Implementing the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

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In partial fulfilment of the requirements for the Doctor of Nursing Practice

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February 16, 2023.

Abstract

Problem: Even though the majority of the patients have been diagnosed with cardiovascular disorders, there is a lack of a cardiovascular disease prevention strategy at the project site. **Background:** Fats, cholesterol, and other chemicals build up in the arteries due to atherosclerotic cardiovascular disease, which impairs blood flow. Approximately 8% of Americans have been diagnosed with ASCVD. The American College of Cardiology/American Heart Association (ACC/AHA) guidelines is one of the strategies to prevent ASCVD. The goal of this investigation was to ascertain how the ACC/AHA guidelines affected ASCVD prevention. **Methods:** In this quasi-experimental project for quality improvement, a quantitative methodology was used. The patients and health care professionals constituted the population for this project. Data were collected before and after the intervention's implementation. Patients' screening rates and health care professionals' compliance rates were the outcome variables that were gathered. **Intervention:** The ACC/AHA recommendations were implemented as the intervention. The health care professionals participated in a brief educational program to increase their expertise in ASCVD screening. ACC/AHA recommendations were presented in a PowerPoint presentation for the educational event. The clinicians had to screen the patients and provide behavior counseling after the training. The electronic health records contained information on screening and behavior screening. **Results:** there was a statistically significant increase in screening rates ($\chi 2$ =5.916, p = .015) and compliance rates ($\chi 2$ = 13.08, p = .000). **Conclusions:** The purpose of this project was to determine the impact of the ACC/AHA guidelines on the screening and compliance rates. Based on the findings, the screening and compliance rates significantly improved after implementing the intervention. Thus, the

intervention can be sustained at the project site to increase the screening rates for cardiovascular diseases.

Implementing the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

Atherosclerotic cardiovascular disease (ASCVD) is a condition in which cholesterol, fats, and other substances build up in the arterial walls, resulting in poor blood circulation (Adebayo & Adeoye, 2020; Boren et al., 2020). The narrowing of arteries specifically causes blockage of blood flow due to plague. The exact cause of ASCVD is unknown (Adebayo & Adeoye, 2020). However, it is presumed that the condition may be attributed to injury in the arterial walls, which may, in turn, be caused by high cholesterol, hypertension, insulin resistance, smoking, and triglycerides (Mortensen et al., 2020; Nanna et al., 2019). In addition, patients with ASCVD are at increased risk of cardiovascular diseases due to low-density lipoprotein cholesterol (LDL-C) levels (Klimchak et al., 2020; Mortensen et al., 2020; Nanna et al., 2019).

According to Klimchak et al. (2020), it is estimated that about 18.3 million adults (8.0%) have ASCVD. Klimchak et al. (2020) also noted that more than 690,500 adults were diagnosed with acute coronary syndrome in 2019, while over six million were considered at high risk of ASCVD. About 74% of patients with ASCVD have LDL-C levels ≥70 mg/dL, with approximately 67% having higher risks of the condition (Klimchak et al., 2020). Statins are the most preferred drugs for cholesterol control among ASCVD patients (De Backer, 2021). Statistics also show that about 24.4% of patients diagnosed with ASCVD with LDL-C levels ≥100 mg/dL receive statins (Klimchak et al., 2020). Additionally, less than 50% of those with LDL-C levels greater than or equal to 70 mg/dL use statins, with only 9.2% receiving high-intensity statins (Klimchak et al., 2020).

Various guidelines recommend different lipid management approaches to prevent ASCVD (Sajja et al., 2021). The American College of Cardiology–American Heart Association (ACC–AHA) guidelines were published in 2019 to support the prevention of cardiovascular disease (Michos et al., 2019; Ng et al., 2021). The 2019 guideline is an update of the 2018 recommendations, which incorporates elements of risk estimation, diet, exercise/physical activity, aspirin use, obesity, smoking cessation, type 2 diabetes, hypertension, and blood cholesterol (Bittner, 2020; Cardoso & Nasir, 2019).

The guideline suggests that adults between 40 and 75 years being evaluated for cardiovascular disease prevention should consider undergoing a 10-year ASCVD risk assessment before receiving any pharmacological therapies, including statins (Arnett et al., 2019; Klimchak et al., 2020; Ng et al., 2021). The use of Pooled Cohort ¬¬ (PCE) is deemed effective in guiding statin therapy decisions among patients (Klimchak et al., 2020). The problem that needs to be addressed in the practice setting involves underutilizing lipid-lowering therapies, particularly high-intensity statins, among patients with uncontrolled LDL-C, including those at significantly high risk. The DNP project site is a primary care clinic and does not currently have a protocol to address the updated ACC–AHA guidelines, which support screening for ASCVD risks and the need for health promotion activities and education. Therefore, the use of the proposed guideline applies to this quality improvement (QI) project because it emphasizes preventing the progression of ASCVD through screening. Screening for the condition promotes early detection and timely treatment. In addition, implementation of the guidelines will help increase the use of health promotion activities and education, considering that it was established that High-risk

patients yet to undergo the 10-year ASCVD risk assessment in the facility are less likely to engage in physical activity and often tend to consume unhealthy diets. There is an increased number of individuals who are at risk of developing ASCVD the population. Therefore, implementing the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease can improve screening for ASCVD risk, subsequently reducing the consumption of unhealthy diets and promoting engagement in physical activity.

Project Question

The project question that guided this QI project was Among adults aged 40-75 (P) being evaluated for cardiovascular disease prevention (I), does implementation of the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease (C) compared to standard practice (O) improve screening and primary prevention practices for ASCVD (T), within five weeks?

Search Methods

A comprehensive literature review was conducted to obtain pertinent information regarding the 2019 ACC/AHA guideline for the primary prevention of cardiovascular disease. Several databases, including PubMed, Medline, CNAHL, and Scopus, were used to search for pertinent literature. In addition, Google Scholar was used to find additional information on the subject. Cardiovascular disease, CVDs, screening, statin therapy, aspirin use, atherosclerotic, lifestyle modification, team-based care, diet, and treatment were among the keywords used. Articles were included in the literature review if they met the following criteria: a) Written in English, b) available in full text, c) peer-reviewed, d) less than five years old, and e) pertinent to

the topic. Therefore, articles written in a language other than English, older than five years, not peer-reviewed, unavailable in full text, or irrelevant to the topic were excluded.

Review of Study Methods

After reviewing the research methodologies in the literature review, the DNP project's emergent themes are relevant. The literature review consisted of systematic reviews and meta-analyses of randomized controlled trials (RCTs), systematic reviews and meta-analyses, cross-sectional studies, retrospective cohort studies, and integrative reviews. The methodologies were pertinent to the studies' objectives and the DNP project. The research methods are pertinent to the DNP project because they are valid and reliable. The validity and reliability of the studies used in the review of the literature were based on similar findings regarding aspirin use and statin therapy, lifestyle modifications, and team-based care. Therefore, the methods of the studies included in the literature review were essential for supporting the proposed DNP project aimed at using the 2019 ACC/AHA guidelines to improve screening and prevent ASCVD.

Review Synthesis

In the United States, cardiovascular disease (CVD) is one of the leading causes of death (US). According to the Centers for Disease Control and Prevention [CDC] (2022), roughly 659,000 Americans die annually from cardiovascular disease. In addition, the disease is associated with a substantial financial burden of over 200 billion dollars, which may be attributed to the costs of care, medication, and loss of productivity due to death (Arnett et al., 2019; CDC, 2022). The condition can be prevented by preventing the development of risk factors. Additionally, the condition can be prevented by addressing conventional CVD risk

factors (Arnett et al., 2019). Consequently, the American College of Cardiology (ACC)/American Heart Association (AHA) guidelines are intended to provide health providers with essential information to aid in reducing the risk of cardiovascular disease (CVD) among patients by encouraging them to make the necessary lifestyle changes to enhance the quality of care and achieve the best clinical outcomes (Arnett et al., 2019).

