP protocol’s usefulness in identifying patients’ knowledge gaps and nurses’ productivity.

**Review of Literature**

The following electronic database was searched for this literature review: EBSCOhost, CINAHL, PubMed, ScienceDirect, and Google Scholar (Appendix A). The following terms were used for the search: *pre-procedure, patient education, teach-back method, coronary artery disease, heart disease, treatment adherence, health literacy*, and *counseling*. The initial search yielded 42,673 articles. Articles that were not full-text, peer-reviewed, written in the English language, and published between 2014 to 2020 were eliminated. The number of articles was reduced to 188. The John Hopkins Nursing Evidenced-Based Practice Evidence Level and Quality Guide was used to appraise the articles, and 17 articles were selected to explore the subject in this literature review (Appendix B).

**Health Literacy and Self-Care Practices**

Health literacy (HL) is the ability to obtain, process, and understand basic health information and services to make informed decisions, a national priority in the U.S. (Vishnevetsky et al., 2017; Healthy People, 2020). Matsouka et al. (2016) examined the influence of improving HL in a sample of 227 heart failure (HF) patients. The study found that
patients with improved HL can quickly recognize worsening symptoms and seek immediate treatment. Adherence to self-care practices is influenced by how a patient recognizes a symptom, evaluates the need to take action, decides to take action, implements the treatment plan, and evaluates the patient’s response to the treatment (Matsuoka et al., 2016). Patient’s evaluation and response to symptoms prevent re-hospitalization or lowering the quality of life due to HF (Matsuoka et al., 2016).

**Post-Procedure Complications Prevention**

Patients undergoing elective surgeries or procedures are usually anxious and unable to retain new information (Elhy & Elalem, 2017). Adequate information before a procedure heightens patients’ awareness and understanding of possible clinical outcomes, results in better patient outcomes, and promotes greater patient satisfaction (Mohammed, 2016; Elhy & Elalem, 2017). A review by Mohammed (2016) showed that anxiety before an elective procedure is associated with fear of experiencing pain, disability, or possibly death after the procedure. Adequate information given before a procedure reduces fear and promotes a better understanding of the procedure (Mohammed, 2016). A study conducted by Elhy and Elalem (2017) demonstrated that cognitive and behavioral conditioning before an elective procedure psychologically prepares patients for the procedure, who were better able to comply with recovery instructions, and be more vigilant to prevent complications.

**Patient Education**

Cardiac rehabilitation is a comprehensive prevention program that emphasizes patient education as a core component (Ghisi et al., 2018). The effectiveness of patient education in improving self-care practices, health-related quality of life, potential reduction of healthcare costs, and recurrence of acute CAD events depends on patients’ ability to understand and process
the health information provided (Ghisi et al., 2018). Patients with low HL are usually older, have many CAD comorbidities, lower educational level, and disadvantaged socioeconomic position. These patients usually have limited access to healthcare resources, higher anxiety, and higher mortality rates (Ghisi et al., 2018).

A study conducted by Zhang et al. (2017) looked at the relationship between health information uptakes among adult participants using educational brochures. The study found that 88.9% (n=141) of adult participants could recall information, while 85.6% of adult participants could apply newly learned information to problem-solving situations. However, participants older than 65 years had a 50.7% score with the Health Knowledge Questionnaire (HKQ) used in the study, while participants younger than 65 years of age had a 78.9% score (Zhang et al., 2017). Study findings attributed cognitive changes in reading comprehension in participants older than 65 years of age to the difference in scores between younger and older participants. Patient education strategies with patients older than 65 should accommodate cognitive declines in reading ability (Zhang et al., 2017).

**Educational Brochures**

Written pamphlets, booklets, or brochures with concrete examples and illustrations are effective means of mentally preparing patients about their health condition and treatment plan (Alsaffar et al., 2016; Simula et al., 2019). A study conducted by Simula et al. (2019) looked at the attitudes of low back pain (LBP) patients (n = 136) and practitioners (n = 32) using an educational brochure to explain the disease process and treatment guidelines. Out of 136 LBP patients, approximately 47% of LBP patients reported that reading the educational brochure helped them understand the LBP disease process; approximately 42% wanted to comply with the recommended treatment guidelines; and approximately 25% reported their willingness to receive
additional information about LBP (Simula et al., 2019). Facilitators to improve educational brochure use were practitioners’ support during the education process, clarity of information, and patient’s interest in learning more about LBP (Simula et al., 2019). All practitioners in the sample agreed that educational brochures helped them educate their patients about LBP; approximately 80% thought educational brochures helped teach the recommended treatment guidelines; and approximately 75% of practitioners expressed their interest to use the brochures (Simula et al., 2019). The commonly reported barriers to the brochure use were patients’ interest to change established behaviors, lack of practitioners’ time, or forgetting to use the brochure. The chief facilitator for brochure use was the brochure's practical explanation of important LBP topics (Simula et al., 2019).

**Teach-Back Method**

The teach-back method uses open-ended questions to verify patients’ understanding and recall of essential information using patients’ own words (Porter et al., 2019). The teach-back method allows practitioners to assess and expand patients’ knowledge gaps about a certain topic, clarify misconceptions, and promote treatment adherence (Hong et al., 2019). A study conducted by Dihn et al. (2016) investigated the effects of the teach-back method among HF patients. The study found a significant improvement in disease-specific knowledge, treatment adherence, and self-care competence as a result of the teach-back method of education. Three out of four teach-back questions regarding the diuretic medication name, weight gain awareness, high sodium foods, and HF warning signs were answered correctly by study participants (Dinh et al., 2016). Another study confirmed that disease-specific knowledge and basic self-care skills among HF patients older than 65 years increased by approximately 90-94% using the teach-back
method. The study found an approximately 12% decrease in HF readmission rates among patients who received the teach-back method (Hong et. al., 2019).

Patients undergoing elective procedures such as LHC face stress from health outcome uncertainty (Mohammed, 2016). Bedside nurses can lessen this stress by imparting knowledge and improving patient’s HL abilities. Educational brochures and the teach-back method offer a concrete way of potentially improving patients’ HL and hospital experience. The use of the teach-back method can identify patient’s knowledge gaps and improve patients’ self-care confidence (Hong et. al., 2019). The teach-back method also allows patient-centered collaboration, thus strengthening the nurse-to-patient relationship (Hong et. al., 2019). Brochures organize patient education materials that are easy for healthcare providers and patients to follow and comprehend.

**Theoretical Framework**

**Kurt Lewin’s Change Theory**

Kurt Lewin’s Change Theory was used as the theoretical framework for this project. Lewin’s Change Theory follows a three-step change model: unfreezing, moving, and refreezing. Driving and restraining forces cause or prevent change to stay permanent (Burnes, 2020). Increasing the driving forces and lessening the restraining forces facilitate change and strengthen changed behaviors (Burnes, 2020).

**Theory Application**

**Unfreezing Stage**

Current practices must be disrupted for change to occur in the unfreezing stage (Burnes, 2020). In this project, the unfreezing stage was accomplished by providing orientation to the bedside CCL nurses on how to use the brochure and teach-back method. This was done by
individual orientation to the PPEP protocol. It is sustained by reminding the nurses during group huddles at the beginning of each shift.

**Moving Stage**

The moving stage is where the changed behavior occurs (Burnes, 2020). The bedside CCL nurses used the brochure and teach-back method during their patient education. Brochures were given during LHC pre-procedural phase and continued until discharge. The teach-back method was used to reinforce essential information to the patients. The moving stage was sustained by monitoring and assisting bedside CCL nurses’ implement the PPEP protocol.

**Refreezing Stage**

The refreezing stage is where the changed behavior is maintained to become a part of regular practice (Burnes, 2020). Project evaluation was conducted to assess bedside CCL nurses’ opinions on PPEP protocol. A supply of available brochures was made available in the CCL department. The bedside CCL nurses are well-informed about CAD management and post-LHC self-care practices. The bedside CCL nurses also show strong expertise with the teach-back method use. The bedside CCL nurses favored the PPEP protocol use during project evaluation.

**Methodology**

**Project Design**

This quality improvement project explored how a standardized PPEP using an educational brochure and teach-back method identifies and lessens patients’ knowledge gap about CAD management and post-LHC self-care practices. This DNP project also explored the PPEP’s usefulness in nurses’ promotion of nurses’ productivity. A survey was administered at the end of the implementation period to gather the participating CCL nurses' perceptions of the effectiveness of the PPEP.
**Project Setting**

The project's setting was the CCL department in a 350-bed urban hospital in northern New Jersey. The CCL department has an average of 5-10 LHC procedures daily or 10-20 daily patient census. It is open on weekdays and closes during weekends and holidays. LHC procedures are elective and emergent cases. Other procedures done in the CCL department include diagnostic and interventional LHC, right heart catheterization, electrophysiological studies with or without ablation, insertion of permanent or temporary pacemakers, insertion of automated implantable cardioverter-defibrillator, and diagnostic or interventional peripheral vascular procedures. The CCL department also does bedside procedures such as tilt-table tests, trans-esophageal echocardiogram with or without cardioversion, and loop recorder placement. It is a fast-paced and busy CCL department with multiple high-risk procedures and emergency cases.

