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Educational Strategies for Preventing and Managing Coronary Artery Disease (CAD)

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NUR 4990 Project: Educational Strategies for Preventing and Managing Coronary Artery Disease (CAD)

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Chapter I. Introduction

Coronary artery disease (CAD) is a leading cause of death in the United States and many older people suffer from this disease (Luisi et al., 2015). It is vital that nurses understand the importance of education, good nursing care, and support in improving patient outcomes. Nurses care for patients with heart disease every day and it is important that nurses have a good understanding of the disease process, how to effectively educate patients, and how to care for them in hospital and community settings. The purpose of this project is to (1) perform a comprehensive literature review regarding prevention, education, and management of CAD, (2) develop new and creative educational strategies that nurses can implement with their patients, (3) create and distribute an educational pamphlet for nurses, healthcare staff and nursing students, and (4) create and give a presentation of this material to junior nursing students. The layout of this paper will be organized into three sections: Chapter I will describe the purpose and significance of this project, Chapter II will be a relevant review of the literature, and Chapter III will be a detailed description of implementation for the final project.

Problem and Purpose

CAD poses several problems for both patients and nurses. One of the major problems nurses face is how to properly and efficiently educate patients about heart disease, and ultimately reduce patients' individual risk factors. The purpose of this project is to find and review the most effective ways to educate patients about prevention and management of CAD to help decrease their modifiable risk factors. Pertinent educational topics include smoking cessation, medication adherence, physical activity, nutrition, and stress management (Jousilahti et al., 2016). The target population consists mainly of older adults in community and hospital settings.

Significance

The goal of this project is to provide nurses with effective educational strategies to best assist patients with CAD in decreasing their own risk factors and managing their disease. Cardiac disease is most often seen in older adults and severely impacts their overall well-being, functional ability, and quality of life (Jakobsson, Huber, Bjorklund, & Mooe, 2016). In the United States alone, 610,000 people die each year from heart disease (Centers for Disease Control and Prevention (CDC), 2015). As a leading cause of death, coronary artery disease kills almost 370,000 people every year (CDC, 2015). Without effective education from nurses, the disease may become progressively worse. As educators, it is vital that nurses be equipped to teach patients about their disease, medications, necessary lifestyle changes, and overall management. Many patients living with coronary artery disease do not make the recommended lifestyle changes to improve their well-being. For example, 52% of adults in the United States do not follow physical activity recommendations, while 36% of adolescents do not eat the proper amount of fruits and vegetables per day (CDC, 2015). On average, one in five adults report smoking, which is the most harmful activity for someone who has heart disease (CDC, 2015). Reasons for not implementing lifestyle changes are decreased retention of educational material, lack of understanding of disease severity, and lack of motivation (Rahmati-Najarkjolaei, Ghaffarpasand, Gholami, and Jonaidi-Jafari, 2015). Relevant literature shows that new educational strategies are needed to increase patient knowledge and retention of information (Peterson et al., 2014). Ineffective educational strategies impact not only the patients living with CAD, but also nurses and the entire healthcare team treating these patients; it is frustrating for nurses when patients do not take their advice or make healthy lifestyle changes.

The overwhelming amount educational material related to a disease can be daunting for patients. For example, someone recently diagnosed with coronary artery disease may feel overwhelmed with the recommended lifestyle changes, and in turn, not accomplish any of them. To combat this problem, there is a need for more personalized education and nurse-led interventions to increase retention of educational material. Information should be presented concisely to decrease patient anxiety. Follow-up is necessary to check in with patients regarding their progress and to continue encouraging them in reaching their goals (Jakobsson et al., 2016). Overall, nurses need to be equipped with new and creative educational strategies to increase effectiveness and retention of educational material.

Objectives

The objectives of this project are: (1) to conduct a critical appraisal of the literature, (2) develop effective ways for nurses to educate cardiac patients about their disease, (3) to develop and distribute a pamphlet of these findings to aid nurses and nursing students in caring for this population of patients, and (4) create and give a presentation of this material to junior nursing students.

Summary

Coronary artery disease poses problems for patients and the nurses caring for them. A major problem is that patients do not fully comprehend the severity of their disease. Often, patients lack understanding of how to modify their individual risk factors, such as consuming a nutritious diet, implementing an exercise routine, and quitting smoking. An aim of this project is to develop efficient ways for nurses to comprehensively educate patients about coronary artery disease and help them manage their everyday lives. Developing new educational strategies will increase effectiveness of patient education and allow cardiac disease patients to reach their

maximum functional potential. A comprehensive review of relevant literature identified several main educational areas that both nurses and patients struggle with. The main themes identified are smoking cessation, diet and exercise, psychosocial implications, and medications. Nurses need to understand current educational practices and know how to modify them to fit individual patient needs. Relevant literature will aid nurses in implementing this process.

Chapter II. Review of the Literature

A comprehensive review of the literature discovered four main educational themes or areas related to CAD: smoking cessation, diet and exercise, psychosocial implications and medications. The main databases searched included CINAHL and Medline. The Center for Transdisciplinary Evidence-based Practice (CTEP) grading system was used to evaluate and critically appraise the evidence (See Appendix B). The CTEP grading system is comprised of seven levels of evidence; systematic reviews and randomized controlled trials (RCTs) are the highest levels of evidence, while reports from expert committees are the lowest level of evidence. CTEP is an effective tool to grade and evaluate the literature.

Education

Smoking cessation.

Smoking is a leading cause of heart disease and influences patients' overall well-being and functional ability (Berndt et al., 2012). It is important that patients quit smoking to reduce their risk of further myocardial damage. According to Kang et al. (2015), current smokers are at a higher risk for having an atherosclerotic plaque rupture. Kang et al. (2015) conducted a level IV, prospective, cohort study that included 697 patients with acute coronary syndromes to assess the effects of smoking on the extent of atherosclerosis. People with coronary artery disease already have plaque buildup in their arteries and smoking increases plaque and constricts the

arteries, which can lead to myocardial infarction and death. Smokers are 20.3% more likely to have thicker plaque, which increases chance of plaque rupture ($p=0.05$) (Kang et al., 2015). Limitations of this study include that it cannot be generalized to smokers because it only samples smokers with cardiovascular disease (Kang et al., 2015). Nurses need to approach these patients in a nonjudgmental and supportive manner to explain the risks and adverse effects of smoking.

