

Practice Inquiry Project Final Manuscript

Improving Women's Awareness of Cardiovascular Disease Through Primary Prevention

The Wahine Heart Wellness Program: A Community Approach

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Abstract

Cardiovascular disease remains the leading cause of death for women in the United States. Despite increases in awareness over the past decade, only 54% of women recognize heart disease as their number one killer (CDC, 2013). Although Hawaii has relatively low rates of death from heart disease and stroke, Native Hawaiians are plagued with disproportionately higher rates of chronic disease. The purpose of this Practice Inquiry Project was to identify Cardiovascular Disease (CVD) risk early and to improve health literacy on cardiovascular disease in women. The plan was to screen and educate Asian, Native Hawaiian, and other Pacific Island women living on the Leeward Coast of Oahu, Hawaii about the risk factors for developing cardiovascular disease.

The specific aim of this study was to: (a) assess the current level of awareness of CVD as the leading cause of death in rural Asian, Native Hawaiian, and Pacific Island women; (b) implement a CVD Risk Program; and (c) evaluate program effectiveness to decrease CVD risk. The study design used a mixed methods approach involving qualitative and quantitative data collection to address the project study aims. The methods included; a cardiovascular awareness questionnaire (pre-test and post-test); a screening process using the Life's Simple 7 matrix; and six educational sessions to improve health literacy on primary prevention of cardiovascular risks. Evaluating knowledge levels, health perceptions, and behavioral performance underline the research methodology used in this study. A convenience sample of 20 predominantly Asian, Native Hawaiian, and Pacific Island women, were recruited from the Makeke Market in Kapolei, Hawaii. Data from the research aims were compiled, and descriptive statistics and charts were used to present the results.

At the conclusion of the program, none of the women scored in the low range (4-6 points) on the Life's Simple 7 matrix; 5% of the women scored in the intermediate range (7-8 points); while 95% scored in the ideal range (9-14 points) on their post-program score. Ninety percent of the participants scored an 80% or above on the Risk Awareness Questionnaire post-test. This study showed that an increase in awareness can improve cardiovascular disease (CVD) risk and encourage women to make behavioral changes to decrease cardiovascular risk. The study also demonstrated that collaboration and partnerships between local schools of nursing and existing community organizations, community-based integrated approaches, incorporating health literacy, and infusing cultural knowledge into practice are essential to successful, innovative, and sustainable solutions when working with rural Asian, Native Hawaiian, and other Pacific Island women.

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Chapter 1

Program Introduction

Introduction and Background

Cardiovascular disease (CVD) is the leading cause of death and disability for both men and women in the United States (Viera & Sheridan, 2010). About 610,000 people die of heart disease in the United States every year, which is about one in every four deaths (Center for Disease Control, 2015b). Every year about 735,000 Americans have a heart attack. Of these, 525,000 are a first heart attack and 210,000 occur in people who have already had a previous heart attack (CDC, 2015)b. The biggest risk factor for CVD is obesity. In the United States, obesity has been on the rise for the last 20 years and has reached epidemic proportions. In 2014, all 50 states had obesity prevalence rates of more than 20%. Nineteen states had rates equal to or greater than 30% (CDC, 2015b). America's obesity epidemic should be a prioritized focus of prevention and treatment efforts. In addition to obesity, high blood pressure, high cholesterol, poor nutrition, sedentary lifestyle, diets low in fruits and vegetables, smoking, and chronic stress are key risk factors for heart disease. About half of Americans have at least one of these three risk factors (CDC, 2015b).

Cardiovascular disease continues to be a growing health problem in the United States. The incidence of cardiovascular disease in high-income countries, such as the United States is higher in populations with lower socioeconomic status (SES) and in minority ethnic groups (Karamangla, Merkin, Crimmins, & Seeman, 2010). There are considerable racial and ethnic disparities with adults in the United States in the incidence of cardiovascular disease, which includes coronary artery disease, heart failure, and stroke. Prevalence of cardiovascular disease risk factors and mortality is significantly higher in minority groups with lower socioeconomic

status (Karlman et al., 2010). Although overall mortality from cardiovascular disease has decreased in the United States in the past decade, mortality in minorities and women have declined at a much slower rate (Karlman et al., 2010).