**Project Population**

A convenience sample of 15 bedside CCL nurses was recruited for this DNP project. All CCL nurses who provide direct patient care were asked to participate. Employees who were not CCL nurses or employees who did not provide direct patient care were excluded from the project.

**Subject Recruitment**

The CCL nursing director provided a letter of cooperation (Appendix F). Potential study participants were recruited using flyers distributed within the CCL department (Appendix G). The co-investigator approached potential participants to participate in the project. The co-investigator discussed the project and asked the CCL nurses to participate during staff huddles at the start of every shift.
Consent Procedure

Using social distancing protocols, the co-investigator explained the project to potential participants and outlined the project's purpose, risk, and potential benefits. Potential participants were encouraged to ask questions and informed that their participation is voluntary and withdrawal from the project can happen at any time. An informed consent document was offered to the potential participant to sign (Appendix H). Personal identifying information was not collected for the project.

Risks, Harms, and Ethics Considerations

There was no physical, psychological, emotional, social, and economic harm involved in this project. Participation in the project may improve the participant's knowledge about using an educational brochure and the teach-back method to assess and strengthen patients’ CAD knowledge and post-LHC self-care practices; however, this could not be guaranteed. This project did not have personal benefits for participants.

Subject Costs and Compensation

There were no additional costs or compensation given to the project participants. However, project participants received lunch during the project orientation session.

Study Intervention

A socially distant small group presentation or a socially distant one-on-one presentation was organized to orient the CCL nurses to the project. The co-investigator discussed and demonstrated the proposed PPEP. The education brochure, which explains CAD, LHC, and self-care practices, was shared with the participants (Appendix D). Bedside CCL nurses were asked to familiarize themselves with the content of the brochure. A return demonstration of the teach-back method was performed by the participants.
Implementation of the proposed PPEP protocol began right after the CCL nurses’ orientation. Bedside CCL nurses gave the educational brochures to patients while they were waiting for the LHC procedure to start. Patients were given time to read the brochure and ask questions. Bedside CCL nurses then used the teach-back method to assess the patient’s baseline CAD knowledge and post-LHC self-care practices knowledge. The bedside CCL nurse referred back to the brochure and reinforced patient education. The brochure and teach-back method was repeated before patients’ home discharge to assess CAD knowledge retention and strengthen post-LHC self-care practices knowledge. The implementation period transpired for one month. The co-investigator supported, guided, and coached the nurses during this stage. An evaluation of the PPEP I was then implemented after the implementation period ended.

**Project Outcomes**

Three project outcomes determined the success of this quality improvement project.

1. The brochure and teach-back method's effectiveness to identify patients’ CAD knowledge and post-LHC self-care practices.

2. The usefulness of the PPEP for patient education.

3. The influence of the PPEP protocol on bedside CCL nurses’ productivity.

An extra category was added to the survey to determine if the proposed PPEP protocol can be applied to explain other health conditions or elective CCL procedures.

**Data Collection Tool**

The PPEP protocol evaluation consisted of 15 survey questions using a five-point Likert scale method (Appendix E). The first two questions asked how the brochure and teach-back method assisted bedside CCL nurses identify patients’ knowledge gaps and topics for discussion. The following six survey questions assessed the usefulness of the PPEP protocol in promoting
patient education. The following three survey questions assessed how the PPEP protocol influences bedside CCL nurses' productivity. The final four survey questions asked if the PPEP protocol can be applied to explain other medical conditions and CCL procedures.

**Project Timeline**

This project was targeted on January 25, 2021, right after IRB approval. The co-investigator informed the project site and recruitment of participants begin. Recruitment, collecting consents, socially distant group presentations, and bedside CCL nurses’ orientation to the PPEP protocol were completed in five days. Project implementation happened for four weeks in February 2021. Project evaluation happened right after project implementation ended on March 2021. Extra time was saved in March and April 2021 for unprecedented events and the processing of data. The project was completed in April 2021.

**Project Budget**

An estimated $400 budget was allotted for project implementation (Appendix I). The CCL nurses were provided with an estimated $200 lunch in appreciation for their time. The patient education brochures were pre-purchased for use at an estimated cost of $170. Additional costs of $40 were assigned for the printed materials.

**Evaluation Plan**

Bedside CCL nurses were asked to complete the PPEP protocol survey right after the implementation period ended (Appendix E).

**Data Analysis Plan**

Microsoft Excel was used to process project data. Bedside CCL nurses' responses to the PPEP protocol’s ability to identify patient knowledge gaps, usefulness in promoting nurses’
patient education duty, and influence on nurses’ job productivity will be described. Data analysis was conducted after data collection was completed in March 2021.

Data Maintenance / Security

The PPEP protocol survey forms were kept in a binder locked inside the CCL’s patient care coordinator’s (PCC) office. Only the co-investigator had access to this data. There were no participant identifiers included in the data collection instrument. The survey forms were disposed of with the hospital’s paper disposal system right after data processing. The project's findings were submitted and kept inside a locked cabinet in Dr. Darcel Reyes’ office, School of Nursing, 65 Bergen Street, Newark, NJ 07107.

Findings

A total of 15 bedside CCL nurses participated in the quality improvement project. Each participant responded to the PPEP protocol survey which was composed of 15 questions divided into 4 categories and rated on a 5 point Likert scale. Microsoft Excel analyzed the data. All of the 15 participants favored the use of the patient education brochure and the teach-back method. The nurses agreed that the PPEP protocol identifies the patient’s knowledge gap (97%), useful in patient education (93%), promotes job productivity (100%), and can be modified to explain other health conditions and medical procedures (100%). Data analysis was conducted on March 2021.

Discussion

The findings of this project revealed that the PPEP protocol using a patient education brochure and teach-back method promotes effective nursing patient education duty. The participants of the study supported that the brochure gave the essential information needed for patient education. The brochure’s simplified terms and organized content-enabled nurses to explain essential information to patients. This coincides with Simula et al.'s (2019) study
indicating that brochure use improves practitioners’ education process to clarify recommended treatment guidelines and explain health conditions and procedures.

Most of the bedside CCL nurses who participated in the study are familiar with the teach-back method. The nurses who were not familiar with the teach-back method effortlessly understood the process and used the brochure as their guide during the return demonstration. All of the bedside CCL nurses who participated in the study completely agreed that the teach-back method identified their patients’ knowledge gaps and topics for discussion. The bedside CCL nurses were able to verify their patients’ familiarity with CAD and post-LHC self-care practices using the teach-back method and brochure. This coincides with Hong et al.'s (2019) study indicating that the teach-back method greatly augments patients’ disease-specific knowledge and basic self-care skills.

The time spent explaining patient education material also influenced how patients comprehend vital information. The patient education brochure was given during the pre-procedural phase of the LHC procedure. This gave enough time for patients to read through the brochure, study, and ask questions. The teach-back method done throughout the patient’s stay assisted nurses to clarify the patient’s knowledge about CAD complications and post-LHC self-care practices. Bedside CCL nurses were able to go back to the brochure as needed and explain further to their patients the necessary information. Adequate information given before a procedure improves cognitive and behavioral conditioning before an elective procedure. Adequate time spent psychologically prepare patients for a procedure reduces fear and promotes a better understanding of the procedure and its associated recovery instructions (Elhy & Elalem, 2017; Mohammed, 2016).

**Recommendation**
The use of the PPEP protocol can be developed further or expanded. This project looks at how bedside CCL nurses use the brochure and teach-back method to explain CAD and post-LHC self-care practices. However, the brochure and teach-back method can be applied to explain other health conditions, medical procedures, and treatment recommendations in various healthcare settings. This was recognized by bedside CCL nurses during the PPEP protocol survey. During informal conversations with bedside CCL nurses, it was recommended that the distribution of brochures should be started at the cardiologist’s office. It was also recommended that the brochure should also be available in other languages besides English.

**Implication**

**Clinical Practice**

This quality improvement project enhances the current clinical practice. The PPEP protocol initiated in the pre-procedural phase of LHC and continued until patients’ hospital discharge will give enough time for patients and bedside CCL nurses to review the education material and validate necessary health information. Through the teach-back method with the brochure use, patients will be reminded of the benefits of controlling the modifiable risk factors of heart disease and how to prevent worsening CAD. Self-care practices after the LHC procedure will also be emphasized using the brochure and teach-back method.