Nurses must be aware of the barriers patients face related to smoking cessation. Barriers to smoking cessation include lack of motivation, lack of a support system, and lack of alternative stress relief methods. Berndt et al. (2012) conducted a level IV, longitudinal, cohort study to identify risk groups among cardiac patients using their social cognitive profiles, and assess predictors of smoking abstinence shortly after discharge. The researchers recruited 133 hospitalized, cardiac patients who smoke. Berndt et al. (2012) administered two questionnaires: the Fagerstrom Test for Nicotine Addiction and the Hospital Anxiety and Depression Scale (HADS). Using the Fagerstrom Test for Nicotine Addiction, the team could gather the patients' current smoking behavior and intent towards nonsmoking. The researchers found that having a social support network and a social support partner increases the intent towards nonsmoking and decreases rates of actual smoking ($p<0.001$). Also, patients with higher rates of depression and anxiety are more likely to smoke ($p<0.01$) (Berndt et al., 2012). Limitations of this study are limited generalizability and a small sample size consisting mostly of males (Berndt et al., 2012). Nurses can educate and motivate patients and families who smoke to support each other in their efforts to quit. The researchers also need to assess patient levels of depression and anxiety because higher levels are associated with higher rates of smoking; patients tend to use smoking as a form of stress relief (Berndt et al., 2012). There are also phone helplines and other networks to aid patients in quitting smoking.

With the increase in anti-smoking campaigns, smoking rates over the last several decades have decreased among the younger generation (Jousilahti et al., 2016). However, older adults tend to continue smoking because it is what they are used to. Jousilahti et al. (2016) implemented a level VI, population based, observational study in Finland to see how changes in the main risk factors of cardiovascular disease can explain the reduction in coronary heart disease mortality. The researchers found that smoking rates decreased from 53% to 29%, cholesterol decreased by 1.4 mg/dL, and blood pressure decreased by 15.65 mm Hg on average, over a forty-year period; these decreases can be attributed to healthier habits, such as better diets and exercise routines (Jousilahti et al., 2016). Limitations of this study include that it is population-based and observational in nature (Jousilahti et al., 2016). Although some populations are developing healthier habits, nurses should continue to educate patients on how to decrease their risk factors.

Diet and exercise.

Poor diet and lack of exercise contribute to the development of coronary artery disease. Luisi et al. (2015) conducted a level II, randomized control trial with 133 cardiac rehabilitation patients in Italy to assess the efficacy of an educational program to improve diet. A significant finding is that an educational session about nutrition helped decrease BMI, daily caloric intake (2,218 kcal/day to 1,727 kcal/day), and weight (Luisi et al, 2015). A limitation of this study is that patient behavioral changes are based on patient self-report, so there is a higher chance of bias. According to Rahmati-Najarkjolaei et al. (2015), interactive educational experiences increase retention of material.

According to Bohman, Mattsson, and Borglin (2015), primary healthcare nurses have limited exposure and knowledge regarding physical activity referrals (PARs). The researchers

implemented a level VI, descriptive, qualitative study to illuminate nurses' experiences in dealing with PARs. Twelve female nurses were interviewed about their individual experience with PARs, and the interviews were transcribed and analyzed. The researchers found that nurses feel they lack organizational support and routine approaches in supporting the advancement of PARs. A limitation of this study is that all the nurses were female (Bohman et al., 2015). Nurses need increased support to be more involved in PARs.

Many cardiac patients struggle with self-management of their disease. Peterson et al. (2014) performed a level II RCT, with a qualitative interview aspect. The researchers provided a cardiac workbook with tips about diet and exercise to sixty-one post-angioplasty patients. The researchers also interviewed these patients about their daily experiences and feelings after being diagnosed with cardiac disease. The researchers found patients who read the workbook reported increases in physical activity and felt less fearful about managing their disease, but did not report any significant change in dietary habits (Peterson et al., 2014). Also, Black and Hispanic populations increased their physical activity levels more than Caucasian populations ($p=0.035$) (Peterson et al., 2014). A limitation of this study is a lack of generalizability (Peterson et al., 2014). More collaborative nursing interventions with nutritionists are needed to sustain these behavioral changes. Rahmati-Najarkolaei et al. (2015) supports the claim that nutrition and physical activity educational interventions can assist patients in managing their disease and decreasing their modifiable risk factors. The researchers conducted a level I systematic review, using studies published between 1989 and 2013. A significant finding is that physical activity and dietary education helped reduce blood pressure by seven mmHg, weight by one kilogram, and cholesterol by 0.1 mM/L (Rahmati-Najarkolaei et al., 2015). A limitation of this study is

that it only reviewed one RCT; further RCTs would need to be reviewed to strengthen the evidence (Rahmati-Najarkolaei et al., 2015).

Physical activity, nutrition, and smoking are three of the main cardiovascular risk factors. van den Wijngaart, Sieben, van den Vlugt, de Leeuw, and Bredie (2015) performed a level IV, prospective cohort study with 176 patients with cardiac disease. Baseline data were obtained from a questionnaire, and then personalized, multidisciplinary, nurse-led interventions were offered to every patient to help decrease their modifiable cardiovascular risk factors. After one year (on average) of follow-up, the study found that smoking rates ($p< 0.0001$) and blood pressure decreased ($p< 0.01$), while physical activity was unaffected (van den Wijngaart et al., 2015). A limitation of this study is lack of a control group without cardiovascular disease to compare the results to (van den Wijngaart et al., 2015).

While coronary artery disease mainly affects older adults, it is important for nurses to also educate younger people on the benefits of a healthy diet and physical activity. Holland, Carthron, Duren-Winfield, and Lawrence (2014), executed a level III, mixed method design with quantitative and qualitative aspects. The team implemented a new curriculum targeting African American college students to increase their awareness about risk factors for cardiovascular disease. A convenience sample of African American freshmen college students sat through six, two-hour educational sessions dealing with physical activity, diet, weight control, stress, and family history (Holland et al., 2014). The researchers measured pretest and posttest knowledge through the Godin-Leisure questionnaire and the SisterTalk food habits questionnaire. After the educational sessions, students reported increased knowledge regarding family history, hypertension ($p=0.041$), cholesterol ($p=0.0005$), stress management strategies, and healthier dietary habits. Also, after the educational sessions, 87% of students reported engaging in

physical activity at least once a week (Holland et al., 2014). Limitations of this study are a small sample size and using students from only one college campus (Holland et al., 2014). If nurses teach adolescents and young adults good dietary and activity habits, they will be less likely to develop cardiovascular disease as adults.

Psychosocial.