Impact of the Problem

ASCVD is a significant health concern in primary care in the U.S. The literature review was guided by three themes: a) Aspirin use, statin therapy, and screening; b) lifestyle modifications; and c) team-based care. Various scholars explored the ACC/AHA guidelines that may be utilized to prevent the risk of ASCVD in primary care.

Aspirin Use and Statin Therapy and Screening

Due to aspirin's lack of net benefit, the ACC/AHA recommends its use only when necessary (Arnett et al., 2019). In addition, statin therapy is recommended as the first-line treatment option for the prevention of CVD in patients with diabetes mellitus, those with low-density lipoprotein cholesterol levels, aged 40–75 years, and individuals determined to be at sufficient risk for CVD following a patient-provider discussion (Arnett et al., 2019). Prior to initiating pharmacological therapy, individuals between the ages of 40 and 75 should undergo a 10-year ASCVD risk estimation and have a patient-provider discussion, according to the ACC/AHA guidelines. The guidelines also recommend the evaluation of additional risk-increasing factors among individuals to facilitate accurate decision-making regarding the prevention of ASCVD. Abdelaziz et al. (2019), Guirguis-Blake et al. (2022), and Yang et al.

(2017), therefore, evaluated the use of aspirin and statin therapy in the prevention of CVD. In addition, Wong et al. (2022) investigated ASCVD risk assessment to prevent the disease's occurrence.

In a cross-sectional study, Ueda et al. (2018) estimated the number of CVD-related deaths that could be prevented with statin therapy among untreated individuals. The study included a representative sample of 7,687 US adults and 10,375 English adults aged 40 to 75 years without CVD (Ueda et al., 2018). The findings of this study indicate that approximately half of the high-risk populations for cardiovascular disease in the United States and England are not receiving statin therapy. Vital to preventing CVD events would be the extension of statin therapy to individuals at high and moderate disease risk. Therefore, the findings by Ueda et al. (2018) support the implementation of the proposed project to enhance ASCVD screening and prevention.

Guirguis-Blake et al. (2022) performed a systematic review and meta-analysis to determine the advantages and disadvantages of aspirin in primary CVD prevention. Included in the study were eleven RCTs and one pilot trial. According to the study's findings, low-dose aspirin was associated with a small absolute risk reduction of major CVD events and an increase in major bleeding (Guirguis-Blake et al., 2021). However, aspirin use was not associated with a statistically significant reduction in CVD or total mortality. Therefore, the study's findings support the implementation of the proposed project to enhance ASCVD screening and prevention.

Abdelaziz et al. (2019) conducted a systematic review and meta-analysis of RCTs to determine the health outcomes associated with aspirin use in the primary prevention of CVD. In the study, 15 randomized controlled trials with 165,502 participants were included to compare the clinical outcomes associated with aspirin use versus placebo in the prevention of CVD. The study results indicated that using aspirin to prevent cardiovascular disease reduces nonfatal ischemic events. In contrast, the medication increases the risk of nonfatal bleeding significantly. As a result, Abdelaziz et al. (2019) provide evidence supporting the ACC/ACA primary CVD prevention guideline, indicating that aspirin should be used sparingly due to its lack of net benefit.

Wong et al. (2022) conducted an integrative review of ASCVD risk assessment. Wong et al. (2022) stated that a baseline assessment of ASCVD using global risk scores derived from standard office measures is essential for preventing the condition. Traditional risk factors, unique biomarkers, and inflammatory factors can be used to assess the likelihood of ASCVD. In addition, social determinants of health (SDOHs), female-specific enhancers, and ethnicity or race may be used to assess the risk of the condition in individuals. Screening for coronary calcium may be utilized in subclinical ASCVD screening to aid treatment decision-making. Accurate ASCVD risk screening is essential for choosing the most suitable preventative measures (Wong et al., 2022). In addition, a patient-provider discussion regarding lifestyle modifications and the benefits and risks of medications used to reduce the risk of ASCVD is essential for preventing the occurrence of the condition. The findings of Wong et al. (2022) support the implementation of the current project, which is aimed at enhancing the screening and prevention of ASCVD.

Lifestyle Modifications

According to the ACC/AHA guideline for primary CVD prevention, lifestyle modifications, including improved dietary habits and increased physical activity, are essential (Arnett et al., 2019; Bittner, 2020). According to the recommendation, individuals should consume healthy meals consisting of vegetables, fish, nuts, fruits, and animal proteins. Moderation is advised when consuming red meat, sugary beverages, trans fats, and refined carbohydrates (Arnett et al., 2019). For obese or overweight individuals to lose and maintain weight, caloric restriction and dietary counseling are crucial. Additionally, the guidelines suggest that a combination of behavioral and pharmacological interventions may be required for effective smoking cessation (Bittner, 2020). Various studies have been conducted to explore the efficacy of lifestyle modifications for the primary prevention of CVDs. Abbate et al. (2020), O'Connor et al. (2020), Roelsgaard et al. (2020), and Wang et al. (2021) evaluated the effect of lifestyle modifications on the prevention of CVDs.

Abbate et al. (2020) conducted a systematic review and meta-analysis to assess the efficacy of dietary and exercise interventions in lowering CVD risk factors and preventing the disease. The study included 21 studies that met the criteria for inclusion and exclusion (Abbate et al., 2020). The Mediterranean diet is the most beneficial for lowering systolic and diastolic blood pressures and the risk of developing type 2 diabetes and major CVD events (Abbate et al., 2020). In addition, a low-fat diet was only beneficial when combined with exercise. However,

compliance with the intervention is crucial to achieving the desired results. In support of the proposed intervention to prevent ASCVD, the study's findings suggest that diet may play a crucial role in reducing CVD risk.

Similar to Abbate et al. (2020), O'Connor et al. (2020) conducted a systematic review and meta-analysis of RCTs to evaluate the benefits and harms of behavioral counseling to promote physical activity and dietary changes in individuals with CVD risk factors. The study included 94 RCTs in total. O'Connor et al. (2020) found that behavioral counseling to encourage dietary changes and physical activity was linked to a decreased risk of CVD events, blood pressure (BP), adiposity-related outcomes, and low-density lipoprotein (LDL). Therefore, O'Connor et al.'s (2020) findings support the implementation of the proposed intervention to prevent ASCVD.

In a cross-sectional study, Roelsgaard et al. (2020) compared CVD risk factors, disease activity, and CVD event rates among 3,311 patients with rheumatoid arthritis (RA). In ten countries, RA patients' disease characteristics, medications, and CVD risk factors were documented (Roelsgaard et al., 2020). In addition, information on CVD events was collected. Also, RA patients who smoked were associated with increased CVD risk factors. Nonsmokers, on the contrary, had a significantly lower risk of CVD events than smokers. Roelsgaard et al. (2020) report that smoking cessation may be crucial in reducing CVD risk factors and events in individuals, thereby supporting the intervention to prevent ASCVD.

Similarly, Wang et al. (2021) compared the CVD risk between smokers and nonsmokers using a systematic review and meta-analysis. Included in the meta-analysis were nine studies. Despite the associated weight gain, the study indicates that quitting smoking is associated with a

reduced risk of CVD and all-cause mortality (Wang et al., 2021). Consequently, the findings of Wang et al. (2021) support the implementation of smoking cessation to prevent CVDs.

Team-Based Care

According to the ACC/AHA guidelines, team-based care and shared decision-making are essential for preventing CVDs. When making treatment decisions, clinicians must consider the social determinants of health (SDOH). Numerous studies have evaluated the effectiveness of team-based care in preventing CVDs. Bittner (2020), Chan et al. (2022), and Fentanes et al. (2018) investigated team-based care in the prevention of CVDs.