**Healthcare Policy**

Implementation of this project will contribute to the Healthy People 2020 goal of improving cardiovascular health and quality of life through early prevention, detection, and treatment of risk factors for heart disease. This project intends to maximize patients’ time spent in CCL. The concurrent use of patient education brochures and teach-back methods during the pre-procedural phase of an elective procedure will provide enough time to organize and impart
vital information to the patients. This project will be recommended as a mandatory CCL patient education policy.

**Quality and Safety**

The application of this quality improvement project in the CCL department intends to promote patients’ health, safety, and quality service. CAD requires specific prevention strategies. Studies have shown that educational brochures assisted practitioners to explain recommended treatment guidelines (Simula et al., 2019). Studies also showed that brochures mentally prepare patients for disease progression and prevention (Alsaffar et al., 2016; Simula et al., 2019). The effectiveness of patient education depends on how the patient receives the health information provided. Effective patient education can lead to improved self-care practices, enhanced health-related quality of life, and reduced disease complications (Ghisi et al., 2018).

**Education**

Patients undergoing elective procedures are usually anxious. Feelings of anxiety may hinder patients from understanding vital health information. The findings of this study contribute to the pre-existing literature that explores the benefits of the patient education process using a brochure and teach-back method started in the pre-procedural phase of an elective procedure. Brochures and teach-back methods simplify vital health information and increase patient’s awareness of the disease process and self-care practices (Elhy & Elalem, 2017; Mohammed, 2016). A structured patient education process maximizes practitioners’ time in enhancing their patients’ knowledge for disease management and self-care practices (Alsaffar et al., 2016; Simula et al., 2019). Sufficient time given to provide education reinforces vital information and may ease up anxiety that prevents a patient from understanding basic health information.
(Mohammed, 2016). Recognizing the possible variables that may promote patients’ awareness can lead to improved service quality.

**Economic Benefits**

This quality improvement project focused primarily on preventing disease progression that may contribute to economic growth. Excellent patient education can influence how a person perceives the disease and minimize the disease development by making informed decisions or participate actively in healthcare recommendations (Hong et. al., 2019; Wittink & Oosterhaven, 2018). Well-informed patients recognize, report, or seek immediate treatment which can ultimately influence the decrease of the $320 billion annual U.S. healthcare budget (Healthy People, 2020). A portion of the annual $170 billion healthcare budget might also be saved from controlling the modifiable risk factors of heart disease. Furthermore, reduced hospitalizations and increased job productivity might save a portion of the $131 billion expenditure (CDC, 2019).

**Sustainability**

The PPEP protocol using a brochure and teach-back method intends to increase patients’ knowledge of the CAD disease process and post-LHC self-care practices. This quality improvement DNP project serves as a foundation to improve the current patient education process for patients undergoing LHC procedure. This project serves as a basis for future studies designed to address specific health conditions or medical procedures in different healthcare settings.

**Limitations**

This quality improvement project has several limitations. The project was conducted during the height of the Covid-19 pandemic crisis. The CCL’s LHC patient census wasn’t high as compared to the pre-pandemic patient census. The patient education brochure was written in
English. Consequently, the limited number of LHC patients was reduced further by patients who preferred other languages besides English. The sample size of bedside CCL nurses who implemented the project was small and specific. Finally, the project was conducted only in one clinical site for four weeks. These circumstances made the findings of this project difficult to generalize in a larger capacity.

**Dissemination**

The findings of this DNP project add to the current literature on the usefulness of pre-procedural patient education, educational brochures, and teach-back method. This DNP project will be disseminated through project paper, poster presentation, and oral presentation to the DNP panel. A presentation with the hospital’s nursing research council will be made. It will also be discussed with the CCL director and nursing staff. A manuscript based on this project idea will be developed for possible future publication.

**Conclusion**

Patient education is one of the most common and cost-effective ways in increasing patients’ awareness and promoting a healthy lifestyle. Implementation of the PPEP protocol can advance the current practice of early prevention, detection, and treatment of risk factors. This DNP project can be applied and modified to explain other health conditions and treatment management besides CAD and LHC.
References


Healthy People (2020, February 09). *Heart disease and stroke.*


Mohammed, S. A. (2016). Effectiveness of structured teaching program on knowledge, anxiety state and tolerance for patients with gastrointestinal endoscopy: Randomized controlled trial. *Life Science Journal*, 13(9), 9-17. DOI: 10.7537/marslsj130916.02


Appendix A

PRISMA 2009 Flow Diagram

Records identified through database CINAHL / EBSCO Host

Additional records identified through other ScienceDirect Host (n = 42,673)

Records after duplicates removed (n = 31,053)

Records screened (n = 11,620)

Records excluded (n = 11,432)

Full-text articles assessed for eligibility (n = 188)

Full-text articles excluded, with reasons (n = 174)

Studies included in qualitative synthesis (n = 0)

Studies included in quantitative synthesis (meta-analysis) (n = 17)
Appendix B

EBP Question: In a busy CCL department, will a standardized pre-procedural patient education (PPEP) protocol consisting of a brochure and teach-back method be useful for a bedside nurse to identify patient’s knowledge gap about post-procedural self-care practices while maintaining productivity?

Evidence Table

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Informed consent: Do information pamphlets improve post-operative risk recall in patients undergoing total thyroidectomy: Prospective randomized control study.</td>
</tr>
<tr>
<td>Evidence Type</td>
<td>Sample, Sample Size, Setting</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
### Research Prospective Randomized Control Study

- **49 patients are included. 25 receive verbal consent only. 24 patients received both verbal consent & patient education pamphlets.**
- **No statistical significant differences between the two groups in both interview duration, in time between interviews, and in recall tests.**
- **No correlation is also apparent between the pre-op Hospital Anxiety and Depression Scale score and the recall questionnaire overall score.**
- **The recall test used for this study was not a validated assessment tool.**

**Article #2**

**Author Date:** Centrella-Nigro, A. M., & Alexander, C. (2017).

**Title:** Using the teach-back method in patient education to improve patient satisfaction.

### Evidence Type

<table>
<thead>
<tr>
<th>Sample, Sample Size, Setting</th>
<th>Study Findings that help answer EBP question</th>
<th>Limitations</th>
<th>Evidence Level &amp; Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Methodology</td>
<td>Setting</td>
<td>Findings</td>
<td>Limitations</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Quasi-experimental design | 361-bed community Magnet-designated hospital in northern New Jersey. 
(n = 24) Intervention group (n = 30) Control group | A significant improvement in knowledge scores in the pretest–posttest was found using paired t tests ($p = .002$). Qualitative analysis of nurses’ comments demonstrated strong support for teach back in the posttest. The HCAHPS scores were not significantly improved in the intervention unit when compared with the control unit. | Relatively small number of participants limits its generalizability. Staffing patterns, acuity levels, and patient’s health literacy level may have affected HCAHPS scores in both nursing units. Unknown baseline health literacy level. The developed instrument had low reliability as measured by Cronbach’s alpha. | Level I High Quality |
**Article #3**


**Title:** Teach-back experience and hospitalization risk among patients with ambulatory care sensitive conditions: A matched cohort study.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Study Findings that help answer EBP question</th>
<th>Limitations</th>
<th>Evidence Level &amp; Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Retrospective Matched cohort study</td>
<td>(n = 3994) = US adults aged 18 years or older with any of the following 5 ACSCs: (1) hypertension, (2) type 2 diabetes, (3) heart disease, (4) asthma,</td>
<td>There was a significant association between reporting teach-back experience and hospital admission for ACSC-related conditions. Patients with teach-back experience had 15% lower risk of being admitted (23% lower for repeated hospitalization) than those without.</td>
<td>Teach-back exposure relied on patient self-reported information.</td>
<td>Level I High Quality</td>
</tr>
</tbody>
</table>
and (5) chronic obstructive pulmonary disease (COPD).

Teach-back decreased risks of hospitalization among patients with hypertension (12% lower), type 2 diabetes (23% lower), and heart disease (36% lower risk of having a second admission), albeit no significant reduction among those with asthma and COPD.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
</table>

**Article #4**


**Title:** Self-management behaviors in older adults with asthma: Associations with health literacy.
| Research Prospective Observational cohort study | Study participants were mostly female (84%), and non-white (Hispanic, 39%; black non-Hispanic 31%). Thirty-six percent of the sample had low health literacy. The mean number of years with asthma was 31, and 9% had a history of intubation. | Individuals with low health literacy were less adherent to asthma controller medications according to subjective and objective measurement. They also demonstrated worse technique for self-administration of inhaled steroids. | These findings suggested low adherence and poor inhaler technique can be a causal link between low health literacy and adverse asthma outcomes such as emergency department visits and hospital admissions. | The current study found no consistent patterns in health literacy and trigger avoidance. | The results may not be generalizable to people outside of urban areas or of other races and ethnicities, in whom health beliefs and behaviors may differ. | Level III, Good Quality |
used a different delivery device.