Although Hawai'i has relatively low rates of death from heart disease and stroke, Native Hawaiians are plagued with disproportionately higher rates of chronic disease, such as obesity, diabetes, high blood pressure, and death from heart disease and cancer as compared with the overall state population (Aluli, Reyes, & Tsark, 2007; Mau, Sinclair, Saito, Baumhofer, & Kaholokula, 2009). Previous studies document ethnic disparities in cardiovascular disease mortality and risk factors (Aluli et al., 2007). Studies showed that Native Hawaiians were dying at younger ages than Hawaii residents in other ethnic groups. Native Hawaiians also have a higher rate of smoking, alcohol consumption, and obesity (Aluli et al., 2007). In 2008, three out of every 10 deaths in Hawai'i were caused by CVD, about 3,000 deaths each year. Of the current Hawai'i population of 1.4 million, more than 2,900 deaths annually are attributed to some form of CVD. Death from CVD accounted for 32% of all deaths in 2009 (Hawaii State Department of Health [HSDH], 2011). In 2007, 29% of adults in Hawai'i reported having high blood pressure, and 36% of those screened reported having high cholesterol, which puts them at risk for developing CAD and stroke (HSDH, 2011). Increased engagement of desperate communities needs to be a priority. Future research is needed to improve cardiometabolic risk and cardiovascular disease in this disproportionately affected population, and to look for novel and effective means to reduce mortality and morbidity (Aluli et al., 2007).

As mentioned earlier, heart disease is the leading cause of death of American women. According to the Center for Disease Control (CDC, 2016b), heart disease kills more women than all forms of cancer (American Heart Association [AHA], 2013d). More than one in three women

in the United States suffers from heart disease. According to the AHA (2013d), mortality attributable to CVD in women continues to outpace that in men. Since 1984, the number of CVD deaths for females has surpassed those for males. In 2013, CVD was the cause of death in 289,758 females (CDC, 2016b). Women represented 51% of deaths from CVD. The rate of heart disease also triples after menopause. Sixty-four percent of women who died suddenly of CVD had no previous symptoms (CDC, 2016b). Recent data supports a gender-specific role of myocardial dysfunction, as an early stage of CVD. Autopsy data has shown that women have more coronary plaque erosion and distal embolization compared with men (Gulati, Shaw, & Merz, 2012). Women also have smaller arterial size and more prominent positive remodeling, which can result in more myocardial dysfunction in CVD in women (Gulati et al., 2012).

Several studies have shown that by increasing awareness of heart disease risk, you can decrease cardiovascular risk. Other studies have shown that being aware of the risks of cardiovascular disease has been linked to taking preventative action in women (VanWormer et al., 2012; Villablanca et al., 2010). Studies have also shown by participating in a comprehensive prevention program, like a women's heart disease awareness program, high-risk women can improve their knowledge and awareness of cardiovascular risk, therefore reducing their risk of cardiovascular disease and improving the health of their families (Villablanca et al., 2010; VanWormer et al., 2012).

Cost of Cardiovascular Disease

In 2008, the estimated annual medical cost of obesity in the United States was \$147 billion (CDC, 2015a). The individual medical cost for people who are obese is \$1,429 higher than those of healthy weight (CDC, 2013a). Coronary heart disease alone costs the United States \$109 billion each year. This total includes the cost of health care services, medications, and lost

productivity. Stroke cost the nation \$38.6 billion annually, including the cost of healthcare services, medications, and lost productivity (CDC, 2013a). In 2010, high blood pressure was projected to cost the U.S. \$93.5 billion in healthcare services, medications, and lost productivity (CDC, 2013a). In Hawai‘i, there are over 18,000 hospitalizations every year for CVD. Total hospital charges for CVD-associated hospital discharges have increased 75.9% from 1996 to 2010, to about \$700 million (HSDH, 2016).