Several studies discuss the psychosocial implications of living with coronary artery disease. Often, patients are not educated about their disease or possible surgeries beforehand. It is imperative that nurses educate patients about what to expect after heart surgery, such as pain, medications, and exercise. Education decreases patients' anxiety and depression after their surgery. Leegaard and Fagermoen (2008) executed a level V, qualitative meta-synthesis looking at patients' post-operative coronary artery bypass graft (CABG) experiences. Leegaard and Fagermoen (2008) reviewed studies published between 1988 and 2006. The researchers identified five main themes from the literature: surviving alone without support, disrupted sense of self, losses, fears, and going on with life. One limitation of this study is that it is qualitative, which makes it lower quality evidence (Leegaard & Fagermoen, 2008). Nurses should do their best to address fears and concerns of patients before and during any hospital stay.

Many women are affected by coronary artery disease and are often unaware of warning signs of cardiac emergencies. Healthcare providers may disregard women's complaints of certain symptoms and associate them with menopause instead of a cardiovascular problem. Ignoring women's complaints can make women less trusting when dealing with healthcare professionals. Giardina et al. (2011) implemented a level V, cross-sectional, qualitative study to determine cardiovascular disease awareness among high-risk women. The researchers interviewed 698 women who were classified as having cardiometabolic risk factors, such as high

blood pressure, a large waist circumference, high glucose, and high cholesterol. The researchers administered the Framingham Risk Score (FRS) to determine their knowledge of cardiometabolic risk factors (Giardina et al., 2011). The team found that women with less education had more cardiometabolic risk factors ($p=0.007$) and most women with high FRS scores did not know when to call 911 in a cardiovascular emergency ($p=0.003$) (Giardina et al., 2011). A limitation of this study is that most women were from urban areas, so the sample may be underrepresented (Giardina et al., 2011). Living with cardiovascular disease is extremely scary, so nurses must be empathetic, caring, and supportive in caring for and educating these patients.

Medications.

People who have coronary artery disease have accelerated rates of atherosclerosis (Komukai et al., 2014). Currently, treatment to slow or lower plaque buildup is a low cholesterol diet and lipid-lowering medications. Jakobsson et al. (2016) support the research that nurse-led interventions are more effective in reducing patient cardiac risk factors, especially LDL. Jakobsson et al. (2016) conducted a level II RCT to evaluate the efficacy of preventative guidelines for cardiac patients in reducing blood pressure and LDL. The researchers recruited 201 hospitalized patients in Sweden with myocardial infarction, angina, or stroke who underwent nurse telephone interviews to discuss lifestyle habits and medication adherence. The intervention group received further nurse follow-up and some lipid-lowering medication titration, while the control group only received lipid-lowering medication titration. 65.3% ($p<0.001$) of the intervention group reached their target LDL level by the end of one year, while only 36% ($p<0.001$) of the control group did so (Jakobsson et al., 2016). A limitation of this study is that patients volunteered to participate and that could impact their overall adherence to

the regimen (Jakobsson et al., 2016). Nurses being involved in outpatient care helps facilitate continued health maintenance.

Komukai et al. (2014) conducted a level II, prospective RCT to assess the effects of five milligrams of atorvastatin compared to twenty milligrams of atorvastatin on fibrous cap thickness in atherosclerotic plaque buildup in the coronary arteries. Komukai et al. (2014) recruited seventy patients and randomized them to the five-milligram group or the twenty-milligram group and followed-up with them at twelve months. A significant finding is that in the twenty-milligram group, LDL cholesterol decreased more ($p=0.039$) and fibrous cap thickness increased ($p< 0.001$) (Komukai et al., 2014). The increase in fibrous cap thickness signifies that the plaque is less susceptible to rupture, which decreases the risk of cardiovascular events (Komukai et al., 2014). A limitation of this study is that it has no control group to compare the results to (Komukai et al., 2014). Johansen, Hefner, and Foraker (2015) agree that "statin" use is beneficial in reducing serum cholesterol. Johansen et al. (2015) implemented a level VI, descriptive longitudinal analysis of 14,334 people with coronary heart disease to see how demographic information influences medication adherence and use. The researchers obtained data such as, race, gender, "statin" use, and antiplatelet use. Johansen et al. (2015) found that only 43.1% of the sample reported use of antiplatelet medications and "statins", signaling that there is an underutilization of these medications, especially in African American and Hispanic populations (Johansen et al., 2015). A limitation of this study is the patient self-report of medication use and medical diagnoses (Johansen et al., 2015). Nurses need to be aware of medication discrepancies among ethnic groups and assure that patients know medication indications and side effects.

Beta-blockers are a class of medications that decrease the workload of the heart. These medications are useful in preventing future cardiovascular events, such as a myocardial infarction or heart attack (Ignjatovic et al., 2016). Bauters et al. (2014) executed a level IV, prospective cohort study to assess the association of beta-blocker use with cardiovascular death in patients with coronary artery disease. The researchers looked at 4,184 patients, with 3,320 of those currently taking a beta-blocker. Measurements include heart rate and cardiovascular mortality rates among both groups (Bauters et al., 2014). The team found that heart rate and cardiovascular mortality was lower in patients taking beta-blockers ($p=0.011$) (Bauters et al., 2014). Limitations of this study are that confounding variables were not accounted for and the findings cannot be generalized to a larger population (Bauters et al., 2014). It is important for nurses to educate patients about their medication actions, side effects, and the importance of taking medications, to reduce poor cardiovascular outcomes.

While beta-blockers reduce heart rate and workload of the heart, they may also influence platelet aggregation. Ignjatovic et al. (2016) conducted a level III, prospective clinical study to examine the effects of different beta-blockers on platelet aggregation in patients on antiplatelet medications. The researchers studied 331 hospitalized patients with coronary artery disease. Four different beta-blockers were used: bisoprolol, carvedilol, nebivolol, and metoprolol (Ignjatovic et al., 2016). Platelet aggregation was least in the nebivolol group, which shows that nebivolol is more effective than other beta blockers in reducing platelet aggregation ($p= 0.009$) (Ignjatovic et al., 2016). Limitations of this study are unequal group sizes and a smaller number of patients (Ignjatovic et al., 2016).