<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Health literacy and coronary artery disease: A systematic review.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>N=3,783 n=83</td>
<td>Results regarding the association between HL and medication use were contradictory.</td>
<td>There was no collective conceptual definition of HL.</td>
<td>Level III, C, Low quality</td>
</tr>
<tr>
<td>Systematic review of observational</td>
<td>2 RCT; 8 observational; 5 cross-sectional; 3</td>
<td></td>
<td>Findings regarding effects of HL from different countries varies.</td>
<td></td>
</tr>
</tbody>
</table>
This systematic review reveals the literature on HL in CAD patients is very limited. Although, findings from meta-analysis provide evidence of the effectiveness of patient education in CAD patients, in improving self-management behaviors, health-related quality of life, and potentially reducing healthcare costs and recurrence of acute events.

Important health behaviors and outcomes related to CAD patients were not assessed.

No effective interventions to improved outcomes for CAD patient with low HL identified.

Qualitative and mixed methods studies were excluded from the review.

Most studies utilized self-reported outcome measures. Subject to expectation bias.
Multiple and simultaneous interventions were implemented. It was difficult to ascertain what components contribute to the outcomes.

Most studies were conducted in the U.S. & written in English which limits the generalizability of the findings to other countries with different healthcare systems and social structures.

**Title:** Health literacy is independently associated with self-care behavior in patients with heart failure. |
<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>n= 249 heart failure (HF) patients</td>
<td>Patients with lower HL had fewer self-care behaviors and lack of HF knowledge.</td>
<td>Verbally reported surveys that can be subject to social desirability bias.</td>
<td>Level II, Good Quality</td>
</tr>
<tr>
<td>Cross-sectional, observational study</td>
<td>1 university hospital &amp; 2 general hospitals in rural and urban areas.</td>
<td>HF patients have several misunderstandings about the disease. This leads to poor adherence to self-care and deterioration of HF</td>
<td>Second, in this explorative study we did not test patients’ motivation, problem solving, and self-efficacy ability. It did not test support from technologies, mass media, and health education resources.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adherence to self-care behavior is poor when patients do not understand, absorb and retain health information.</td>
<td>A longitudinal follow-up is necessary to define the association between HF outcomes and HL self-care behaviors.</td>
<td></td>
</tr>
</tbody>
</table>
HF patients require self-care behaviors to maintain their physiological stability (self-care maintenance) and to respond to symptoms when they occur.

<table>
<thead>
<tr>
<th>Article #7</th>
<th>Author Date: Miller, T. A. (2016).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Health literacy and adherence to medical treatment in chronic and acute illness: A meta-analysis.</td>
</tr>
<tr>
<td>Evidence Type</td>
<td>Sample, Sample Size, Setting</td>
</tr>
<tr>
<td>Research A Meta-Analysis Correlation Study</td>
<td>220 studies were reviewed; 101 studies located in the U.S.; 117 located outside the U.S.; 4 with</td>
</tr>
</tbody>
</table>
unspecified locations; 2 located in multiple categories
3 studies set in HMOs; 4 in Veterans Affairs hospitals; 41 in University Medical Centers; 6 in private practices; 39 in clinics; 49 in hospitals; 6 in patient homes; 99 in other settings; 24 in multiple categories

among patients with cardiovascular disease.

Health literacy interventions had greater effect on adherence in lower income patients and of racial-ethnic minority patient.

Health behavior change and complex treatment management behaviors may demand greater patient health literacy than medication adherence.

**Article #8**

**Author Date:** Mohammed, S. A. (2016).

**Title:** Effectiveness of structured teaching program on knowledge, anxiety state and tolerance for patients with gastrointestinal endoscopy: Randomized controlled trial.
<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>n= 60 patients</td>
<td>Anxiety, discomfort, and pain are interrelated. Anxiety level is increased before gastrointestinal endoscopic procedure due to feeling of pain and discomfort associated with the procedure.</td>
<td>Limited sample size. Larger sample is required to achieve generalizable results.</td>
<td>Level II, Low Quality</td>
</tr>
<tr>
<td>Quasi-experimental study</td>
<td>The study was conducted in the endoscopy unit in [redacted] in Egypt.</td>
<td>Structured teaching program decreases patients’ anxiety, improve knowledge, &amp; improve general health.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cognitive &amp; behavioral preparation is more effective in reducing patient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
anxiety than a purely cognitive intervention.

**Article #9**


**Title:** Using teach-back to understand participant behavioral self-monitoring skills across health literacy level and behavioral condition.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Cross-sectional</td>
<td>n = 301 Participants were from 8 southwest Virginia counties, USA. 48.1% female and 93.9% white.</td>
<td>Low HL participants recalled fewer behavioral messages correctly and needed more rounds of teach-back than high HL participants. Participants who struggle with recalling key concepts value the</td>
<td>The sample was predominantly female and white, which may limit generalizability. The teach-back completers were slightly older than non-completers.</td>
<td>Level II Good Quality</td>
</tr>
</tbody>
</table>
Approximately 42.1% have a high school education or less. Average annual income is $48,104.

Skill-building activities are known to be critical for initiating health behaviors and improving health outcomes. Teach-back; an adaptable and participant-accepted HL technique; can be employed to reinforce both knowledge and behavior-specific skill.

Participants with more positive attitudes about the program components may have been more likely to complete the program. This study relied on self-reported data which were unable to check against observations.

**Article #10**

**Author Date:** Simula, A. S., Jenkins, H. J., Holopainen, R., Oura, P., Korniloff, K., Hakkinen, A., Takala, E. P., Hancock, M. J., & Karppinen, J. (2019).

**Title:** Transcultural adaption and preliminary evaluation of understanding low back pain patient education booklet.
<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Randomized Control Study</td>
<td>N = 405 patients N = 86 practitioners</td>
<td>The booklet helped low back pain (LBP) patients modify beliefs. It encouraged &amp; supported communication between patients and practitioners; the basic elements of successful therapeutic alliance.</td>
<td>Further research on the clinical effectiveness of the booklet in controlled study settings is needed.</td>
<td>Level I, Good Quality</td>
</tr>
<tr>
<td></td>
<td>n = 136 patients n = 32 practitioners</td>
<td>Studies showed that patients with LBP want clear explanations for their pain, written information and instructions, and support from the practitioner. The new patient education booklet combines</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 primary health care clinics 41 occupational health care units</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
biopsychosocial education with support for clinical decision making and patient communication including imaging issues.

Approximately half of the patients reported that reading the booklet helped them to understand LBP and it was useful for them; one third thought they recovered better, had less fear about their LBP, or were able to be more physically active.

<table>
<thead>
<tr>
<th>Article #11</th>
<th>Author Date:</th>
<th>Dinh, T. T., Bonner, A., Clark, R., Ramsbotham, J., &amp; Hines, S. (2016).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>The effectiveness of the teach-back method on adherence and self-management in health education for people with chronic disease: a systematic review.</td>
<td></td>
</tr>
<tr>
<td>Evidence Type</td>
<td>Sample, Sample Size, Setting</td>
<td>Evidence Type</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Research</td>
<td>Adults aged 18 years and over with one or more than one chronic disease. 110 patient education materials reviewed within the Patient &amp; Caregiver Education Department of a National Cancer Institute (NCI)-Designated</td>
<td>Of the 21 articles retrieved in full, 12 on the use of the teach-back method met the inclusion criteria and were selected for analysis. Four studies confirmed improved disease-specific knowledge in intervention participants. One study showed a statistically significant improvement in adherence to medication and diet among type 2 diabetics patients in the intervention group compared to the control group (p &lt; 0.001). Two studies found statistically significant improvements in self-efficacy (p = 0.0026 and p &lt; 0.001) in the intervention</td>
</tr>
</tbody>
</table>
Comprehensive Cancer Center. groups. One study examined quality of life in heart failure patients but the results did not improve from the intervention (p = 0.59). Five studies found a reduction in readmission rates and hospitalization but these were not always statistically significant. Two studies showed improvement in daily weighing among heart failure participants, and in adherence to diet, exercise and foot care among those with type 2 diabetes.

**Article #12**

**Author Date:** Wittink, H., & Oosterhaven, J. (2018).

**Title:** Patient education and health literacy.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Study Findings that help answer EBP question</th>
<th>Limitations</th>
<th>Evidence Level &amp; Quality</th>
</tr>
</thead>
</table>
The purpose of this master paper is to increase awareness of patients' health literacy levels.

Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgements and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course.

Multiple professional organizations recommend using universal health literacy precautions to provide understandable and accessible information to all patients, regardless of their literacy or education levels.