Problem Statement

Cardiovascular disease remains the leading cause of death for women in the United States (CDC, 2015b). A healthy diet and appropriate physical activity can improve the risk of CVD. Despite increases in awareness over the past decade, only 54% of women recognize that heart disease is their number one killer (CDC, 2016). However, many women are not living a heart healthy lifestyle. Women’s awareness of cardiovascular disease as the leading cause of death in women has almost doubled since 1997, but still lags behind in racial and ethnic minority women’s awareness (AHA, 2013d). Existing research confirm these women are underserved and under-researched with inadequate resources, knowledge deficits, and disadvantaged living conditions that lead to cardiovascular risk.

Significance of the Problem

In Hawai‘i, someone dies of cardiovascular disease every three hours. Of the current population of 1.4 million, there are 2,900 deaths every year related to cardiovascular disease (HSDH, 2011). In 2009, heart disease and stroke were the first and third leading causes of death in Hawai‘i. Less than two-thirds of people at risk for CVD are utilizing therapies that have been proven to lower the risk of initial events (Viera & Sheridan, 2010). Native Hawaiian women were found to have a high frequency of hypertension and high cholesterol in comparison with

whites and other ethnic groups (Mau et al., 2009). According to Mau et al. (2009), studies that examined hypertension along with other covariates in Native Hawaiians found that hypertension was significantly related to the degree of Hawaiian ancestry and especially diastolic blood pressure.

Goals

The overarching goal of the Practice Inquiry Project (PIP) was to identify cardiovascular disease (CVD) risk early, to improve health literacy about cardiovascular disease, and to use evidence-based practice to decrease CVD risk and to promote healthy lifestyle changes in Asian, Native Hawaiian, and Pacific Island women.

Specific Aim 1

Assess the current level of awareness of CVD as the leading cause of death in rural Native Hawaiian women.

Objective 1. Identify cardiovascular risk awareness of Asian, Native Hawaiian, and other Pacific Island women

Objective 2. Identify individual CVD risk factors (modifiable/non-modifiable risk factors) in Asian, Native Hawaiian, and other Pacific Island women (physical, genetic & psychosocial)

Specific Aim 2

Implement a CVD Risk Program for Asian, Native Hawaiian, and Pacific Island women

Objective 1. Target health literacy

Objective 2. Target modifiable/non-modifiable risk factors

Specific Aim 3

Evaluate program effectiveness to decrease CVD risk.

Objective 1. Evaluate health awareness about CVD risk.

Objective 2. Evaluate participants' perspectives on the program

Objective 3. Evaluate program outcomes

The overall objective of this Practice Inquiry Project is to help women identify cardiovascular disease risk early, to improve health literacy about cardiovascular disease, and to provide culturally appropriate strategies to reduce risk.

Chapter 2

Conceptual Framework and Literature Review

The Rosswurm and Larrabee's Model for Change to Evidence-Based Practice was selected as the conceptual frameworks to guide the practice inquiry project and to facilitate the implementation of research findings into nursing practice (Rosswurm & Larrabee, 1999). This framework was selected because of its strong emphasis on evidence-base practice. The Rosswurm and Larrabee's Model for Change guides the practitioner through a systematic process for the change to evidence-based practice. This model recognized that translation of research into practice requires three things. It requires a solid grounding in change theory, principles of research utilization, and the use of standardized nomenclature (Rosswurm & Larrabee, 1999). In this chapter, a comprehensive review of literature will also be discussed. The topics of the review of literature consist of cardiovascular disease in women, Native Hawaiians and disparities in health, preventing CVD through primary prevention, and community-based prevention programs.

Rosswurm and Larrabee's Model for Change to Evidence-Based Practice

The model selected for the framework for the implementation of the practice inquiry project (PIP) is the Rosswurm and Larrabee's Model for Change to Evidence-Based Practice (see Appendix B). This model was selected based on its comprehensive six-step process that guides practitioners through the entire process of changing to evidenced-based practice. This process also incorporates best evidence as a priority component of the model. The six steps include: Step 1, assessing the need for change; Step 2, link the problem with intervention and outcomes; Step 3, synthesize the best evidence; Step 4, design a change in practice, Step 5, implement and

evaluate the practice change; and Step 6, integrate and maintain the practice change (Rosswurm & Larrabee, 1999).