Chan et al. (2022) examined the association between team-based care continuity and CVD risks in diabetic patients in a retrospective cohort study. Included in the study were 312,068 patients with type 2 diabetes and no history of CVD at baseline. Among patients with type 2 diabetes, team-based care was associated with a lower risk of CVD (Chan et al., 2022). Supporting the proposed intervention, the findings indicate that team-based care must be integrated into primary care to reduce CVD risk.

In an integrative review, Bittner (2020) concluded that team-based care is essential for preventing CVDs. Reducing the risk of CVDs, cardiovascular events, hospitalizations, and care costs are facilitated by multidisciplinary teams of healthcare professionals able to engage patients and their families in care decision-making. In addition, healthcare professionals should assess patients' SDOHs at each clinical encounter to determine their risk of developing CVD, thereby enabling them to take the necessary preventive measures (Bittner. 2020). For instance, SDOHs such as low socioeconomic status, poor health literacy, and food and housing may increase the

risk of cardiovascular disease. Therefore, Bittner's (2020) findings support the implementation of team-based care to prevent CVD following ACC/AHA recommendations.

In a retrospective cohort study, Fentanes et al. (2018) evaluated the effect of advanced practice practitioner teams on improving adherence to ASCVD prevention interventions. Five hundred and ninety five patients who utilized advanced practice practitioners (APPs) in a preventive cardiology clinic (PCC) were compared to 595 patients who did not. The study's findings indicate that APPs collaborating in a PCC were essential for accurately identifying the CVD risk among patients, thereby aiding in the aggressive management of the condition's contributing factors. Consequently, Fentanes et al. (2018) indicate that the implementation of team-based care is essential for preventing ASCVD, thereby supporting the proposed project.

Project Aims

In the doctor of nursing practice (DNP) project, it was anticipated that using the 2019 ACC/AHA guideline would improve screening for ASCVD risk, thereby reducing unhealthy diet consumption and promoting physical activity. The specific project aims include the following;

- Improving the screening of ASCVD risks by 50% within five weeks.
- Providers would increase patient education regarding physical activity and consuming a heart-healthy diet among patients with ASCVD by 50% within five weeks.
- Enhancing staff education and the creation of a protocol would help increase the implementation of the ACC/AHA guidelines by 50% within five weeks.

Project Objectives

- Improving ASCVD screening by 50% within five weeks.

- Reduce the occurrence of ASCVD by 50% within five weeks.
- Improve the implementation of the ACC/AHA guidelines by 50% within five weeks.

Theoretical Framework

Kurt Lewin's change theory was utilized to guide the proposed project aimed at implementing the 2019 American College of Cardiology (ACC)/American Heart Association (AHA) guideline to improve the screening and prevention of atherosclerotic cardiovascular disease (ASCVD). The 2019 guideline is an update of the 2018 recommendations, which incorporates elements of risk estimation, diet, exercise/physical activity, aspirin use, obesity, smoking cessation, type 2 diabetes, hypertension, and blood cholesterol (Bittner, 2020). The 2019 ACC/ AHA guideline is intended to provide health providers with essential information to reduce the risk of ASCVD among patients by encouraging them to make the necessary lifestyle changes to enhance the quality of care and achieve the best clinical outcomes (Arnett et al., 2019). Therefore, the theoretical framework that guided the implementation of the proposed project are discussed in this section.

Historical Development of the Theory

The Lewin change theory was developed in 1947 by Kurt Lewin (Lewin, 1947). Initially, the Lewin change theory was developed to aid in solving social conflicts, such as racism, instead of a strategy to guide organizational changes (Burnes, 2020). In his first article on human relations, Lewin described his approach to behavioral change as "unfreezing the current level, moving to the next stage, and freezing group life." According to Lewin, the permanence of

change requires the new force field to resist modification (Burnes, 2020). Since then, Lewin's three-step model for organizational change has become the most effective approach.

According to Lewin, the change process entails the creation of the perception that a change is necessary, followed by a shift to the desired and new behavior level, and finally, the establishment of the novel conduct as the norm (Lewin, 1947; Lewin, 1951). Due to the high prevalence of ASCVD in the United States, a change was required in clinical settings. Klimchak et al. (2020) estimated that approximately 18.3 million adults (8.0%) have ASCVD. In addition, patients with ASCVD with elevated levels of low-density lipoprotein cholesterol (LDL-C) are at increased risk for cardiovascular disease (Klimchak et al., 2020; Mortensen et al., 2020; Nanna et al., 2019). The high prevalence of ASCVD and the associated health risks underscore the need for a long-term strategy to promote and manage optimal outcomes. Consequently, the 2019 ACC/AHA guideline provides a long-term strategy for enhancing screening and preventing ASCVD in primary care.

Implementing the 2019 ACC/AHA guideline to improve the screening and prevention of ASCVD in primary care was guided by Lewin's theory of change. According to Lewin's theory of change, individuals and groups are influenced by obstacles that oppose driving forces to maintain the status quo (Lewin, 1951). Additionally, individuals are influenced by motivating forces that facilitate change. Therefore, organizations must implement planned change activities using Lewin's change theory to alter the status quo. Lewin’s change theory involves three stages or phases, including a) unfreezing, b) changing/moving, and c) refreezing (Lewin, 1951).

The first phase, unfreezing, entails raising awareness of the problem and allowing individuals to abandon old practices, disrupting existing equilibrium. During the unfreezing phase, it was crucial to solicit input from healthcare professionals at the project site to reduce the likelihood of resistance to change and ensure that all investigators have a comprehensive understanding of the project and their roles (Lewin, 1951). In addition, it was essential to obtain input from health professionals at the project site to reduce the likelihood of resistance to implementing the 2019 ACC/AHA guideline to enhance the screening and prevention of ASCVD. The second stage of the model, changing or moving, involves seeking alternatives, demonstrating the benefits of change, and minimizing forces negatively affecting modifications (Lewin, 1951). For instance, role modeling, brainstorming role modeling, new approaches, training, and coaching could facilitate practice change (Lewin, 1951).

The final stage, Refreezing, involves integrating and stabilizing a new equilibrium into the system to become a routine and resists further change (Lewin, 1951). Retraining, recognizing accomplishments, and monitoring performance indicators are essential components of refreezing (Lewin, 1951). The refreezing phase occurrf following the completion of the project, and if successful, the 2019 ACC/AHA guideline will become a part of standard management approaches for the screening and prevention of ASCVD in primary care. Lewin's theory of organizational change aided in evaluating the primary care clinic's current practices, implementing an evidence-based intervention, and monitoring its efficacy before putting it into practice.

Application to DNP Project

Lewin's change theory guided the implementation of the 2019 ACC/AHA guideline to improve the screening and prevention of ASCVD in primary care. The project site is a primary care clinic and does not currently have a protocol to address the updated ACC/AHA guidelines. Therefore, Lewin's change theory facilitated the implementation and adoption of the proposed intervention to achieve the best health outcomes among patients with ASCVD. The three phases of the change theory, including unfreezing, changing, and refreezing, were crucial in promoting the practice change (Lewin, 1951).

Unfreezing

Awareness of the intervention's necessity were raised at the project site during the unfreezing phase. Awareness of the issue enables individuals to abandon outdated practices, disrupting the current equilibrium (Lewin, 1951). It was essential to obtain feedback from the health professionals at the project site to reduce the likelihood of resistance to implementing the 2019 ACC/AHA guideline to enhance the screening and prevention of ASCVD in primary care. The second stage of the model entails seeking alternatives, demonstrating the advantages of change, and minimizing forces that negatively impact modifications.

Changing

The second stage of the model, changing or moving, involves seeking alternatives, demonstrating the benefits of change, and minimizing forces negatively affecting modifications (Lewin, 1951). Training, brainstorming, role modeling, and coaching facilitatef the implementation and adoption of the 2019 ACC/AHA guideline to enhance the screening and

prevention of ASCVD during the changing phase. In this project, training, role modeling, and brainstorming will be essential in motivating health providers to adopt the 2019 ACC/AHA guidelines to improve ASCVD screening and prevention.