Many cardiac patients are older adults, and therefore, may have a difficult time remembering to take their medications or knowing how to properly administer them (Aggarwal,

Liao, & Mosca, 2013). Nurses and other healthcare providers must educate patients on what their medications are used for and when and how to administer them. According to Aggarwal et al. (2013), many cardiac patients have caregivers that assist them with their daily activities, including taking medications. The researchers conducted a level IV, prospective study to determine if having a paid caregiver was associated with medication adherence in patients with cardiovascular disease. 1,432 patients filled out a questionnaire about medication adherence and paid caregivers. Aggarwal et al. (2013) found that patients with a paid caregiver were less likely to report medication nonadherence. While the paid caregiver produced the best results, any caregiver (formal or informal) was more beneficial than having no caregiver at all ($p=0.009$) (Aggarwal et al., 2013). Additionally, female patients who had paid caregivers were 53% less likely to report nonadherence (Aggarwal et al., 2013). The study team concluded that paid caregivers perform the best because of their formal training and education. Informal caregivers or family members should also be trained to increase reliability. Limitations of this study are that information was obtained from patient self-report, and the study was observational in nature (Aggarwal et al., 2013). Nurses could be involved in training family caregivers to ensure they can effectively monitor the patient's medication use.

Gallagher et al. (2013) agrees that there are numerous problems with patient's self-administration of medication. Gallagher et al. (2013) conducted a level III, quasi-experimental, pretest-posttest to evaluate the effect of educational intervention on the knowledge and administration of sublingual nitroglycerin (SNL). Eighty-six cardiac rehabilitation patients underwent SNL education to determine if their posttest scores increased from the pretest scores. The results of the study found that, on average, scores increased by 1.5 points after education, and more people knew the name of the medication ($p=0.001$) and the correct timing between

doses (p=0.017) (Gallagher et al., 2013). A few limitations of this study are that it lacked randomization and patients may have been motivated to study for the posttest (Gallagher et al., 2013). The results of this study support the belief that brief, targeted educational information regarding medications allows patients to retain the information more effectively, rather than excessive amounts of information at one time.

Literature Synthesis

After reviewing the evidence from the included studies, nurse-led, personalized, multidisciplinary interventions are the most effective in reducing risk factors for coronary artery disease. Most of the studies included in the literature review are medium or high quality. Some of the studies are interventional in nature, while others are descriptive or observational.

The evidence shows that there is a need for new and creative educational strategies related to cardiovascular disease. Development and implementation of a pamphlet is needed to increase knowledge levels of nurses and nursing students, so they can more effectively educate their patients about how to decrease their modifiable risk factors. There are many educational strategies nurses can employ to educate patients about their disease. Some strategies are more effective than others; nurse-led, personalized interventions have shown to be the most effective and produce the longest lasting results for patients. Overall, nurses need to think critically to educate different patients based on their individual needs. Incorporating these new nurse-led interventions will help patients live longer lives, reduce hospital costs and readmission rates, and increase nurse satisfaction.

Chapter III. Description of Project

The goal of this project was to create and distribute an educational pamphlet to nurses and junior nursing students to increase their knowledge regarding educational strategies for

patients who have coronary artery disease. Nurses need new and creative ways to teach patients how to effectively manage and prevent complications of heart disease. Many of these new strategies involve primary prevention and are aimed at younger populations in order to prevent heart disease. The layout of this chapter was split into five sections: setting and population, description of project implementation, definition of terms, ethical and legal aspects, and a plan for evaluation.

Setting and Population

An educational pamphlet was distributed to Wright State University junior nursing students and to a Dayton area hospital to be used in the nurse residency program. The main goal of the pamphlet and presentation was to equip nurses with more effective ways to educate patients about cardiovascular disease. To educate future nurses about this topic, a post-conference presentation was developed and given to Wright State University junior nursing students.

Description of Project Implementation

The first objective of this project was to (1) conduct a critical appraisal of the literature to find main points for education. CAD affects more than just the patient; the literature discusses issues the disease poses, such as longer hospital stays, more surgeries, and increased healthcare costs (Holland et al., 2014). Performing a literature review helped gather pertinent information related to the topic, which guided the creation of the pamphlet and presentation (Rahmati-Najarkolaei et al., 2015). The second objective was to (2) develop new and creative educational strategies based on information gathered in the literature review. The third objective was to (3) create and distribute an educational pamphlet to nurses and junior nursing students. The educational brochure was developed during the fall semester of 2017 and was distributed during

a post-conference presentation to junior nursing students in November of 2017. The brochure was distributed to a Dayton area hospital for use in the nurse residency program in December of 2017. The brochure discussed four main heart disease topics: medication adherence, smoking cessation, diet, and exercise. Each of these topics was divided into two sections: important points to provide education on and strategies for how to educate patients. The brochure included facts about CAD and community and online resources that nurses can share with patients to further help them manage their cardiovascular disease. Written material is an effective way to enhance patient education because it provides a guide that patients can refer back to if they get confused or forget pieces of information (Peterson et al., 2014). An outline of the pamphlet was developed prior to pamphlet creation. The pamphlet was concise, easy to read, and explained the main ideas of this project. The fourth objective was to (4) create and give a post-conference presentation of this material to junior nursing students. Pertinent information and main ideas were drawn from the literature review, which covered four main educational topics: smoking cessation, physical activity and diet, psychosocial implications, and medication adherence. Brief targeted presentations allow visual and auditory pathways to be stimulated for increased retention of material (Gallagher et al., 2013). The presentation aimed to enhance future nurses' knowledge about how to effectively educate patients with cardiovascular disease.

Definition of Terms

The American Heart Association (2017) defines coronary artery disease as plaque buildup within the walls of the coronary arteries that eventually limits blood flow to and from the heart.

Coronary artery disease is a serious condition that affects the daily lives of people with the condition. Nurses play a pivotal role in educating patients about ways to decrease their

modifiable risk factors. The goal of education is to help patients reach their maximum functional potential and recognize that lifestyle changes, such as eating healthily and exercising, impacts the outcome of their disease.

1. *Smoking cessation:* Smoking cessation is defined as "a temporary or final ceasing of an action [smoking]" (Merriam-Webster, 2017).
2. *Exercise:* Exercise is defined as "bodily exertion for the sake of developing and maintaining physical fitness" (Merriam-Webster, 2017).
3. *Prevention:* Prevention is defined as "to keep something from happening or existing" (Merriam-Webster, 2017).
4. *Management:* Management is defined as "the act of working on or trying to alter for a purpose" (Merriam-Webster, 2017).
5. *Non-adherence to medication:* Aggarwal et al. (2013) defines medication non-adherence as "missing one or more pills/doses during a typical week in the past 6 months" (p. 238).