This includes avoiding medical jargon, breaking down information or instructions into small concrete steps, limiting the focus of a visit to three key points or tasks, and assessing for comprehension by using the teach back cycle.

| Non-Research Systematic review | The purpose of this master paper is to increase awareness of patients' health literacy levels. Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgements and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course. | Multiple professional organizations recommend using universal health literacy precautions to provide understandable and accessible information to all patients, regardless of their literacy or education levels. This includes avoiding medical jargon, breaking down information or instructions into small concrete steps, limiting the focus of a visit to three key points or tasks, and assessing for comprehension by using the teach back cycle. | Level V Low Quality |
Many patients have low health literacy skills, and have difficulty with reading, writing, numeracy, communication, and, increasingly, the use of electronic technology, which impede access to and understanding of health care information. Printed information should be written at or below sixth-grade reading level. Visual aids can enhance patient understanding.

<table>
<thead>
<tr>
<th>Article #13</th>
<th>Author Date: Wolderslund, M., Kofoed, P. E., Holst, R., Waidtlow, K., &amp; Ammentorp, J. (2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Outpatients’ recall of information when provided with an audio recording: A mixed-methods study.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>n = 33 patients</td>
<td>No correlation between replay and recall. This study could not confirm the main hypothesis that patients</td>
<td>Our results are greatly limited by the large attrition rate and the small sample size.</td>
<td>Level III, Good Quality</td>
</tr>
<tr>
<td></td>
<td>Four outpatient clinics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explorative study</td>
<td>Explorative study</td>
<td>Who replay their consultation would have better information recall.</td>
<td>The time span from the consultation to the interview might have negatively influenced patients’ ability to recall information about future tests, risks/ side effects and general advice.</td>
<td></td>
</tr>
<tr>
<td>Mixed- method design</td>
<td>Mixed-method design</td>
<td>The time elapsed from consultation until interview (M = 37 days) might also have influenced the patients’ ability to demonstrate a correlation between replay and patients’ information recall.</td>
<td>These three key themes are regarded as time sensitive in terms of relevance to the patient than test results, diagnosis and treatment.</td>
<td></td>
</tr>
<tr>
<td>quantitating qualitative data into a quantitative data</td>
<td>quantitating qualitative data into a quantitative data</td>
<td>It might be relevant to provide patients with guidelines on how to recall information after recorded consultation to ensure the retention of information. Research has shown that recall starts decreasing two weeks after the consultation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition, our results showed that patients’ recall greatly varies. There is greatest recall for information on test results, diagnosis, and treatment. Poor recall on general advice and risks/side effects.

### Article #14

**Author Date:** Zhang, K. M., Swartzman, L. C., Petrella, R. J., Gill, D. P., & Minda, J. P. (2017).

**Title:** Explaining the causal links between illness management and symptom reduction: Development of an evidence-based patient education strategy.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Randomized Control Study</td>
<td>n = 90 undergraduate students from Department of Psychology research</td>
<td>Reading comprehension and health literacy affect cognitive processing of health information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample, Sample Size, Setting</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>The design of the health information booklets and knowledge test may advantage individuals with higher reading comprehension.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I, Good Quality</td>
</tr>
<tr>
<td>participant pool at n = 51 community dwelling older adults (&gt; 60 years and older)</td>
</tr>
</tbody>
</table>
education sessions in addition to written information. Reduce the reading level of text information.

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Study Findings that help answer EBP question</th>
<th>Limitations</th>
<th>Evidence Level &amp; Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Comparative descriptive design.</td>
<td>258 in-ward non-cardiac general surgery and orthopedic surgery adult patients. The data on patients admitted for non-cardiac</td>
<td>There were differences between patient groups in their perception of receiving enough knowledge and they were connected to gender (male vs. female OR 2.67, 95% CI 1.55–4.60, P = 0.0004) and</td>
<td>The patients’ physical and mental ability to answer the questionnaires may have caused a selection bias, and the sample involved one public central hospital in Western Finland.</td>
<td>Level I High Quality</td>
</tr>
</tbody>
</table>

Article #15

**Author Date:** Koivisto, J. M., Saarinen, I., Kaipia, A., Puukka, Pauli, Kivinen, K., Laine, K., & Haavisto, E. (2020).

**Title:** Patient education in relation to informational needs and postoperative complications in surgical patients
surgery were collected in three phases during an eight-month period.

procedure (elective orthopedic implant surgery vs. elective minor orthopedic and hand surgery: OR 3.25, 95% CI 1.72–6.17, P = 0.0003). Patients who received less knowledge than expected had more postoperative complications than those who received sufficient (as much or more than expected) information.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Knowledge expectations, self-care, and health complaints of heart failure patients scheduled for cardiac resynchronization therapy implantation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Sample, Sample Size, Setting</th>
<th>Study Findings that help answer EBP question</th>
<th>Limitations</th>
<th>Evidence Level &amp; Quality</th>
</tr>
</thead>
</table>


Research Cross-sectional survey study, and data were collected with self-reported questionnaires in 2012–2014. All consecutive heart failure patients scheduled for an elective, first-time CRT device implantation in five Swedish and one Icelandic hospital were eligible for the study. The institutions included four university hospitals and two regional hospitals. Patients were included if they were aged 18 or older, able to understand Swedish/Icelandic, and had no cognitive limitations.

Patients expected most knowledge related to their disease and its treatment (median 4.0, interquartile range 0.13) and least on social issues (median 3.5, interquartile range 0.83). Their self-care was average (standardized mean 51.0±19.6) before the procedure. Patients had on average 8.2 (±4.7) health complaints and rated fatigue and sexual problems as the most severe. Age was independently associated with knowledge expectations (Expβ 0.049, P=0.033).

The Knowledge Expectations of hospital patient Scale has previously been validated but has not been used before with heart failure patients undergoing CRT implantation. However, it has been used successfully in an ambulatory surgical patient population who also had minimally invasive procedures. The adjusted PRP scale consists of 19 items or health complaints; it is possible that patients in this study had other health complaints that were not included in that list. Another limitation is that the European Heart

| Research Cross-sectional survey study, and data were collected with self-reported questionnaires in 2012–2014. | All consecutive heart failure patients scheduled for an elective, first-time CRT device implantation in five Swedish and one Icelandic hospital were eligible for the study. The institutions included four university hospitals and two regional hospitals. Patients were included if they were aged 18 or older, able to understand Swedish/Icelandic, and had no cognitive limitations. | Patients expected most knowledge related to their disease and its treatment (median 4.0, interquartile range 0.13) and least on social issues (median 3.5, interquartile range 0.83). Their self-care was average (standardized mean 51.0±19.6) before the procedure. Patients had on average 8.2 (±4.7) health complaints and rated fatigue and sexual problems as the most severe. Age was independently associated with knowledge expectations (Expβ 0.049, P=0.033). | The Knowledge Expectations of hospital patient Scale has previously been validated but has not been used before with heart failure patients undergoing CRT implantation. However, it has been used successfully in an ambulatory surgical patient population who also had minimally invasive procedures. The adjusted PRP scale consists of 19 items or health complaints; it is possible that patients in this study had other health complaints that were not included in that list. Another limitation is that the European Heart | Level I High Quality |
impairment diagnosed and documented in their medical records.

Failure Self-care Behavior Scale is a generic instrument and not specific to CRT patients, which may have impacted the results of the relationship between self-care and knowledge expectations. Also, patients answered the questionnaire before hospital admission but we could not control how much, or what specific information they had received before participating in the study. In addition, measuring the knowledge patients had beforehand and comparing it with their knowledge expectations might have added valuable data to this study.
<table>
<thead>
<tr>
<th><strong>Article #17</strong></th>
<th><strong>Author Date:</strong> Elhy, A. H., &amp; Elalem, S. M. (2017).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Effect of early preparation on anxiety level among patients undergoing upper gastrointestinal endoscopy.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Evidence Type</strong></th>
<th><strong>Sample, Sample Size, Setting</strong></th>
<th><strong>Study Findings that help answer EBP question</strong></th>
<th><strong>Limitations</strong></th>
<th><strong>Evidence Level &amp; Quality</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quasi-experimental</td>
<td>A purposive sample of 300 adult patients who were undergoing upper gastrointestinal endoscopy conducted in endoscopy unit of Egypt</td>
<td>Knowledge preparation for upper gastrointestinal endoscopy has shown a beneficial improvement of knowledge related to the procedure and reduction of anxiety level among patients. The study recommended that knowledge preparation for upper gastrointestinal endoscopy should form an important concern for patients before performing the procedure that lead to reducing anxiety level.</td>
<td>Selection bias. Limited to one location.</td>
<td>Level I, Good Quality</td>
</tr>
</tbody>
</table>
Appendix C

Theoretical Framework – Kurt Lewin’s Change Theory

Unfreezing
- Review of current patient education protocol.
- Orient bedside CCL nurses how to use the brochure and teach-back method.