Several models for change using evidence-based practice was compared. Literature searches of several databases, including EBSCOhost, CINAHL, Pub Med, were done using terms such as “models for change” and “evidence-based practice.” The Rosswurm and Larrabee’s Model for Change to Evidence-Based Practice was selected because of its ease of use when applying the concepts to direct healthcare issues and adaptability in a community care setting. One of the criteria when selecting the model was it had to be clear and concise so that the framework would allow quick assimilation of the concepts and organization of steps. Another important criterion was its comprehensiveness from the beginning steps through to the implementation and evaluation phases. Finally, published evidence of the model’s evaluation and successful use in practice was also a strength.

Healthcare practitioner’s that are interested in making a change in practice may be incentivized by the awareness of patient preference or dissatisfaction, quality improvement data, evaluation data, or new research. In step one of the Rosswurm and Larrabee’s Model for Change, the practitioner collects internal data or new research data. When a problem is noted with an aspect of care, the practitioner can form a discussion group or focus group. Stakeholders can include a multidisciplinary team, health care providers, or community members who have a stake in the practice. The use of flow charts and brainstorming can enhance group success. Practitioners then review the evidence by using sources such as quality improvement, risk management data, and customer satisfaction surveys. After examining internal data, practitioners assess the need for change in practice (Rosswurm & Larrabee, 1999). In step two, practitioners need to define the problem and then link the problem with a classification of

intervention and outcomes. Classification systems help explain the concepts of science and help organize knowledge. Classification systems also help facilitate communication between practitioners (Rosswurm & Larrabee, 1999). In step three, a review of literature is conducted, and the best evidence is synthesized and combined with clinical judgment. Potential interventions and desired outcomes become significant variables for considering the literature. Steps taken before conducting a literature search would include concept identification and identifying criteria for including a reference. In the critical appraisal of the literature, practitioner should evaluate strengths, weakness, gaps, and conflicts (Rosswurm & Larrabee, 1999).

In step four, the practitioner describes the process variables or sequence of care activities in the change in practice, usually in the format of protocol, procedure, or standard. Only evidenced-base activities are included in the protocol (Rosswurm & Larrabee, 1999). Step five involves implementing the change in practice. Change can be carried out in the form of a pilot study or intervention program. Follow-up reinforcement of the modification by the coordinator is essential. After the protocol has been implemented, patient or staff surveys are conducted. Then the data is analyzed to facilitate interpretation. The decision to adapt, adopt, or reject the change is then decided. Feasibility, benefits, and risks are assessed during step five. Lastly, in step six, results are presented to the stakeholders. Ongoing communication with the stakeholders is crucial to the acceptance of change. Continuing education of the staff is important to reinforce the change (Rosswurm & Larrabee, 1999). The Rosswurm and Larrabee's Model for Change provides a practical, theory-driven framework for guiding clinicians in the process of evidence-based practice (Rosswurm & Larrabee, 1999).

Comprehensive Review of Literature

The concept map illustrated in *figure 1*, guided and drove the review of literature. The conceptual illustration shows how the primary prevention of cardiovascular disease is associated with modifiable lifestyle risk factors.