Refreezing

The final stage, Refreezing, involves integrating and stabilizing a new equilibrium into the system to become a habit and resists further change (Lewin, 1951). The refreezing phase occured following the completion of the project, and if successful, the 2019 ACC/AHA guideline would become a part of standard management approaches for the screening and prevention of ASCVD in primary care. Lewin's theory of organizational change will aid in evaluating the primary care clinic's current practices, implementing an evidence-based intervention, and monitoring its efficacy prior to putting it into practice.

Hussain et al. (2018) examined change theories for various organizational change phases. Hussain et al. (2018) observed that Lewin's theory of change reduces resistance to change and maximizes the outcomes of an intervention. In addition, Lewin's theory of change enables practitioners and patients to collaborate and share information regarding their experiences receiving and providing care (Hussain et al., 2018). In summary, the project advanced the model by illustrating the applicability of this theory to introducing change that requires input from health care professionals and patients.

The PICOT question that guided this QI project was Among adults aged 40-75 (P) being evaluated for cardiovascular disease prevention (I), does implementation of the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease (C) compared to standard

practice (O) improve screening and primary prevention practices for ASCVD (T) within five weeks? Therefore, the Lewin change theory was crucial in facilitating the implementation and adoption of the 2019 ACC/AHA guideline to improve screening and prevent ASCVD in the proposed project. Improved screening practices and prevention of the condition are crucial to achieving the best patient outcomes.

Population of Interest

The population of interest in this project involved both direct and indirect populations. The direct population consisted of the staff at the project site who provide health care services to the patients. According to the ACC/AHA 2019 guidelines, the assessment of cardiovascular diseases is the most significant factor in preventing ASCVDs (American College of Cardiology, 2019). The authors have also highlighted that the healthcare staff's primary role is to assess patients at a higher risk of cardiovascular diseases (American College of Cardiology, 2019). Therefore, the involvement of the healthcare staff in this project is crucial.

The indirect population impacted by this project are the patient adults who were screened for cardiovascular diseases. According to the American College of Cardiology (2019), patients should be assessed for the risk factors for cardiovascular diseases. According to Bhatia and Dorian (2018), the population interested in preventing cardiovascular diseases is the patients. The authors further stated that screening should be conducted on adult patients without the symptoms or even a diagnosis of cardiovascular conditions (Bhatia & Dorian, 2018). In addition, accurate screening of patients with a high risk of cardiovascular events enables efficient management of the conditions. In addition, the screening may help identify patients at low risk, thus reducing the application of the intervention among such populations. Therefore, adult

patients are also a crucial part of the population of interest in this project (Bhatia & Dorian, 2018).

The inclusion criteria for the population of interest in this project involved adult patients aged over 65 years, those with elevated blood pressure, individuals with high low-density lipoprotein (LDL) cholesterol, and also those diagnosed with diabetes, smoking problems, obesity, and with limited physical activities. In addition, patients who were found with a family history of cardiovascular diseases also be included in this project. The exclusion criteria involved participants without hypertension, those who were physically active, those with low cholesterol levels, those who are undiagnosed with diabetes, obesity, or smoking issues, and without a family history of cardiovascular diseases.

Project Setting

This project was conducted in a small, underserved community clinic in South Central Los Angeles, California. The community clinic is a non-profit organization that offers insured, uninsured, cash, and free services to the people around it. In addition, the facility consists of around 18 to 28 employees. Among the employees are five primary care providers, two obstetricians, an endocrinologist, one cardiologist, one urologist, 12 medical assistants, one podiatrist, two front desk secretaries, four housekeepers, and three phlebotomy, two security officers, and a surgeon or cardiologist. Also, the facility offers services to marginalized communities, including lesbian, gay, bisexual, transgender, and queer (LGBTQ). The facility has also been found to have a higher number of patients with ASCVD risk factors, resulting in its selection as the primary setting for this project. Also, there is a lack of effective measures to prevent ASCVD among the population of interest at the project site.

Stakeholders

The stakeholder's active involvement in the project is essential to its success (Dwivedi, 2021). Starting with the project manager identifying important stakeholders based on their significance, role, and attitude within the project is significant in the implementation of this project. Once the parties have established their mutual expectations and resolved any issues, the stakeholder management process begins. Although the requirements for inputs, information, processes, and decision-making may change during the project's life cycle, the major stakeholders' responsibility stays unchanged: Attaining the project's successful goals and objectives. Managing the project's stakeholders creates a huge success gap across the entire life cycle. As a result, every project's stakeholders are important and play a crucial role in the project's success (Dwivedi, 2021).

As a result, multiple stakeholders will b involved in the implementation of this project. The stakeholders include the Doctor of Nursing Practice (DNP) student, the leaders at the facility, health care providers, registered nurses, receptionists, and medical record keepers. The DNP student managed the implementation of the project and also contribute to the development of the intervention. The leaders at the facility ensured that the project was conducted within all laws and policies that guide the project site. The leaders at the facility also helped by asking the healthcare providers to participate in the educational intervention which was implemented in this project.

Additionally, the health care providers and the registered nurses participated in the intervention. They were educated on the screening of patients for ASCVD to prevent the invasion of the condition among the patients. The medical record keepers helprf retrieved data on patients receiving treatment at the project site. The medical records were sought to determine if

the intervention impacted the screening rate of cardiovascular diseases. The medical record keepers also helped de-identify the patient data. That was achieved by assigning pseudonyms to the patients' data obtained from the medical records. Additionally, the receptionists assisted in distributing the educational materials and sorting the data to be analyzed to determine the impact of the intervention.

Permission to conduct the project was sought from the practice-setting administrators. The DNP student wrote a letter to the setting's administrators requesting them to grant permission to collect data from the site. The letter also included information concerning the intention of the DNP student to educate healthcare providers at the project site concerning screening and prevention of ASCVD among patients. Also, the letter consisted of a summary of the project description and purpose. Therefore, the setting administration granted the permission to conduct the project because there is a need at the site to prevent the occurrence of cardiovascular diseases at the project site.

Intervention

Before the implementation of the ASCVD risk assessment and patient behavioral counseling intervention protocol, healthcare providers at the practicum site were engaged in a short collaborative education program to enhance their skills and awareness to address potential barriers such as lack of knowledge that may arise during patient screening and undertaking behavioral counseling (Wong et al., 2022). A PowerPoint presentation were designed based on the 2019 American College of Cardiology-American Heart Association guidelines for the primary prevention of cardiovascular disease (Wong et al., 2022). With the assistance of the nurse practitioners at the practicum site, the project lead also addressed clinicians' issues that

may arise relating to screening patients for ASCVD based on lipid, blood pressure, family history, and lifestyle behaviors. Healthcare providers at the practicum site were required to undertake routine patient screening and behavior counseling and record the information in the electronic health records.

To address suboptimal ASCVD screening at the facility, a protocol was implemented for ASCVD risk screening and subsequent patient behavioral counseling for those at risk of cardiovascular disease. During the implementation of the protocol, healthcare providers were required to assess the patient's risk of ASCVD through routine lipid screening and blood pressure assessment and evaluate clients for tobacco and alcohol use, physical inactivity, family history, and dietary habits (Arnett et al., 2019). Healthcare providers also assessed patients for physical activity using the International Physical Activity Questionnaire. Based on the patient's cardiovascular disease risk factors, clinicians identified individuals that require behavioral intervention to reduce the risk of ASCVD (Boettiger et al., 2020).