Ethical and Legal Issues

Due to the nature of this project, an IRB process was not necessary. To adhere to legal and ethical standards the pamphlet was at a 5^{th}-7^{th} grade reading level and there was no plagiarism of pictures or graphs. The presentation highlighted the main educational areas of this project and was clear, concise, and easy to understand.

Plan for Evaluation

The goal of this project was to promote effective education and increase knowledge levels of nurses and junior nursing students regarding cardiovascular disease. The project's effectiveness was gauged using an evaluation tool, which was administered to junior nursing students after viewing the presentation and pamphlet. The evaluation tool consisted of five questions using a Likert-based scale (ranging from strongly agree to strongly disagree) (See

Appendix A). If the majority of responses were strongly agree, that suggests that the presentation was effective, clear, and the students felt that they could apply this information in their future careers. Additionally, feedback from my instructor was taken into account.

Summary

Overall, an educational pamphlet about cardiovascular disease was created and distributed to nurses and nursing students. The goal of this pamphlet was to increase knowledge levels regarding educational strategies that nurses can implement for patients with cardiovascular disease. Additionally, a post-conference presentation was given to junior nursing students, highlighting the most effective educational strategies. Cardiovascular disease affects many people, but with improved educational strategies, nurses can reduce individual risk factors and help patients reach their full potential.

Project Evaluation

After implementation of this project, feedback from the evaluation tool was analyzed. 88.9% of students strongly agreed that this information would be useful in their future careers and that the presentation was clear, concise, and easy to understand. 77.8% of students strongly agreed that they were able to discuss educational needs and implement educational strategies for CAD patients after viewing the presentation. 66.7% of students strongly agreed that the pamphlet contributed to their learning.

Additional Comments from Evaluation Tool:

Comments include the following:

“Very useful knowledge.”

“Good presentation with very helpful information.”

“Great job! Very informative!”

"I like the handout."

This project discusses new and creative educational strategies for patients with cardiovascular disease. Feedback shows that nursing students believe they can use this information in their future careers. Implementing this information will help patients with heart disease improve their modifiable risk factors, such as weight, exercise patterns, smoking and diet. These educational topics and strategies can help decrease the incidence of heart disease, which will decrease healthcare costs and length of time patients spend in the hospital.

Conclusion and Discussion

Based on the feedback of this project, more detailed information regarding medication adherence and psychosocial implications regarding heart disease would be discussed. The presentation would be more interactive and the participants would role-play what they would say to patients in certain educational situations. Based on the evaluation tool used in this project, future nurses believe they will use this information in their careers. Future projects could provide a more in-depth look at different types of heart disease, such as heart failure or valve disorders. In the future, this project will be used in nurse residency programs of Dayton area hospitals. Additionally, there should be focused continuing education hours aimed at nurses in order to increase their knowledge about how to educate this population. People with heart disease make up a large percentage of patients that nurses encounter, so it is important they know how to care for them. Nurses must devote time and effort educating their patients in order to decrease their risk of complications from heart disease. If more people develop heart disease, it will further increase healthcare costs, patient deaths, and length of stay in the hospital. If nurses are equipped with effective educational strategies, patients will be better able to prevent and manage their cardiovascular disease. In summary, a presentation and pamphlet were created to

increase knowledge among nurses and nursing students regarding educational strategies for CAD patients, hoping to decrease the number of people with heart disease.

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Appendix A

Preventing and Managing Coronary Artery Disease (CAD) Project Evaluation

The material in this presentation will be useful in my future career as a nurse.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

After viewing the presentation, I am able to discuss educational needs for patients with CAD.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

After viewing this presentation, I am able to identify and implement educational strategies for patients will CAD.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

The pamphlet provided during the presentation contributed to my learning.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

The presentation was presented in a clear, concise, and easy to understand manner.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

Additional comments:

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Appendix B

Article Citation	**Conceptual Framework and Purpose**	**Design/ Method**	**Sample/ Setting**	**Major Variables Studied (and their definitions)**	**Measurement**	**Data Analysis**	**Findings**	**Appraisal: Worth to Practice**
Kang et al. (2015)	No conceptual framework To assess effects of smoking on the extent of atherosclerosis	Prospective, cohort study, Level IV	697 patients with acute coronary syndromes; quantitative and qualitative analyses	Research variables Age: older than 65 years or younger than 65 years Smoking status: nonsmoker, former smoker, current smoker Research variables or what is being measured : plaque rupture-	Grayscale intravascular ultrasound Virtual histology intravascular ultrasound EEM: mm^3/mm Plaque rupture : % Calcification : % Fibrotic tissue : %	Fischer's exact test Unpaired t-tests Non-parametric Wilcoxon rank-sum test Multivariable linear regression analysis	Current smokers are at higher risk for having atherosclerotic plaque rupture Current and former smokers showed smaller EEM diameter (16 and 15.9 mm^3/mm) Patients > 65 who were current smokers had more plaque ruptures (4.7% vs 1.8%) and thicker plaques	Good evidence-medium quality Can relate to nurse education; it is beneficial to know that smoking is associated with more plaque lesions; this can guide nurse education as to why to stop smoking

				not defined EEM area (external elastic membrane)- not defined Calcification-not defined Fibrotic tissue- not defined			(20.3% vs 13%)	
Peterson et al. (2014)	Many people with CAD lack proper knowledge about how diet and physical activity can improve their CAD symptoms and lifestyle To develop and evaluate a CAD self-management workbook's effects on	Qualitative interviews and longitudinal study evaluating change in lifestyle with use of workbook Level III – RCT, workbook is intervention	61 post-angioplasty patients, purposive and maximum variation sampling (ensures some who had been successful in behavioral change and some who were unsuccessful), also included equal amounts of minority groups	Qualitative has 4 main themes: fear, experiencing a "turning point", social support, and a belief that "nothing helps"	Quantitative: Physical activity- kcal/week expenditure Qualitative- 4 main themes as mentioned previously	Patient self-report and self-efficacy Kcal/week in physical activity	Patients who read the workbook reported greater within-patient increases in kcal/week at 12 months, as compared with those who did not read the workbook, although was not statistically	Good evidence-medium Patient education materials should provide simple, concise instructions to be effective, nurses should allow patients to participate in