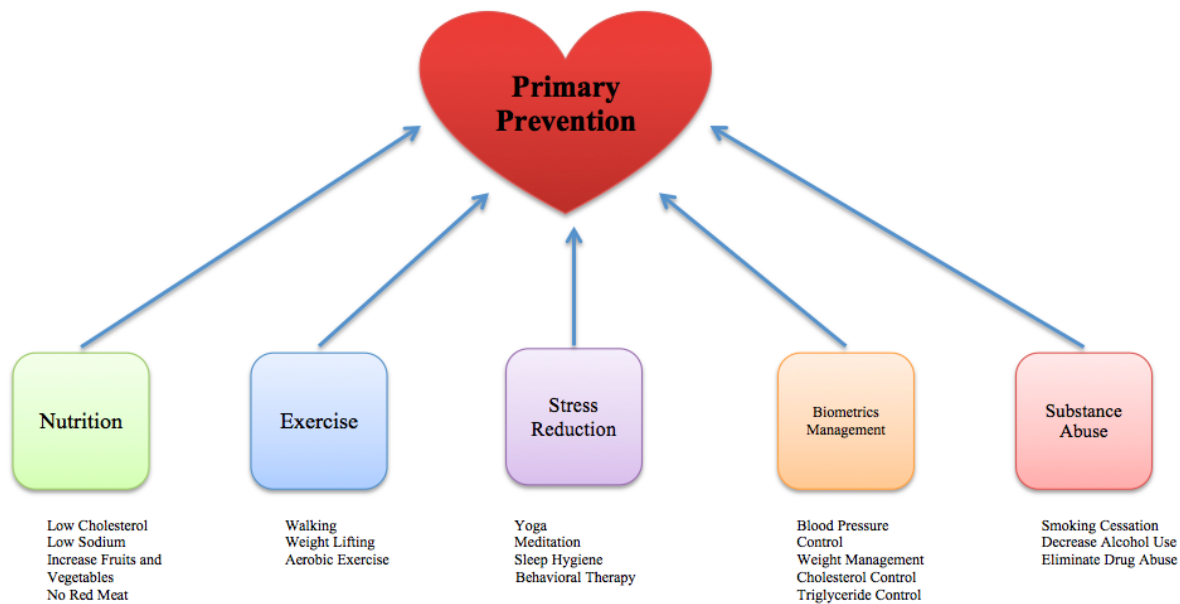


Figure 1. Concept map: Disease prevention using lifestyle modifications.

Cardiovascular disease is the leading cause of death in women. Primary prevention in healthcare is defined as a program of activities directed at improving general wellbeing, where actions are usually taken before the onset of disease (CDC, 2013b). Cardiovascular disease is the leading cause of death and disability across all racial groups in the United States (CDC, 2013a). Much of the burden of cardiovascular disease is associated with modifiable lifestyle risk factors. Primary prevention can help individuals modify their risk factors to avoid disease (National Prevention Council, 2011). The concepts related to primary prevention in relations to CVD include nutrition, exercise, stress reduction, biometric management, and substance abuse.

Primary prevention is the process of empowering people to increase control over the determinants of health, therefore improving their health and wellbeing (CDC, 2013b).

Database searches were performed using EBSCOhost, CINAHL, Pub Med, American Heart Association (AHA), National Heart, Lung, Blood Institute (NHLBI), the American Association of Nurse Practitioner (AANP) databases, and the web, for the time period of September 2013 to December 2015. The keyword combinations included “cardiovascular risk,” “primary prevention,” “lifestyle interventions,” “awareness,” “health literacy,” “chronic disease,” “coronary artery disease,” “heart disease,” “Native Hawaiian,” “women,” “healthy diet,” “DASH diet,” “Mediterranean diet,” “vegetarian diet,” “exercise,” “physical activity,” “menopause,” “ethnic disparities,” “rural populations,” “community-based prevention program,” “lifestyle intervention,” and “lower socioeconomic status.” This review of literature describes factors that contribute to the development and prevention of cardiovascular disease. The question formulated for this review of literature was, "For adult Asian, Native Hawaiian, and other Pacific Island women at risk for cardiovascular disease, what are effective ways to prevent cardiovascular disease through primary prevention?" Current literature showing major trends with scientific supports for effective ways to prevent coronary artery disease and gaps in knowledge and policies were sought.