Clinicians were also be required to engage patients at risk of cardiovascular disease in behavioral counseling using evidence-based techniques such as motivational interviewing for potential behavior modification (Trautwein et al., 2020). Patients were educated on the need to engage in physical activity, adopt healthy diets and smoking cessation to improve blood pressure and cholesterol, and body mass index as risk factors for ASCVD. Under the protocol to be implemented, clinicians were required to record patient evaluation data in electronic health records. Retrospective chart reviews were undertaken at baseline and at the end of five weeks to

ensure compliance with screening patients for ASCVD risk and engaging those identified in behavioral counseling. The codes that triggered chart audits are E78.5 and R03.0.

The physical resources that were used in this project include a personal computer, a projector, and self-reported questionnaires. The physical resources were obtained from the facility except for a personal computer that belongs to the DNP student. Human resources included the health care providers. This project was implemented for five weeks. The activities consisted of a collaborative training program for clinicians, data collection, project implementation, and post-intervention data collection. The summary of the timeline has been presented in Appendix A

Tools

The tool that was used in this project is the self-reported International Physical Activity questionnaire. The tool was used to collect data on participants' physical intensity, frequency, and duration in the previous seven days. Based on the scores of the tool, the participants were categorized as low, moderate, and high. Also, the tool was used to assess the association between physical activity as per the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease with blood pressure and dyslipidemia readings. The International Physical Activity questionnaire was used by healthcare providers who were conducting patient screening, and it will become part of standard care. The International Physical Activity questionnaire is a reliable and valid tool, with an interclass correlation coefficient of 0.65 for men and 0.57 for women. Thus, the tool has an acceptable criterion validity and is useful in classifying adults on achieving and not achieving the recommended threshold for physical

activeness. The International Physical Activity Questionnaire is freely available; thus, no permission is required for its use (Tran et al., 2020). The tool has been presented in Appendix B.

Protocol

The AHA recommends behavioral counseling to promote a healthful diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors (Laddu et al., 2021). Healthcare providers at the facility were required to assess cardiovascular risk factors and provide behavioral counseling. The recommendation applies to adults aged 18 years or older in primary care settings who are overweight or obese and have known cardiovascular risk factors, including dyslipidemia, hypertension, impaired fasting glucose, or metabolic syndrome (Krist et al., 2019). Clinicians in primary care must offer or refer to intensive behavioral counseling intervention to promote a healthy diet and physical activity. It is recommended that clinicians should provide intensive, with multiple contacts combined behavioral counseling on physical activity and the adoption of a healthy diet. The intervention should involve about five to 16 contacts over nine to 12 months. Patient behavioral counseling should focus on behavior modification and include didactic education and customized patient support (Laddu et al., 2021). The behavioral intervention should comprise audit, feedback, problem-solving skills, and individualized care plans. Healthcare providers should undertake intensive in-person or telephone counseling and provide patients with tailored materials for effective dietary and physical activity improvements (Laddu et al., 2021). It is also recommended that clinicians ask all adult patients about tobacco use and provide tobacco cessation interventions to individuals using such products (Krist et al., 2019).

Chart Review Tool

Two address the project's objective two chart review tools for Chi-square was used in data collection. To assess potential increment in the number of adult patients screened for cardiovascular risk factors, a chart review tool for Chi-square was used at baseline and at the end of five weeks. The tool was used to identify the frequency in the number of patients screened/not screened for cardiovascular risk factors at baseline and the end of the five. Using the tool, data were recorded into two categories, including 1(*screened*) and 2 (*not screened*). Data collected using the tool supported the computation of a Pearson Chi-square test to compare the difference in the cardiovascular screening at baseline and the end of five weeks. The second chart review for Chi-square (see Appendix C) was used to collect data on provider compliance with cardiovascular risk factor screening and engaging patients identified in behavioral counseling. Using the tool, data were collected in two categories, including 1(*compliant*) and 2(*not compliant*). Data collected using the chart review tool will support statistical analysis to assess potential improvement in provider compliance with the protocol.

PowerPoint Education Tool

Health care providers at the facility were trained on how to undertake cardiovascular disease assessment and engage patients in behavioral counseling. The PowerPoint presentation (Appendix D) contain information on the protocol to be implemented at the facility. The PowerPoint presentation comprised the recommendation by the AHA and the United States Preventive Service Task Force regarding a healthy diet and physical activity intervention for cardiovascular disease prevention in adults with high disease risk.

Data Collection Plan

Outcome evaluation was used in examining the impact of the project as retrospective chart reviews were undertaken five weeks before and after implementation. The EHRs was used in retrieving charts required for review, and the codes that trigger audits are E78.5 for hyperlipidemia and R03.0 for high blood pressure. Approximately 20 charts were reviewed five weeks before and after project implementation. Chart audits were conducted only before and after the project implementation. During chart auditing, the project lead examined the information to establish if the provider screened the patient for blood pressure and ordered lipid testing at the visit. The project lead also established if individuals identified to be at risk of cardiovascular disease were engaged in behavioral counseling, including physical activity and adopting a healthy diet. Data were categorized as compliant if the chart audit indicates the providers screened the patient for elevated blood pressure, ordered a lipid test, and engaged the individual in behavioral intervention if at risk of cardiovascular disease. During data collection, data on provider compliance were categorized as 1 (*compliant*) and 2 (*not compliant*), while data on patients screened for cardiovascular disease risk were categorized as 1(*screened*) and 2 (*not screened*).

Participant Privacy

During data collection and analysis, participants' identities were kept anonymous to promote privacy and confidentiality. Anonymity entaild keeping the secrecy of participants by refraining from using sensitive or personally identifiable information (Barrow et al., 2021). The project lead strived to promote the privacy and confidentiality of the participants' data collected

to protect them from any form of psychological or physical harm. Pseudonyms were used instead of actual personal identifiers during data collection to safeguard the privacy of participants (Ross et al., 2018). Thus, the project lead collected general information without using personally identifiable data to promote privacy and confidentiality.

Data Storage

Various measures were undertaken to safeguard the data collected during the project implementation. The data collected were recorded on a Microsoft Excel spreadsheet on a personal computer secured with a password to promote the privacy and confidentiality of the information. Hard copies of the data collection sheets were stored in a highly secured cabinet. Data collected during the project implementation will be stored for a period of three years after completion. At the end of the third year, the file on the personal computer will be deleted permanently, and the hard copies shredded. The project leader adhered to the Health Insurance Portability and Accountability Act guidelines to safeguard the data collected (Ross et al., 2018).

Ethics and Human Rights Protection

The project involved human participants, which raises ethical concerns that need to be addressed. Firstly, participation in the project was voluntary, without coercion or the use of incentives. Autonomy of the participants and project implementers were achieved by promoting their right to self-determination (Barrow et al., 2021). The project lead was responsible for explaining to individuals involved the purpose of the project and the potential benefits of participating in the program (Ross et al., 2018).

The project leader truthfully disclosed the project's information, including the intended purpose for implementation (Barrow et al., 2021). Generally, measures were undertaken during the project implementation to ensure ethical considerations, including anonymity, refraining from causing harm to human participants, securing data collected, and ensuring voluntary participation. The planned project is a collaborative provider training program and taking measures to promote efficiency and efficacy in cardiovascular disease screening, and there is no compensation for participants. Lastly, Touro University, Nevada, does not require Institutional Review Board (IRB) approval for quality improvement projects. The project site also does not have IRB, and the project was implemented under the supervision of the quality improvement committee at the facility.

Plan for Data Analysis

The data collected during the project implementation were analyzed using the Statistical Package for Social Science (SPSS) version 28.0. The project lead consulted with a statistician in the process of data analysis. The data analysis was undertaken in two stages: Descriptive statistics to summarize the data collected and inferential statistics to address the project question. Descriptive statistics were computed to summarize data on the number of patients screened and engaged in behavioral counseling before and after five weeks of project implementation.