	increasing healthy behaviors, including physical activity	Level VI-qualitative interviews		Everyone gets workbook (no control group) Research variable-CAD workbook Dependent variable: changes in physical activity over 12 months, defined as kcal/week expenditure			significant at 12 months (p=0.093) Blacks and Hispanics reported greater physical activity increases than White counterparts (p=0.035)	their own care and education; workbooks are effective in increasing physical activity for at least 6 months
Aggarwal, Liao, & Mosca (2013)	Many cardiac patients utilize caregivers to help them with daily tasks, including	Prospective study, evaluating caregiving and its associations with clinical outcomes	1,432 patients who were admitted to a cardiovascular service at a university medical center who completed a	Instrument: Questionnaire Caregiver: defined as a paid	Asking about nonadherence: standardized and validated questions: "Have you missed any pills in the last	Image Formula Chi-square tests Logistic regression	Overall, patients with a paid caregiver (trained and accountable) compared with no	Good evidence-medium Nurses or other professional caregivers

	taking medications To determine if having a paid and/or family caregiver was associated with medication adherence in patients hospitalized for cardiovascular disease.	Level IV	medication adherence questionnaire	professional or a family member (nonpaid person who assists patient with medical and/or preventative care) Research variable: Nonadherence: defined as missing one or more pills/doses during a typical week in the past 6 months	week?" If answered yes, "How many have you missed in the last week?"		caregiver or an informal caregiver were 40% less likely to report nonadherence. Any type of caregiver compared to no caregiver produced lower rates of nonadherence among patients (p=0.009) Observed among minorities, not whites Women with paid caregivers were 53% less likely to report nonadherence, not statistically significant in men (p=0.04)	are better able to produce lower rates of medication nonadherence among patients with CVD Nurses can potentially "train" family members on effective caregiving

Bohman, Mattsson, & Borglin, (2015)	Nurses have limited exposure and knowledge regarding physical activity referrals (PARs) The aim of this study is to illuminate primary health care (PHC) nurses' experiences of physical activity referrals (PARs)	12 interviews with PHC nurses, descriptive, qualitative content analysis Level VI	12 female nurses between the ages of 29 and 59	N/A Descriptive study 12 nurses were interviewed about their experience with physical activity referrals (PAR's)	Qualitative analysis of interview answers Several themes identified: lack of organizational support, lack of familiarity	Transcribed interviews analyzed based on study by Burnard (1996); 4 step content analysis- identifies, codes and categorizes important meanings from the text, how it relates to aim	PAR's are an important nursing intervention, but there must be a health gain. Nurses feel they lack organizational support and routines in issuing PAR's	Low-medium evidence There is a need to educate nurses on how to issue PAR's and follow through with them. There needs to be set and clear guidelines for issuing PAR's, this would be beneficial in getting patients to partake in physical activity
Luisi et. al (2015)	Nutrition plays a large role in occurrence of CAD Assess the efficacy of an educational program to improve the	RCT Level II Randomized to intervention group (IG) or control group (CG)	133 patients with CAD admitted to the Cardiac Rehabilitation Unit of Don Carlo Gnocchi Foundation	Each group attended two, one- hour sessions regarding nutrition IV: Follow-up at 6 and 12 months for	Measure changes in dependent variables- BMI, weight, and daily caloric intake	Mean, standard deviation, median Relative and absolute frequencies t-test	Intervention group had decreased BMI, daily caloric intake (2,218 kcal/day baseline to 1727 kcal/day	Good evidence- high quality Follow-up with individualized diet plans produce better nutritional results

	diet of cardiac rehabilitation patients compared to usual treatment		of Florence, Italy	intervention group: individual diet counseling with review of dietary habits Control group received no follow- up DV: weight, BMI, daily caloric intake (kcal/day)		Chi-squared test	follow-up), and weight Control group had increased waist circumference (p=0.008), and LDL (p=0.025)	
Gallagher, Belshaw, Kirkness, Warrington & Roach (2013)	Sublingual nitroglycerin (SLN) is one of the most common medications for angina, and many people do not know how to use it correctly To evaluate the impact of a brief educational intervention delivered in	Single group pretest, posttest design Level III	86 patients from phase II cardiac rehabilitation programs in Sydney, Australia	Independent variable: educational intervention DV: score on SLN questionnaire after intervention (max 8 points)	SLNQ (10-item sublingual nitroglycerin questionnaire) pre and post test	Two-tailed paired sample t-test and chi squared tests Multiple linear regression analysis Frequencies, percentages, means, standard deviations	SLN knowledge increased on average by 1.5 points from baseline in the intervention group Name of medication: (p=0.001) Recommended timing between doses: (p=0.017)	Good evidence-medium-high quality Brief targeted intervention from nurses aimed at patients in cardiac rehabilitation has strong potential to increase patients knowledge about SLN

	cardiac rehabilitation (CR) on patients' knowledge of sublingual nitroglycerin (SLN).							
Holland, Carthron, Duren-Winfield, & Lawrence, (2014)	Conceptual framework: "Health actions are dependent on one's perceived susceptibility to and seriousness of a potential health problem, perceived benefits and barriers to taking action, cues to action, including knowledge about others who have been affected, and self-efficacy"	Mixed method design Quantitative: Quasi-experimental with pretest-posttest-Level III Qualitative: content analysis-Level VI	Convenience sample of 20 African-American males and females who were healthy freshmen students at a historically black college in North Carolina	Intervention: 6, 2-hour educational sessions focusing on physical activity, diet, weight control, stress, and family history Dependent variable: knowledge of appropriate CVD risk factors (based on posttest and self-report) Blood glucose,	Pre-and posttest knowledge-performed through questionnaires Godin-Leisure time questionnaire SisterTalk food habits questionnaire	Descriptive statistics McNemar test Content analysis	84% reported engaging in physical exercise in the first 7 days after the educational sessions Posttest knowledge increased in the following: Hypertension (p=0.041) Cholesterol (p=0.0005) Diabetes (p=0.043) Obesity (p=0.002)	Good evidence-medium quality Educational intervention increased knowledge about cardiovascular risk factors for at risk groups. Primary prevention is an important tool for nurses to use with younger populations, and it can affect if they develop cardiovascular disease

	(Holland et al., 2014). To pilot test a culturally specific and developmentally appropriate curriculum for African-American college students that included self and family assessment to increase awareness of their risk of cardiovascular disease (CVD)			cholesterol testing				
Van den Wijingaart, Sieben, van der Vlugt, de Leeuw, & Bredie (2015)	No conceptual framework To evaluate the impact of a structured screening and nurse-based intervention on cardiovascular risk factors.	Prospective cohort study Level IV	176 patients over 18 who were referred with atherosclerotic vascular diseases	Baseline data were filled out about each patient 55-item lifestyle questionnaire (physical activity, diet, smoking, daily habits)	Alcohol use defined as- "healthy, could be improved, unhealthy" Physical activity defined as- "healthy, could be	Univariate ANOVA test Paired t-test Chi-square test Wilcoxon signed rank test	After follow-up: Smoking rates decreased ($p < 0.0001$) Physical activity was unchanged	Good evidence-medium quality Personalized, multidisciplinary, integral, nurse-led secondary preventative care can be effective in