Cardiovascular disease. Cardiovascular disease (CVD) is common in the general population, affecting the majority of adults past the age of 60 years. In 2012 and 2013, CVD was estimated to result in 17.3 million deaths worldwide on an annual basis (Wilson, 2016). As a diagnostic category, CVD includes four major areas: coronary heart disease (CHD), manifested by myocardial infarction (MI), angina pectoris, heart failure, and coronary death; cerebrovascular disease, manifested by stroke and transient ischemic attack; peripheral artery disease, manifested

by intermittent claudication; and aortic atherosclerosis; and thoracic or abdominal aortic aneurysm (Wilson, 2016). Many individuals in the general population have one or more risk factors for CVD, and over 90% of CVD events occur in people with at least one risk factor. The five leading modifiable risk factors (hypercholesterolemia, diabetes, hypertension, obesity, and smoking) are estimated to be responsible for more than half of cardiovascular mortality. On the contrary, the absence of significant risk factors predicts a much lower risk of CVD (Wilson, 2016).

Primary prevention. According to Merriam-Webster (2013), prevention is defined as the act of stopping something bad from happening, or the act of preventing something. Primary prevention in healthcare is defined as a program of activities directed at improving general wellbeing, where actions are usually taken before the onset of disease (CDC, 2013a). The concept of primary prevention in the context of health care usually occurs before a disease develops. The concept occurs when one feels at risk of developing a condition, such as cardiovascular disease. Primary prevention is an action performed to preclude the development of disease, or to avoid disease (Association of Faculties of Medicine of Canada [AFMC], 2013). For example, decreasing cholesterol intake can reduce the risk of coronary artery disease. Health promotion, health education, proper standards of nutrition, exercise programs, stress reduction, biometric management, and smoking cessation interventions are examples of primary preventions (AFMC, 2013).

The ultimate goal of primary prevention is to improve the health of individual and population health. Primary prevention interventions can be directed at individuals and communities. Studies have shown that preventing disease is critical to living healthier and longer lives (Block, Scribner, & De Salvo, 2004). Primary preventive services can help

individuals avoid disease altogether. Poor nutrition, physical inactivity, chronic stress, substance abuse, and obesity lead to unhealthy shorter lives (Block et al., 2004).

Health disparities in cardiovascular risk. This literature review consists of studies of disparities in cardiovascular risk in the United States. A systematic search of the peer-reviewed literature showed that racial and ethnic disparities in health care exist for those of minority racial and ethnic groups, and lower socioeconomic status. The most consistent findings were for blacks and Hispanics relative to non-Hispanic whites (Feinstein, Ning, Kang, Bertoni, Carnethon, & Lloyd-Jones, 2012; Karlamangla et al., 2010). The review of literature on disparities in cardiovascular risk showed that minorities and those of lower socioeconomic status were at higher cardiovascular risk (Feinstein et al., 2012; Karlamangla et al., 2010).

Cardiovascular disease affects blacks earlier than in whites, which could be due to elevated cardiovascular risk factor levels among blacks (Feinstein et al., 2012; Karlamangla et al., 2010). Disparities in cardiovascular risk in the United States are mainly related to socioeconomic status and less to race and ethnicity (Karlamangla et al., 2010; Kawachi et al., 2012). Age-adjusted death rates for cardiovascular disease and stroke in 2009 were higher in men and higher in black men than in whites (AHA, 2013a). Age-adjusted heart disease death rates since 1980 did not decline as rapidly for blacks. Disparities in cardiovascular disease and diabetes remain pervasive (Feinstein et al., 2012; Karlamangla et al., 2010; Kawachi, Daniels, & Robinson, 2012). A common theme in the review showed that racial and socioeconomic status differences in cardiovascular risk might be shaped by race-based racial segregation and income inequalities, mediated through social and physical environments (Feinstein et al., 2012; Karlamangla et al., 2010; Kawachi et al., 2012; VanWormer et al., 2012).