For inferential statistics, the Chi-square test was computed to evaluate the impact of the project on provider compliance/not compliance with cardiovascular disease risk screening and patient behavioral intervention. The Chi-square test was computed to examine the difference in the number of patients screened/not screened for cardiovascular disease. The Chi-square test was

preferred as it is designed to analyze group differences when the dependent variable is measured on a nominal scale (Nihan, 2020). While using a Chi-square test, it was assumed that the two variables are provided on a nominal scale with no natural ordering and that the observations are independent of each other (Schober & Vetter, 2019). It was also be assumed that the actual frequencies of the data collected can be cross-tabulated in a contingency table. Lastly, the Chi-square test does not require equality in variances among the groups of homoscedasticity in the data (Nihan, 2020). At $\alpha = 0.05$, a statistically significant difference in both provider compliance and the number of patients screened for cardiovascular risk was used in assessing the efficacy of the project's intervention.

Analysis of Results

The purpose of this project was to determine the impact of implementing the ACC/AHA 2019 guidelines on the screening rates of atherosclerotic cardiovascular diseases (ASCVD) and the compliance of the providers to the intervention. The timeline for the implementation of the intervention has been presented in Appendix D. There were no modifications to the original timeline. Data analysis involved both descriptive and inferential statistics. In the descriptive analysis, demographic data were analyzed. The inferential analysis involved a Chi-square test for screening and compliance rates of the intervention.

Demographic Statistics

The number of charts reviewed decreased from 30 (53.6%) to 26 (46.4%) after the intervention. The average age of the participants was $M = 58.05$ ($SD = 10.34$) years. Half of the participants were males ($n = 28$, 50%), and a half (50%) were African Americans. More than half

of the participants were screened for ASCVD (51.8%). Less than two-fifths (35.7%) of the nurses complied with ACC/AHA guidelines (see Table 1).

Table 1

Demographic Data

Variable	*n* (%)	*M* (*SD*)
Age		58.05 (10.34)
Charts Reviewed:		
Pre-Intervention	30 (53.6%)	
Post-Intervention	26 (46.4%)	
Gender:		
Males	28 (50.0%)	
Females	28 (50.0%)	
Ethnicity:		
African America	28 (50.0%)	
Hispanic or Latino	26 (46.4%)	
Whites	2 (3.6%)	
Screening:		
Screened	29 (51.8%)	
Not Screened	27 (48.2%)	
Compliance:		
Compliant	20 (35.7%)	
Not Compliant	8 (14.3%)	

Inferential Analysis

Assumptions

The first assumption was the data can be cross-tabulated. The first assumption was met because the data were categorical with two levels (Schober & Vetter, 2019). The second assumption was the variables were nominal, which was met because the variables had the following levels: Screened and not screened, complied and not complied. The third assumption is that observations are independent, which was observed because there was no relationship between the participants from different implementation groups. The fourth assumption is that the frequency is less or equal to five in more than 75% of the cells, and there was zero cell count.

The fourth assumption was met as the Chi-Square tests did not reveal the violation (Schober & Vetter, 2019). In addition, there were no missing data in this project.

Screening Rates

Table 2 shows the cross-tabulation of pre and post-intervention screening rates. As shown in Table 2, the number of patients screened increased from 11 to 17 after the intervention. The screening rates increased from 36.7% to 69.2% after the intervention.

Table 2

Cross Tabulation of Screening Rates

		Screening Status		Rate of Screening	Total
		Screened	Not Screened		
Time line	Pre	11	19	36.7%	30
	Post	18	8	69.2%	26
Total		29	27		56

A Chi-Square test of independence was conducted to determine the association between pre and post-intervention screening rates. There was a statistically significant association between pre and post-intervention screening rates ($\chi 2$ =5.916, p = .015) (See Table 3). Figure 1 shows the screening status before and after the intervention.

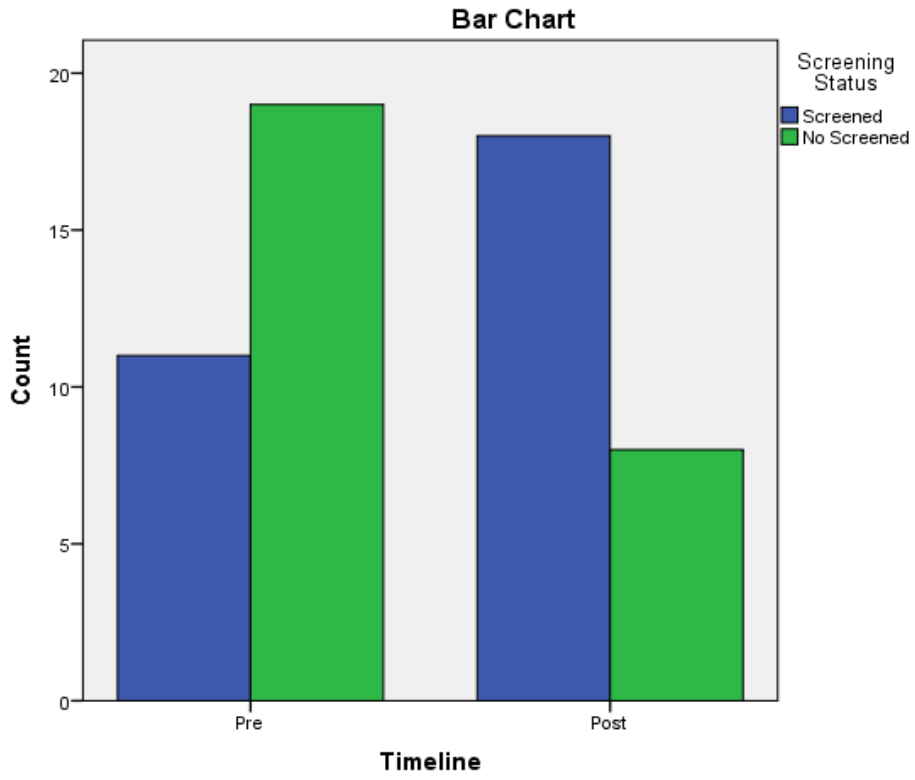
Table 3

Chi-Square Tests of Independence for Screening Rates

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.916[a]	1	.015		
Likelihood Ratio	6.035	1	.014		
Fisher's Exact Test				.018	.015
Linear-by-Linear Association	5.810	1	.016		
N of Valid Cases	56				

Figure 1

Bar Graph of Screening Rates Before and After the Intervention



A Chi-Square test was also conducted to determine the association between pre and post-intervention ACC/AHA compliance rates. Table 4 shows a cross-tabulation of the compliance rates among the health care providers. As shown in Table 4, the number of providers who complied with ACC/AHA guidelines increased from three to 17 after the intervention. Additionally, the compliance rates increased from 30% to 94.4% after the intervention.

Table 4

Cross-Tabulation for Pre and Post-Intervention Compliance Rates

		Compliance Compliant	Not Compliant	Rate of Compliance	Total
Time line	Pre	3	7	30%	10
	Post	17	1	94.4%	18
Total		20	8		28

Table 5 shows the results of the Chi-Square test of independence used to establish the association between pre and post-intervention compliance rates. Based on the findings, the association between pre and post-intervention compliance rates was statistically significant ($\chi 2$ = 13.08, p = .000) (See Table 5). In addition, Figure 2 shows the graphical representation of the pre and post-intervention compliance rates.