				Fragerstrom Test for Nicotine Dependence International Physical Activity Questionnaire AUDIT Research variable: multidisciplinary personalized intervention, with nurse input DV: after intervention: physical activity-not defined Healthy eating-not defined Smoking-defined as smoking or nonsmoking LDL	improved, unhealthy" Eating habits defined as-"healthy, could be improved, unhealthy"	Means, standard deviations	Reduction in SBP ($p < 0.01$) Patients developed healthier eating habits ($p < 0.0001$)	reducing patient cardiovascular risk factors

				Blood pressure				
Jakobsson, Huber, Bjorklund, & Mooe, (2016)	No conceptual framework To evaluate the efficacy of a new preventative guideline for cardiac patients in reducing blood pressure and LDL levels	RCT (NAILED trial) Level II	201 hospitalized patients living in Jamtland, Sweden with myocardial infarction, unstable angina, stroke or TIA	Independent Variable: type of care Each group was interviewed over the telephone by a nurse at least once, to get baseline data about current lifestyles Intervention group (n= 101) was followed-up again: medication titration to reach LDL goal Control group (n=100) received no further follow- up	LDL: < 1.8 mmol/L Measured 4 weeks after intervention, additional medication titration was performed if target LDL level was not met	Mann-Whitney U-test Person's X^2 test Wilcoxon signed rank test	39.6% of intervention group had at least one medication titration 9.0% of control group has at least one medication titration After follow-up: 65.3% of intervention group reached target LDL level (p< 0.001) 36% of control group reached target LDL level (p<0.001)	Good evidence- high quality Nurse-based telephone follow- up in one year performed better than usual care Nurses play an integral role in secondary prevention

				Nurse-based follow-up (intervention) Usual care (control) Dependent variable: LDL levels defined as target range below < 1.8 mmol/L				
Rahmati-Najarkolaei, Ghaffarpasand, Gholami, & Jonaidi-Jafari (2015)	No conceptual framework To review the effect of nutrition and physical educational intervention in decreasing cardiovascular risk factors.	Systematic review Level I	Studies published between 1989-2013 using electronic databases 194 articles identified with 43 meeting criteria	Independent variables: Physical activity and nutrition educational interventions: dietary and physical activity educational sessions offered by trained professionals to help reduce modifiable cardiac risk factors	Detailed, comprehensive search strategy with inclusion and exclusion criteria Each dependent variable measured numerically Cigarette smoking measured as decrease in number of packs/day	Detailed appraisal approach to report results using data extraction and standardized procedures 8 review articles, three descriptive studies, 7 case control studies, 25 intervention al trials	Evidence suggests that physical activity and dietary education can reduce cardiac risk factors, such as fasting blood sugar, triglycerides, blood pressure, weight, BMI, and cholesterol 25 interventional studies were high quality,	Good review of evidence, indicates physical activity and dietary education can reduce cardiac risk factors High quality of review 11 were deemed to be low quality

				Dependent variables: Fasting blood sugar: not defined Triglycerides : numeric Total cholesterol: numeric Weight and BMI: numeric Blood pressure: numeric Cigarette smoking: not defined	JADAD quality scale		7 case control studies were medium quality and 11 review and descriptive studies were deemed to be low quality	
Berndt et al. (2012)	Conceptual framework: Attitude-social influence-efficacy model. Identify risk groups among smoking cardiac patients from	Cohort study, longitudinal in nature Level IV	133 hospitalized, smoking, cardiac patients	Research variable: baseline information about smoking, social factors and psychological factors affecting smoking	Demographic information assessed through questionnaire Fagerstrom Test for Nicotine Addiction	Cluster analysis Agglomerative hierarchical analysis Hierarchical regression	Evidence suggests that presence of social support networks, a social support partner, social modeling partner and	Certain cardiac patients are at increased risk for smoking after discharge Nurses need to target these specific groups, focusing on

	their social cognitive profiles, and to assess predictors of smoking abstinence shortly after discharge.			Dependent research variable: Intent towards nonsmoking: not defined Actual smoking behavior: not defined	Hospital Anxiety and Depression Scale (HADS) Questionnaires were answered in hospital and 1 month after discharge	Linear regression analysis	network, and pros and cons of nonsmoking are all statistically significant factors that can decrease intent towards nonsmoking and actual smoking behavior ($p < 0.001$) Patients with higher rates of depression and anxiety are more likely to continue smoking ($p < 0.01$)	social and cognitive factors Nurses also need to assess depression and anxiety because it affects smoking Medium quality
Giardina et al. (2011)	No conceptual framework To document the extent of CVD knowledge and awareness among women with	Cross-sectional interviewer assisted questionnaire Level V	698 women recruited from 4 participating sites, ages 20-86; 443 classified as having metabolic risks	Research variable: metabolic risks were determined (Blood pressure, waist circumference, height,	Questionnaire Framingham Risk Score (FRS) Education level	Univariate and multivariable logistic regression analysis Odds ratio	Higher metabolic risks associated with less education (< high school vs postgraduate, $p < 0.0001$)	Good evidence There is a need to target women with cardiometabolic risk factors

	cardiometabolic risks, and if such women are aware of options for managing an acute CVD emergency.			weight, glucose, triglycerides, LDL, and HDL) Dependent research variable: extent of knowledge about CVD (not defined)			Fewer participants with high FRS and metabolic risks knew the leading cause (p=0.007) of death or when to call 911 in a cardiovascular emergency (p=0.003)	Improving awareness among women will help to decrease cardiovascular morbidity and mortality Medium quality
Leegaard & Fagermoen (2008)	No conceptual framework Through a synthesis, to integrate and explore qualitative studies regarding patients' post-CABG experiences.	Qualitative meta-synthesis Level V	Studies published between 1988 and 2006 40 studies identified with 19 meeting criteria	Post-op CABG knowledge and experiences	Detailed, comprehensive search strategy with inclusion and exclusion criteria Post-op experiences through patient self-report and qualitative descriptive research	Detailed appraisal approach to report results using data extraction and standardized procedures 7 undefined descriptive studies, 5 phenomenologies, 3 naturalistic studies, 2 grounded	5 main themes or key experiences identified: surviving alone without support, sense of self disrupted, losses, fears, and going on with life	Nurses play an integral role in educating patients about what to expect post-op Patients, especially women, should be educated about pain and taste alterations before surgery Educating patients before will help to