Moving
- Bedside CCL nurses implementing the PPEP protocol to LHC patients.
- Support and guide CCL nurses' success of PPEP protocol implementation.

Freezing
- Evaluation of PPEP protocol.
- Project dissemination.
Appendix D

Patient Education Brochure

ANGIOPLASTY AND STENTING

Catheter-Based Procedures for Coronary Artery Disease
Coronary artery disease (CAD) occurs when the arteries that carry blood to the heart muscle are narrowed or blocked. It can lead to serious problems, even a heart attack. If you have CAD, a procedure called angioplasty and stenting may be part of your treatment plan. It can also be used as emergency treatment for a heart attack. This booklet will help you learn more about angioplasty and stenting and what it means for you.

Signs and Symptoms of CAD
CAD is the most common type of heart disease. You may have been diagnosed with CAD because:

- **You have angina.** This is often described as a painful, heavy, or tight feeling in or near the chest. Angina is a common symptom of CAD. You may also have other symptoms, such as shortness of breath or tiredness, especially during exercise.

- **You had tests that suggest CAD is likely.** These can include stress tests, imaging tests, or an electrocardiogram (ECG).

- **You have CAD risk factors.** These are things that make a person more likely to have CAD. Risk factors for CAD include smoking, being overweight, and lack of exercise. Having high blood pressure, unhealthy cholesterol levels, diabetes, or a family history of heart disease can also increase risk.
How Angioplasty and Stenting Can Help
CAD can sometimes be managed with medications and lifestyle changes alone. If these measures aren’t enough to relieve your symptoms, angioplasty and stenting may be needed. This procedure can help restore blood flow to the heart muscle to provide further relief for angina. In certain cases, the procedure may reduce the risk of heart attack. It may also be used to treat a heart attack.

Deciding on Treatment
You and your doctor will work closely together to choose the best treatment for your needs. First, you’ll have a procedure to confirm the locations of blockages in your arteries. Based on the results, your doctor may then advise treatment with angioplasty and stenting. Sometimes, surgery to bypass blockages may be recommended instead. Before making a decision about treatment, be sure to talk with your doctor about all of your options. Know what each procedure can and can’t do for you. Be clear about the risks and benefits for you. Also, get answers to any questions that you have. By being informed, you can help your doctor ensure that your needs are met.
The heart is a muscle that pumps blood throughout the body. Like other muscles, the heart needs a steady supply of oxygen to function. Blood is supplied to the heart muscle by coronary arteries, which wrap around the surface of the heart. If the heart muscle doesn’t get enough oxygen, angina or a heart attack can result.

Coronary Arteries Fuel the Heart Muscle
The amount of oxygen the heart muscle needs depends on how hard it’s working. For example, exercise makes the heart beat faster. This increases the muscle’s need for oxygen. Healthy coronary arteries can easily meet this need. They have smooth, flexible walls that can adjust for changes in blood flow.

- The intima is the smooth lining of the artery.
- The lumen is the channel where the blood flows.
- The left main coronary artery divides into two branches, described below.
- The circumflex coronary artery supplies blood to the back and left side of the heart.
- The left anterior descending coronary artery supplies blood to the front and left side of the heart.
Coronary Artery Disease (CAD)

CAD starts when the wall of a coronary artery is injured by risk factors such as high blood pressure or smoking. Plaque (a fatty substance made up of cholesterol and other particles) then builds up within the artery wall. The buildup of plaque (called atherosclerosis) narrows the path for blood flow inside the artery. It also makes artery walls less able to expand when the heart needs more oxygen, such as during activity. This can lead to angina.

Heart Attack

A heart attack (myocardial infarction) occurs when a coronary artery is blocked by plaque or a blood clot. When this happens, the heart muscle beyond the blockage doesn’t get oxygen. That part of the heart muscle dies. This damage cannot be reversed. A heart attack can lead to other problems, such as heart failure or an abnormal heart rhythm. A heart attack can also be deadly.
Confirming Blockages

To confirm where blockages are located, a procedure called **angiography** is needed. Based on the results of this, and previous tests, angioplasty and stenting may be done right after angiography. You and your doctor will discuss this possibility before the procedure.

Preparing for the Procedure

- Tell your doctor about all of the medications you take. This includes herbal remedies, supplements, and over-the-counter medications. Also mention if you take medications to prevent blood clots. You may be asked to stop taking some or all of these. In some cases, your doctor may prescribe a new medication before the procedure.
- Tell your doctor if you are allergic to iodine or any medications.
- Mention if you are pregnant or think you might be pregnant.
- Don’t eat or drink anything as instructed before the procedure.

The Day of the Procedure

At the hospital, you’ll be prepped for the procedure. You may be asked more than once to provide your name and what procedure you’re having. This is for your safety. An **intravenous line (IV)** will be placed in your arm or hand. You’ll be given a mild sedative through the IV to keep you relaxed during the procedure.

**Risks and Complications**

Cardiac cath, angiography, and angioplasty and stenting all involve similar risks. But the level of risk is higher with angioplasty and stenting.

Risks may include:

- Bleeding
- Blood clots
- Infection
- Allergic reaction to the contrast fluid
- Damage to blood vessels or heart tissues
- Abnormal heartbeat (arrhythmia)
- Kidney damage or failure
- Need for emergency bypass surgery
- Heart attack, stroke, or death
Cardiac Catheterization
Cardiac catheterization ("cath") is the first step in angiography. This procedure uses a thin, flexible tube called a catheter.

- You lie on an x-ray table in a cath lab.
- The catheter insertion site in the groin, wrist, or arm is numbed.
- A tiny puncture is made into the artery at the insertion site.
- An introducing sheath (tube) is inserted into the artery.
- A catheter and guide wire are put into the sheath. They are threaded through the arteries to the heart.
- The guide wire is removed, leaving the catheter in place.
- During the procedures that follow, the guide wire and catheter may be removed and replaced several times. This is done to reach each of the coronary arteries.

Coronary Angiography
Once the catheter is in place, contrast fluid is injected through it. This allows coronary arteries to show up on x-rays (angiograms). Several angiograms are then taken. They help show the location and amount of narrowing or blockage in an artery. Your doctor will review this information to decide the best way to treat your problem. If angioplasty and stenting is needed, it will likely be done right away. If bypass surgery is a better option, it will most likely be done at a later date.
During Angioplasty and Stenting

Angioplasty and stenting may be used to open a narrowed or blocked artery. Catheters like those inserted for angiography are used for the procedure. Depending on your needs, one or both procedures may be done.

Balloon Angioplasty
For this procedure, a special balloon catheter is put into the problem artery. The balloon is then inflated. This widens the channel where blood flows in the artery. In most cases, angioplasty is followed by stenting.

The Angioplasty Procedure
The balloon catheter is moved into the narrowed or blocked part of the artery. The balloon is then inflated. This flattens the plaque against the walls of the artery, which widens the channel. When the balloon is inflated, blood flow stops for a moment. As this happens, you may have angina for a short time. Tell your doctor if you feel any symptoms or discomfort. The balloon may be inflated one or more times before being removed. An angiogram is then done to confirm that blood flow through the artery has improved.

Angioplasty

A balloon catheter is inserted into the narrowed area.

The balloon is inflated. This flattens the plaque against the artery walls.

The channel is widened. This improves blood flow in the artery.
Stenting
A stent is a tiny wire-mesh tube that supports the artery. It remains in place permanently to help keep the artery open. This may reduce the risk of restenosis (renarrowing of the artery in the same place). Most stents are drug eluting. They slowly release medication. This reduces the amount of scar tissue that forms inside the artery and helps prevent restenosis. Stenting after angioplasty is common. Stents can also be placed without angioplasty being done first.

The Stenting Procedure
A collapsed stent is mounted on a balloon catheter and guided to the blockage. Once in place, the balloon is inflated. This opens the stent and also flattens plaque against the artery walls. The balloon is then deflated and removed, leaving the stent in place. Depending on the amount of plaque, more than one stent may be used per blockage. An angiogram is then done to confirm that blood flow through the artery has improved.
Your Recovery

You may go home the same day. Or you may stay in the hospital for one or more nights. Your doctor will determine when you can safely go home. Follow any discharge instructions you’re given.

Closing the Insertion Site
After the procedure, the sheath in your groin, wrist, or arm is removed. The insertion site is then closed with manual pressure or a closure device. You may need to keep still, with your leg or arm straight, for several hours. How long depends partly on the insertion site and the type of closure used.

Monitoring Your Condition
You’ll be closely watched until it’s okay for you to go home. Your pulse and blood pressure will be checked often. You may have blood tests and an ECG test to assess your condition. Be sure to tell the nurse or doctor if you have chest pain or shortness of breath.