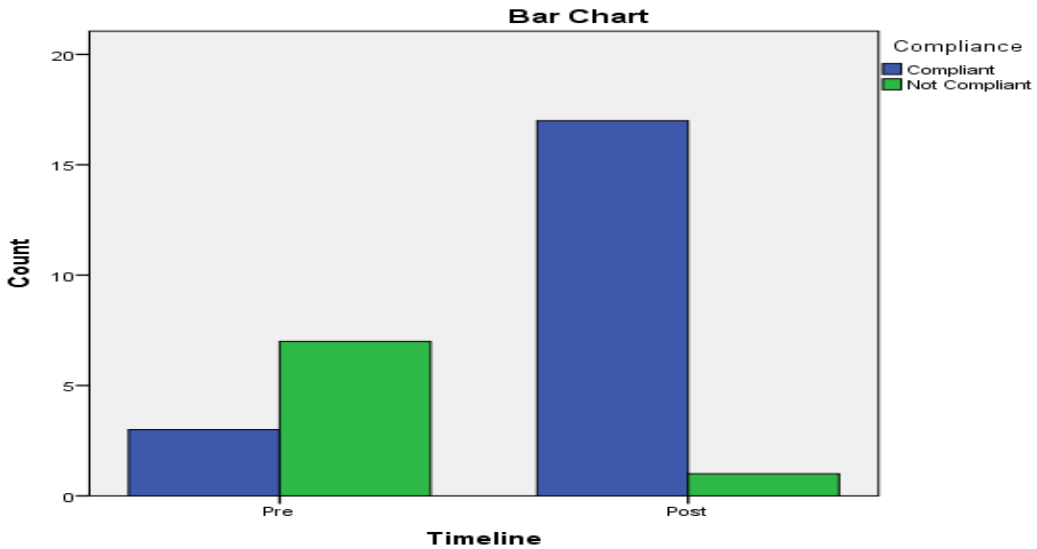
Table 5

Chi-Square Results for Pre and Post-Intervention Provider Compliance Rates

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.082	1	.000		
Likelihood Ratio	13.562	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	12.615	1	.000		
N of Valid Cases	28				

Figure 2

Bar Graph of Pre and Post-Intervention Provider Compliance



Summary

The purpose of this project was to determine the impact of the ACC/AHA intervention on the ASCVD screening and compliance rates. Based on the findings, implementing the intervention significantly improved the screening rates of the patients for ASCVD. It was also found that the ACC/AHA compliance rates significantly improved after the intervention implementation. The first strength of this project is that all the findings were statistically significant. In addition, the intervention was conducted successfully as planned. The project's weakness is that it was only conducted in a specific setting, thus, affecting the generalizability of the findings.

Interpretation

Alignment of Results to Previous Literature

The data in this project represents a significant improvement in screening rates for ASCVD and compliance rates of ACC/AHA. The use of aspirin to prevent ASCVD is one of the recommendations made by the ACC/AHA. A study on the use of aspirin in the prevention of cardiovascular illnesses was undertaken by Abdelaziz et al. in 2019. The authors found that aspirin use was effective in nonfatal ischemia episodes. Examining cardiovascular disease risk factors enhances decision-making for the condition's prevention (Amett et al., 2019). As a result, the intervention implementation increased screening rates, as indicated by the findings. It was also discovered that aspirin and statin medication use, recommended by the ACC and ACA, is linked to the prevention of cardiovascular diseases (Guirgius-Blake et al., 2022). Additionally, according to Ueda et al. (2019), statin medication may reduce the number of fatalities brought on by cardiovascular disorders. According to Guirguis-Blake et al. (2022), using aspirin in small dosages lowers the chance of developing cardiovascular illnesses. In addition, a study was

carried out by Wong et al. in 2022 to evaluate the risk of cardiovascular illnesses. The researchers discovered a link between the evaluation of cardiovascular disease risk and conditions' prevention. Therefore, the authors of previous literature support implementing ACC/AHA in preventing cardiovascular diseases, as found in this project.

Impact of the Project on People and Systems

The project's implementation impacted the patients and healthcare professionals. The intervention made it possible for patient screening rates to increase. The intervention's compliance rates among health care professionals also increased. Increased numbers of health care professionals suggest increased ACC/AHA knowledge and proficiency. In addition, the costs of treating the condition's unfavorable occurrences will decrease if adverse ASCVD events are prevented. Thus, this project impacts the health care systems as it is associated with a reduction in medical costs.

Association Between Outcomes and Interventions

This project’s implementation significantly increased the ACC/ AHA screening and compliance rates. There were no discrepancies between the project's actual results and those anticipated. The findings of this project met the project investigator's expectations. Thus, there was an association between the interventions and outcomes.

Costs and Strategic Tradeoffs

The cost of health care will decrease due to this project's implementation. Cardiovascular illnesses are linked to greater medical costs, according to Bittner (2020). Thus, implementing the intervention will lower ASCVD-related health care expenses. Participation in the intervention at the expense of patient care was one of this initiative's strategic tradeoffs (opportunity cost). The

intervention's significance is long-term since it will lead to future improvements in patient outcomes.

Limitations

The first limitation of this project is that the selected quasi-experimental design will pose a threat to the internal validity of the project. The internal validity of the project was affected because the design causes selection bias as participants are selected through non-random procedures (Handley et al., 2018). Inclusion and exclusion criteria were followed during the selection of the participants, thus limiting the generalizability of the findings to the general population as there is no randomness. The limitation also impacted recruitment because the selected participants were not random. The error in the participants' non-random selection was minimized through an adequate sample size, which will be computed through power analysis.

The second limitation is history bias, whereby events unrelated to the intervention may affect the outcome of a project (Handley et al., 2018). The limitation affected data collection and analysis. In this project, the health care providers have different knowledge levels concerning the intervention in assessing cardiovascular diseases. As a result, the improvement in self-efficacy may be influenced by adequacy or inadequacy of knowledge concerning the management of cardiovascular diseases. Thus, to minimize the limitation, all the health care providers were educated on the management and screening for cardiovascular diseases to address the inadequacy of knowledge among some of them.

The third limitation that impacted this project is the Coronavirus-2019 (COVID-19). The limitation had an impact on the data collection in this project. The health care providers were required to conduct behavioral counseling to the patients after the screening for cardiovascular diseases. During behavioral counseling, there was supposed to be a physical interaction between

the patients and the health care providers. As a result, due to the COVID-19 pandemic, some health care providers may have opted not to counsel the patients or may have used less time counseling the patients on the preventive measures for cardiovascular diseases. To minimize the limitation, the health care providers gave the patients materials containing guidelines on managing cardiovascular diseases from their homes.

The fourth limitation is that the timeframe allocated for the project implementation was smaller. The limited timeframe could not allow the conducting of follow-ups to determine if the patients adhered to the guidelines provided to them during behavioral counseling. The limitation also had an impact on the recruitment process because it could not accommodate all the interested participants. The health care providers were encouraged to strictly adhere to the stipulated guidelines to improve the efficiency of the intervention to mitigate this limitation.

The fifth limitation is that there were limited resources to allow the implementation of this project. In this project, other factors that may have influenced the outcomes were not studied. There is a possibility that the knowledge levels of the health care providers may have influenced the outcomes of this project. The participants' pre and post-intervention knowledge levels were not evaluated to determine their impact on the outcome measure, self-efficacy. Due to the limited resources, this project was only conducted in one setting; thus, the sample was limited. The generalizability of the results was also limited to the project setting due to the smaller sample size. To mitigate the limitation, the sample size was selected through power analysis.

Conclusions

As of 2019, 8% of Americans had already been diagnosed with cardiovascular diseases. Among those diagnosed, 67% are at high levels of the condition. Thus, the purpose of this

project was to determine if the implementation of the 2019 ACC/AHA guidelines on the primary prevention of cardiovascular diseases would improve screening and compliance with the intervention among health care providers. Data on the screening and compliance rates were collected before and after the intervention. The Chi-Square test was conducted to determine the statistical significance of the changes in screening and compliance rates. Based on the findings, the screening and compliance rates significantly improved after implementing the intervention.

The implementation of this project is useful to health care providers and patients. The statistically significant increase in the screening rates is beneficial to patients because the risk of cardiovascular diseases will also decrease. The statistically significant increase in the compliance rates also implies that the knowledge levels of health care providers in screening and behavioral counseling increased.

Sustainability

The health care providers were asked to implement the ACC/AHA guidelines at the project site to sustain the intervention. After every three months, an educational program will be conducted to educate health care providers on the ACC/AHA guidelines. New health care providers at the project site will also be educated on how to implement ACC/AHA guidelines.