						theories, and 2 ethnographies		decrease anxiety and depression, and improve their overall well-being
Jousilahti et al. (2016)	No conceptual framework To estimate how much changes in the main risk factors of cardiovascular disease (smoking prevalence, serum cholesterol, and systolic blood pressure) can explain the reduction in coronary heart disease mortality observed among working aged men and women in eastern Finland.	Population based observational study Level VI	34,525 men and women aged 30-59 years who participated in the national FINRISK studies between 1972 and 2012.	Independent variables: Baseline measurements are taken (smoking, cholesterol, blood samples, blood pressure) every year for 40 years Primary prevention programs (observation of anti-smoking campaigns, dietary changes) Dependent variables: observed mortality, reduction in cardiac risk	Random sample of population every year for 40 years; getting baseline measurements of smoking, cholesterol, and blood pressure	Logistic regression analysis Continuous and dichotomous variables Confidence intervals	From 1972-2012 smoking rates fell from 53% to 29% Cholesterol in men fell from 6.8 to 5.4 Cholesterol in women fell from 6.7 to 5.3 Systolic blood pressure in men fell from 147.1 to 135.9 Systolic blood pressure in women fell from 149.2 to 129.1	Medium-low quality evidence Cardiovascular risk factors decrease as a population becomes healthier (stops smoking, eats healthy, exercises) As mortality is beginning to decline, nurses need to continue to educate patients on how to prevent and manage cardiovascular disease

				factors over time				
Bauters et al. (2014)	No conceptual framework To assess the association of ß-blocker use with cardiovascular mortality in patients with stable coronary artery disease (CAD).	Prospective cohort study Level IV	4,184 outpatients with stable CAD (3320 with beta blocker use)	Research variables: Beta blocker use at enrollment Dependent variable: cardiovascular mortality rate: not defined	Propensity scores to determine cardiovascular mortality rates among both groups Heart rate Clinical follow-up data	Fischer's test Unpaired t test Kaplan-Meier method Cox proportional hazard analyses Propensity scores	Heart rate lower in patients with beta-blocker use (66 compared to 71, $p<0.0001$) Cardiovascular mortality lower in patients with beta-blocker use ($p=0.011$)	Good evidence, medium quality Nurses need to be aware that many cardiac patients are taking beta blockers and should be aware of side effects Education about taking this medication and not stopping abruptly is important, because this medication decreases cardiovascular mortality
Ignjatovic et al. (2016)	No conceptual framework To examine the effect of different beta	Prospective clinical study; patients divided into 4 groups,	331 patients hospitalized for treatment and/or diagnostics	Independent variable: type of beta-blocker used (bisoprolol, carvedilol,	Direct measurements of platelet aggregation after addition of agonist	Kruskal-Wallis test Bonferroni correction	Reduced ADP/TRAP value (platelet aggregation) was found in	Good evidence, high quality Nebevilol is more effective

	blockers on platelet aggregation in patients on dual antiplatelet therapy	based on which beta-blocker used (bisoprolol, carvedilol, nebivolol, and metoprolol) Level III	of coronary heart disease	nebivolol, metoprolol) Everyone received dual antiplatelet therapy (Clopidrogel and aspirin) Dependent variable: level of platelet aggregation: not defined	(ADP to assess clopidrogel, and arachidonate for aspirin) ADP/TRAP ratio expressed as percentage	Chi-square test Mann-Whitney U test	the nebivolol group, compared to the other 3 groups (p=0.009)	in reducing platelet aggregation in patients, when they are also on dual antiplatelet therapy Nurses should educate about the importance of beta blockers
Komukai et al. (2014)	No conceptual framework The aim of this study was to assess the effect of lipid-lowering therapy with 20 mg/day of atorvastatin versus 5 mg/day of atorvastatin on fibrous cap thickness in coronary atherosclerotic plaques by using optical coherence	Prospective, dual intervention RCT Level II	70 patients with successful percutaneous coronary intervention (PCI) for unstable angina pectoris	Independent variable: Atorvastatin dose- 5 mg/day or 20 mg/day Dependent variable: Fibrous cap thickness determined by optical coherence tomography (OCT), comparison of thickness at baseline and 12 month follow-up ;	Direct measurement and visualization of fibrous cap thickness (measured in mm) through OCT. Small catheter inserted into coronary arteries to determine thickness Cholesterol values were measured numerically	Chi-square test Fischer exact test Mann-Whitney U test Wilcoxon signed rank test Simple regression analysis	Laboratory results: LDL decreased in both groups (p=0.009); at follow-up LDL decreased more for the 20mg group (69 mg/dl vs 78 mg/dl) (p= 0.039) Fibrous cap thickness increased in the 20mg/day group opposed to the 5 mg/day	Good evidence, high quality 20 mg/day atorvastatin is associated with greater fibrous cap thickness and a decrease in LDL Higher doses may help patients avoid plaque rupture, and is associated with a decrease in

	tomography (OCT).			HDL, LDL, total cholesterol, triglycerides			(12.2 mm compared to 10.2 mm) (p< 0.001), making these plaques less vulnerable to rupture	lipoproteins and inflammatory biomarkers
Johansen, Hefner, and Foraker (2015)	No conceptual framework To investigate long-term, outpatient use of statins and antiplatelet medications in a contemporary nationally representative sample.	Repeated cross sectional analysis 2003-2012 Descriptive longitudinal analysis Level VI	14,334 men and women >29 years with coronary heart disease.	Research variables: race, ethnicity, gender, statin use and antiplatelet use Primary outcomes: use of statins, antiplatelet medications, or a combination of the 2 Medication user- defined as someone who takes > 179 tablets or > 2 medication	Medical Expenditure Panel Survey (MEPS), verified through pharmacy to see what each person is taking	Adjusted Wald test Chi-square statistics Simple or multivariable logistic regression Sensitivity analyses	More men reported CHD than women (p < 0.001) 70.9% reported antiplatelet use, while 67.6% reported aspirin use Underutilization of statins and aspirin in patients with CAD African Americans and Hispanics less likely to report	Good evidence, medium quality Nurses should educate patients that it is appropriate to take medications for their heart disease, even though some ethnic groups have preconceived ideas about medications. Nurses need to explain all treatment options to patients.

				refills in a 1-year period			medication use	