Going Home
Have an adult family member or friend prepared to drive you home. You can go home when:
• Your condition appears stable.
• The insertion site is not bleeding.
• You can urinate.
Back at Home
You can go back to your normal routine soon after the procedure. As you recover:

- Take all medications as directed.
- Shower or take sponge baths for a few days if your insertion site was in the groin. Don’t swim or soak in a tub.
- Walk as often as you feel able. This will help your recovery.
- Avoid heavy lifting and strenuous activities as instructed.
- Talk with your doctor about when you can return to work. Also ask when you can resume driving, exercise, and sex.

Visiting Your Doctor
You’ll see your doctor for your first follow-up visit about a week after the procedure. The insertion site will be checked. Tests may also be done to check your heart and overall health. Going forward, you may need to see your heart or primary care doctor regularly. These visits allow your doctor to track your health and help you manage your CAD.

When to Call the Doctor
After your procedure, call the doctor if you have any of these:

- Increasing pain, swelling, redness, warmth, bleeding, or drainage at the insertion site
- Fever of 100.4°F (38°C) or higher
- Chest pain or shortness of breath
- Inability to urinate, or blood in the urine
- Severe pain, coldness, or a bluish color in the leg or arm where the catheter was inserted
Long-Term Considerations

After angioplasty and stenting, there is a chance that a blood clot will form at the blockage site. A blood clot can also form on a stent, if you have one. Your doctor will prescribe medication to help prevent this. Over time, the artery may also become blocked again. By monitoring your symptoms, you help your doctor detect problems before they become too serious.

Preventing Blood Clots
To help prevent blood clots, you’ll need to take medication daily for an extended period of time. This is likely to be aspirin. A second medication, such as clopidogrel, may also be needed. Take these medications exactly as directed. Doing so lowers your risk of heart attack and even death. Your heart doctor can tell you how long these medications will be needed. Don’t stop taking them without talking to your heart doctor first.

Watching for Restenosis
Angioplasty and stenting is generally very successful. But in some cases, the artery may narrow or become blocked again. If this occurs, it will most likely be within 3 to 12 months after the procedure. Be alert for the return of the symptoms you had before the procedure, such as chest pain or discomfort. If you do notice any symptoms, contact your doctor right away to discuss treatment options.
Managing Your Risk Factors

Angioplasty and stenting can open arteries and relieve symptoms, but it doesn’t cure CAD. New blockages can still form. You need to take steps to prevent this by managing risk factors for CAD. Doing so will help make your heart and arteries healthier. Your doctor may prescribe cardiac rehab (rehabilitation) to help with this lifelong process.

Understanding Risk Factors
Some risk factors for CAD can be controlled. These include smoking, high blood pressure, unhealthy cholesterol levels, diabetes, and excess weight. They can be managed with medication, diet, and exercise. Support and counseling can also play a role. This may sound like hard work, but know that the effort will pay off. Managing risk factors can help you be more active, feel better, and reduce the risk of heart attack.

Cardiac Rehabilitation
Cardiac rehab is a total program for promoting heart health. It can give you tools to manage your risk factors and improve your health for the rest of your life. You’ll work closely with a team of healthcare providers. These may include doctors, nurses, exercise specialists, dietitians, and counselors. Your program may include the following:

- **Exercise.** You’ll learn safe ways to be active and strengthen your heart.
- **Nutrition education.** You’ll learn to make heart-healthy food choices.
- **Counseling.** You’ll get help dealing with the emotional aspects of heart disease and its treatment.
- **Family education.** If you want, family members can learn with you. They can help you put your new skills to use after you finish the program.
Protecting Your Heart

Whether or not you enter a cardiac rehab program, you can still take steps to manage your risk factors and protect your heart. The lifestyle changes described on these two pages can help you get started. Your doctor can also advise you on other changes to try.

If You Smoke, Quit!
Smoking and other tobacco use damages your heart, blood vessels, and lungs. The good news is that quitting can halt or even reverse the damage of smoking. To quit now:

- **Get medical help.** Ask your doctor for advice on stop-smoking programs. Also ask about medications or products that may help you quit smoking.
- **Get support.** Join a support group. Ask for help from your family and friends.
- **Don’t give up.** It often takes several tries to succeed in quitting smoking.
- **Avoid secondhand smoke.** Ask family and friends not to smoke around you.

Eat for Heart Health
A heart-healthy diet can improve cholesterol levels and lower blood pressure. It can also help you lose excess weight and manage diabetes. To follow a heart-healthy diet, try these tips:

- **Eat more fruits, vegetables, whole grains, lean proteins, and low-fat or nonfat dairy products.** These contain nutrients that are better for your heart and overall health.
- **Choose healthier fats.** These include unsaturated fats (vegetable oils, nuts, seeds, and fish). Limit saturated fats (red meats, butter, whole milk). Avoid trans fats (fast foods, baked goods, deep-fried foods).
- **Cut back on salt (sodium).** Too much salt can raise blood pressure in some people.
- **Limit added sugars.** These are found in many sweetened beverages, candies, and desserts. They can lead to weight gain and contribute to heart disease.
Exercise for Your Heart
Exercise can help strengthen your heart. It can also help you feel good and improve your overall health. Talk with your healthcare provider or a cardiac rehab team member about good options for you.

- **Start slowly.** Work up to more vigorous exercise as you get stronger. Aim for at least 40 minutes of exercise, 3 to 4 days a week.
- **Include aerobic activities.** These make the heart beat faster. They work the heart and lungs, and improve the body’s ability to use oxygen. Good choices include walking, swimming, and biking.

Lose Excess Weight
If you’re overweight, losing just 5% to 10% of your body weight can have great benefits for your health. For instance, it can help manage cholesterol, blood pressure, and diabetes. To help you get started, talk with your doctor or a dietitian about a weight-loss plan. Also try these tips:

- **Watch how much you eat.** Eating more calories than your body needs can lead to weight gain. You don’t have to give up your favorite foods, but do eat smaller portions. Also limit second helpings as much as possible.
- **Get regular exercise.** Being active each day burns calories. This can help you lose weight or maintain a healthy weight.

Know the Symptoms of a Heart Attack
Part of protecting your heart when you have CAD is knowing how to recognize a heart attack. Call 911 right away if you have these symptoms:

- Pressure, squeezing, discomfort, or pain in the chest, neck, jaw, shoulders, arms, or back
- Severe shortness of breath
- Dizziness or faintness
- Nausea or vomiting
- Sweating (often a cold, clammy, sweat)
Make an Action Plan
Managing your heart health is easier if you have a plan. Ask your doctor what changes you can make to help your heart. What are your risk factors? What can you do about them? Then write down your goals. List one or two things you can do to meet each goal. By committing to an action plan, you can help protect your heart and create a healthier future for yourself.

Work with Your Doctor
If you have CAD, angioplasty and stenting is a treatment that may help. It can relieve angina. It may even reduce the risk of heart attack in certain situations. Talk with your doctor. Find out if angioplasty and stenting is the right choice for you. Also ask if other treatments might be good options as well. Together, you and your doctor can make the best plan for you and your heart.

Also available in Spanish.

TAKE OUR PATIENT SURVEY. Help us help other patients. Please visit www.kramesurvey.com to provide your feedback on this booklet.
# Appendix E

## Evaluation for the Pre-Procedural Patient Education Protocol

Please answer the following questions based on your opinion. Place an “X” on one of the categories.

<table>
<thead>
<tr>
<th>Patient’s Knowledge Gap Identification</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The brochure assisted me on providing patient education about CAD risk management and post LHC self-care practices.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The teach-back method helped me assess my patient’s knowledge gap and identify topics for discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PPEP Protocol Usefulness</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The brochure uses simple terms to explain topics for patient education.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The brochure gave me essential information for discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. The brochure’s content is well organized.

4. The teach-back method is simple to execute.

5. I was able to verify my patient’s familiarity to post-procedural self-care practices using the teach-back method.

6. The PPEP protocol improved my patient education capability.

**Productivity**

1. The PPEP protocol organized my time spent on patient education.

2. The PPEP protocol did not interfere with my nursing tasks and duties.

3. The PPEP protocol allowed me to discuss essential patient education information.

**Sustainability**

1. I am satisfied with the PPEP protocol.

2. I will continue to implement the PPEP protocol.
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>I can apply the PPEP protocol to explain other elective procedures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I will recommend using the PPEP protocol.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Letter of Cooperation for Site Agreement

January 30, 2020

Letter of Cooperation from [Redacted] RN, MSN, DNP

Dear Ben Jay Bautista,

This letter confirms that I, Rodolfo Sangalang, an authorized representative of [Redacted], allow the Principal Investigator access to conduct study related activities at the listed site(s), as discussed with the Principal Investigator and briefly outlined below, and which may commence when the Principal Investigator provides evidence of IRB approval for the proposed project.

- **Research Site(s):** [Redacted]

- **Study Purpose:** To implement a standardized patient education protocol that will organize a busy CCL department’s patient education efforts while maintaining quality service and productivity.