Implications

The statistically significant results in this project imply that nursing field policies should change to adopt the intervention to encourage the screening of patients. Implementing policies that support the use of ACC/AHA guidelines will increase screening rates for cardiovascular diseases. As a result, the prevalence and management of cardiovascular diseases among patients will also improve. The findings also imply that the ACC/AHA guidelines should be adopted in the project site's clinical practice to improve cardiovascular disease screening. In addition, in the

nursing field, ACC/AHA guidelines should be embraced to reduce the prevalence of cardiovascular diseases. Other health care facilities should adopt the intervention to improve outcomes. Therefore, ACC/AHA sensitization programs should be initiated to encourage nurses to adopt the intervention. Health care providers should also be educated on ACC/AHA guidelines frequently to promote the adoption of the intervention in the nursing field.

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Appendix A:
Project Timeline

Project Activity	**Week**
Baseline Chart Reviews	Week 1
Collaborative training of clinicians	Week 1
Implementation of the project	Week 2 to 7
Post-intervention chart reviews	Week 8

Appendix B

The International Physical Activity Questionnaire

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

   _____ **days per week**

   ☐ No vigorous physical activities → ***Skip to question 3***

2. How much time did you usually spend doing **vigorous** physical activities on one of those days?

   _____ **hours per day**
   _____ **minutes per day**

   ☐ Don't know/Not sure

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

   _____ **days per week**

   ☐ No moderate physical activities → ***Skip to question 5***

SHORT LAST 7 DAYS SELF-ADMINISTERED version of the IPAQ. Revised August 2002.

4. How much time did you usually spend doing **moderate** physical activities on one of those days?

_____ **hours per day**

_____ **minutes per day**

☐ Don't know/Not sure

Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

_____ **days per week**

☐ No walking → ***Skip to question 7***

6. How much time did you usually spend **walking** on one of those days?

_____ **hours per day**

_____ **minutes per day**

☐ Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

_____ **hours per day**

_____ **minutes per day**

☐ Don't know/Not sure

This is the end of the questionnaire, thank you for participating.

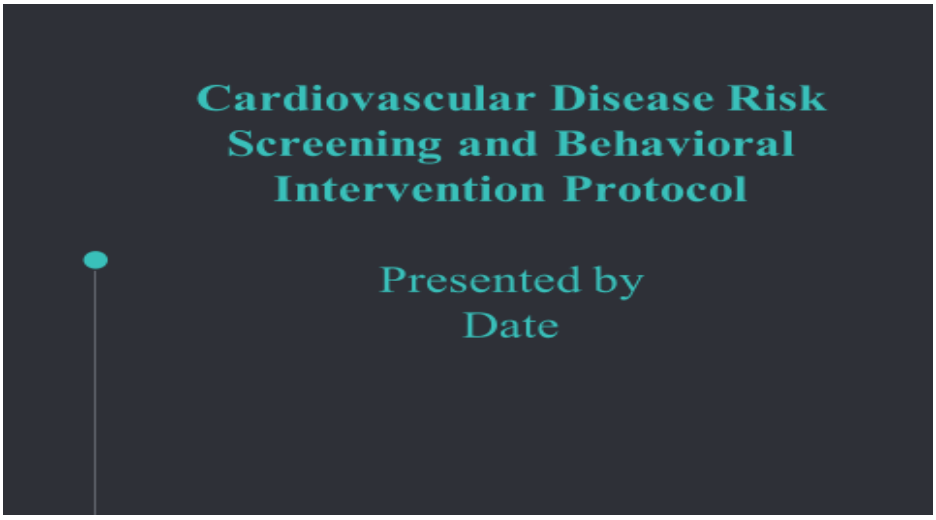
Appendix C

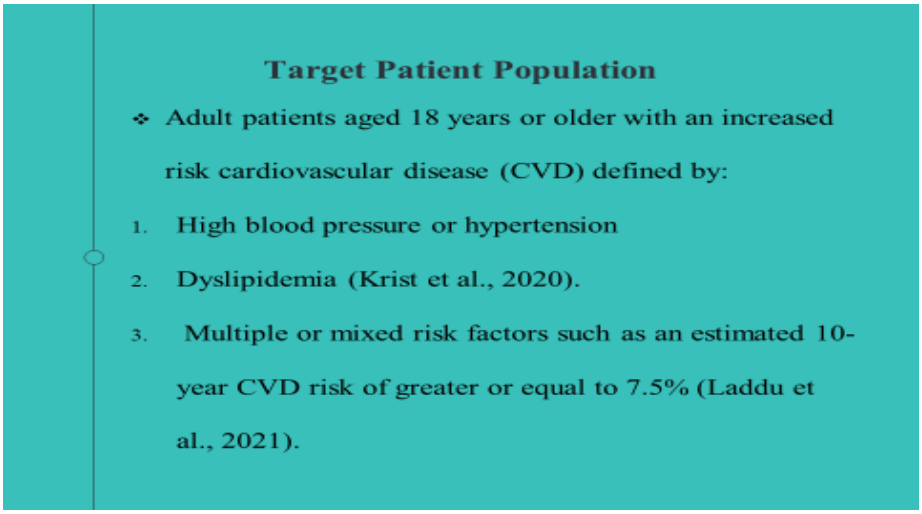
Chart Review Tools for Chi-Square

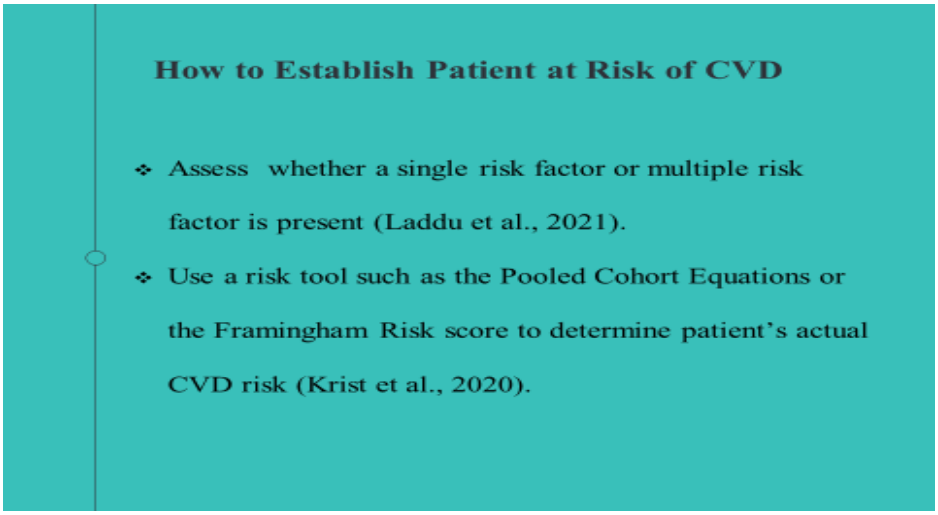
Clinicians	Compliant with the Protocol (Patient screening and behavioral counseling criteria)	Not compliant with the Protocol	**Total Chart Reviewed**
A			
B			
C			
B			
E			
Column totals			**Grant Total** =

Appendix D

PowerPoint Education Tool







Provide Behavioral Counseling

- Combination of counseling of healthy diet and physical activity.

1. Provide dietary counseling advice which include reduction in saturated fats, sodium sugars, and increased consumption of vegetables, whole grains, and fruits (Krist et al., 2020).
2. Physical activity counseling should be focused achieving 90 to 180 minutes per week of moderate to vigorous physical activity (Laddu et al., 2021).

Importance of Behavioral Intervention

- Multicomponent behavioral interventions can significantly reduce CVD risk (Laddu et al., 2021).
- Behavioral interventions reduces individuals blood pressure, body weight, and dyslipidemia.
- Patient-centered intensive behavioral interventions can produce desirable outcomes (Krist et al., 2020).

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