- **Study Activities:** Implement a standardized pre-procedural patient education protocol consisting of a brochure and a teach-back method to identify patient’s
knowledge gap and maintaining nurses’ productivity.

- **Subject Enrollment:** A convenience sample of 10 to 15 participants will be recruited.
  
  Inclusion: CCL nurses that provide direct patient care.
  
  Excluded: Employees who are not CCL nurses.

- **Site(s) Support:** The department will provide space to conduct study and activities.

- **Data Management:** No patient data will be reported.

- **Anticipated End Date:** December 2020.

We understand that this site's participation will only take place during the study's active IRB approval period. All study related activities must cease if IRB approval expires or is suspended.

I understand that any activities involving Personal Private Information or Protected Health Information may require compliance with HIPAA Laws and Rutgers Policy.

Our organization agrees to the terms and conditions stated above. If we have any concerns related to this project, we will contact the Principal Investigator. For concerns regarding IRB policy or human subject welfare, we may also contact the Rutgers IRB (see orra.rutgers.edu/hbpp).

Regards,

Cardiac Catheterization Laboratory Director

[Signature]

1/31/2020

Date Signed

Full Name

Job Title
Appendix G

Participants Needed for DNP Project

Implementation

DNP Project: Pre-Procedural Patient Education Protocol for Cardiac Catheterization Patients

Why is this project important?

Promoting health literacy to our patients improves their ability to obtain, process, and understand basic health information and services. A well-informed person can make appropriate health decisions and self-care behaviors.

Target Audience: Registered Nurses and Advanced Nurse Practitioners

Inclusion Criteria: Registered nurses who have direct patient contact.

Exclusion Criteria: Individuals who are not RN or provide direct patient contact.

Participation Includes:

- A 30 minutes session that includes
  - Pre-test survey
  - 5-10 Presentation
  - Question and Answer

Compensation: **FREE LUNCH during presentation!!!!**

For more information or to participate in this project please contact:

Ben Jay Bautista DNP Student, Principal Investigator

Rutgers School of Nursing
65 Bergen Ave. Newark, NJ 07107
Appendix H

RUTGERS
School of Nursing

Consent for Participation

TITLE OF STUDY:
Pre-Procedural Patient Education Protocol for Cardiac Catheterization Patients

Principal Investigator: Ben Jay Bautista, DNP Student

This document is part of the informed consent process for a research study. It will provide you with information that will help you to decide whether you wish to participate for this research study. It will help you understand what the study is about and what will happen in the course of the project.

If you have questions at any time during the research study, please feel free to ask them and expect to be given answers that you will completely satisfy your understanding.

You will be asked to sign this informed consent form after all of your questions have been answered and when you wish to take part in the study.

You are not giving up any of your legal rights by volunteering for this research study or by signing this consent form.
Who is conducting this research study?

Ben Jay Bautista is the Principal Investigator of this research study. A Principal Investigator has the overall responsibility for the conduct of the study. However, there are often other individuals who are part of the research team.

Ben Jay Bautista can be reached at [REDACTED] or [REDACTED]

The principal investigator (Ben Jay Bautista) or another member of the study team will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Why is this study being done?

The purpose of this DNP project is to implement a standardized patient education protocol that will organize a busy CCL department’s patient education efforts while maintaining quality service and productivity.

Why have you been asked to take part in this study?

As a registered nurse who provides direct care to patients with coronary artery disease and undergoing left heart catheterization, you have an immediate access to influence patients on how to improve their self-care practices and overall health.
Who may take part in this study? And who may not?

Bedside cardiac catheterization laboratory nurses who provides pre-procedure and post-
procedure care to patients undergoing left heart catheterization may take part in this study.

Employees who are not cardiac catheterization laboratory nurses or employees who do
not provide direct patient care will not be invited to take part in the study.

How long will the study take and how many subjects will participate?

This DNP project is expected to be completed within a 4 weeks period. Ten to fifteen
participants are expected to partake.

What will you be asked to do if you take part in this research study?

After signing the informed consent, you will be asked to complete a pre-assessment
survey on how to deliver teach-back questions. You will also be asked to familiarize the
educational brochure that explains CAD, LHC, and its self-care practices. These activities will be
the foundation on how to provide the pre-procedural patient education protocol.

You will then be trained to assess and reinforce patient knowledge using the patient
education brochure and teach-back method. A socially distant small group sessions will be
conducted.

You are then expected to provide the pre-procedural patient education using the
educational brochure and teach-back method to the patients undergoing LHC. You will be
observed, coached and supported throughout the implementation period.
An evaluation survey of the PPEP protocol’s usefulness to identify patient’s knowledge gap and effectiveness in maintaining nursing productivity will be collected after the implementation period.

**What are the risks and/or discomforts you might experience if you take part in this study?**

As a participant, there will be no risk or discomfort.

**Are there any benefits for you if you choose to take part in this research study?**

Your participation in the project may improve your provider’s knowledge about coronary artery disease, left heart catheterization procedure and its self-care practices. You will also learn how to use the brochure and teach-back method to reinforce your patient’s knowledge. It is also possible that you may not receive any direct personal benefits from taking part in this study.

**What are your alternatives if you don’t want to take part in this study?**

There will be no other available alternative treatments. You will become an observer and will not participate in this study.

**How will you know if new information is learned that may affect whether you are willing to stay in this research study?**

During the course of the study, you will be updated about any new information that may affect whether you are willing to continue taking part in the study. If new information is learned that may affect you after the study or your follow-up is completed, you will be contacted.
Will there be any cost to you to take part in this study?

There will be no cost to participate in this study.

Will you be paid to take part in this study?

You will not be paid for your participation in this research study.

How will information about you be kept private or confidential?

The information will be kept confidential and no participant identifier will be collected.

What will happen if you do not wish to take part in the study or if you later decide not to stay in the study?

Your participation in this study is voluntary. You may choose not to participate or withdraw from the study at any time you want.

If you do not wish to partake in the study or decide to stop participating in a later time, your employment status will not be affected. There will be no penalty or loss of benefits to which you are otherwise entitled.

Who can you call if you have any questions?

You may call the primary investigator if you have any questions about taking part in this study.
What are your rights if you decide to take part in this research study?

You have the right to ask questions about any part of the study at any time. You should not sign this document unless you have had a chance to ask questions and have been given answers to all of your questions.

Contact Information:

If you have any questions about taking part in this study, you can call the Principal Investigator.

Principal Investigator: Ben Jay Bautista

If you have any questions about your rights as a research subject, you can call Rutgers IRB - Newark, Director at 973-972-3608.

Consent:

I have read this entire form, or it has been read to me, and I believe that I understand what has been discussed. All of my questions about this form or this study have been answered. I agree to take part in this research study.

Participant Signature: ___________________________ Date: ________________

Principal Investigator Signature: ___________________________ Date: ________________
## Program Expenses

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
<td>$200</td>
</tr>
<tr>
<td>Brochures</td>
<td>$3 each (x 50 pieces)</td>
<td></td>
<td></td>
<td>$170</td>
</tr>
<tr>
<td>Shipping and Handling</td>
<td>$5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printed Materials</td>
<td></td>
<td></td>
<td></td>
<td>$30</td>
</tr>
<tr>
<td>Consent</td>
<td>$0.40 (x 20 pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test survey</td>
<td>$0.10 (x 20 pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teach Back Questions</td>
<td>$0.20 (x 20 pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test survey</td>
<td>$0.10 (x 20 pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flyers</td>
<td>$0.10 (x 3 pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>$400</td>
</tr>
</tbody>
</table>
Appendix J

Gantt Chart - Project Timeline

<table>
<thead>
<tr>
<th>Evaluation of Results</th>
<th>Statistical Analysis</th>
<th>Project Evaluation</th>
<th>Project Implementation</th>
<th>Project Presentation</th>
<th>Consent</th>
<th>Selection of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
<td>22-Mar</td>
<td>15-Mar</td>
<td>8-Mar</td>
<td>8-Feb</td>
<td>1-Feb</td>
<td>1-Feb</td>
</tr>
<tr>
<td>Days to Complete</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>28</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Start Date  Days to Complete
Appendix K

Knowledge Gap Identification
Appendix L

Usefulness

<table>
<thead>
<tr>
<th>STRONGLY DISAGREE</th>
<th>DISAGREE</th>
<th>NEUTRAL</th>
<th>AGREE</th>
<th>STRONGLY AGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>50%</td>
<td>60%</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix M

Productivity

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRONGLY DISAGREE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISAGREE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEUTRAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGREE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STRONGLY AGREE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STRONGLY DISAGREE: 100%
DISAGREE: 100%
NEUTRAL: 100%
AGREE: 100%
STRONGLY AGREE: 100%