Women and microvascular heart disease. During the past few decades, studies have

shown there has been significant gender differences in patients with ischemic heart disease (IHD) undergoing revascularization with both coronary artery bypass grafting and percutaneous coronary interventions (Fox & Nussmeier, 2004; Jacobs, 2003; Kip et al., 2004; Malenka et al., 2002). These studies have shown differences in clinical, angiographic, and procedural factors and an increased morbidity and mortality in women (Fox & Nussmeier, 2004; Jacobs, 2003, Kip et al., 2004, Malenka et al., 2002). Explanations such as alternative markers of atherosclerosis, elevated C-reactive protein and brain natriuretic peptide, and unique risk factors in women, gender-specific measures of left ventricular function, and the relationship between disorders more common in women with ischemic heart disease and adverse cardiovascular outcomes are beginning to be seen (Kip et al., 2004). Based on previous studies, periprocedural mortality and morbidity are significantly higher in women than in men (Fox & Nussmeier, 2004; Jacobs, 2003; Kip et al., 2004). The outcomes differences following revascularization are due to the older age in women and underlying gender differences in clinical, angiographic, and procedural factors (Jacobs, 2006). Studies have shown that women have a higher prevalence of risk factors, such as acute coronary syndromes, (angina) symptoms, and a higher prevalence of congestive heart failure, despite preservation of left ventricular (LV) systolic function, and microvascular disease (Jacobs, 2006; Malenka et al., 2002). One of the biggest risk factors for developing microvascular disease is metabolic syndrome (Kip et al., 2004). Metabolic syndrome is the name for a group of risk factors that raises your risk for heart disease and other health problems, such as diabetes and stroke. Reports from the Women's Ischemia Syndrome Evaluation (WISE) study investigators have noted that metabolic syndrome is associated with significant coronary artery disease (Bailey et al., 1999).

Menopause and cardiovascular risk in women. Studies show at the time of

menopause, serum estrogen levels decrease (AHA, 2013e; Yang & Reckelhoff, 2011). The lack of estrogen increases a postmenopausal woman's susceptibility to heart disease due to changes in lipoprotein metabolism (AHA, 2013e; Yang & Reckelhoff, 2011). These changes include a decrease in HDL levels and an increase in LDL levels (AHA, 2013e). Blood vessels also become less flexible after menopause due to the reduction in circulating estrogen. Blood pressure levels and the prevalence of hypertension are lower in premenopausal women compared with age-matched men (AHA, 2013e; Yang & Reckelhoff, 2011). While experimental studies have shown that estrogen plays an essential role in blood pressure control, use of hormone therapy to manage the risk and prevent the development of hypertension and cardiovascular disease in women remains controversial (Maric-Bilkia, Gilbert, & Ryan, 2014). A decline in the natural hormone estrogen may be a factor in heart disease increase among post-menopausal women (Yang & Reckelhoff, 2011). Estrogen is believed to have a positive effect on the inner layer of the artery wall, helping to keep blood vessels flexible (AHA, 2013e).

Hormone replacement therapy (HRT) can increase the risk of breast cancer, heart attack, stroke, and blood clots in the leg and lungs. Therefore, HRT should not be used for the prevention of heart attack and stroke (AHA, 2013e; Yang & Reckelhoff, 2011). Heart disease risk rises for everyone as they age, but for women, symptoms can become more evident after the onset of menopause (Yang & Reckelhoff, 2011). Menopause does not cause cardiovascular disease. However, certain risk factors increase around the time of menopause and a high-fat diet, lack of exercise, smoking, or other unhealthy habits begun earlier in life can also take a toll. Studies have also shown by participating in a comprehensive prevention program, high-risk women can improve their knowledge and awareness of cardiovascular risk, therefore reducing the risk of heart disease (Villablanca et al., 2010; VanWormer et al., 2012).

Pregnancy complications and cardiovascular risk in women. Other risk factors that predispose women to develop CVD include gestational diabetes, hypertension, preeclampsia, and eclampsia. These complications are not limited to the pregnancy period and can leave permanent vascular and metabolic damage (Gongora & Wenger, 2015). Although there is evidence this association exists, most often women who experience these complications of pregnancy do not receive adequate postpartum follow-up and counseling regarding their increased risk of future CVD (Gongora & Wenger, 2015). For these women, it is important to intervene with lifestyle modifications directed at reducing the development of premature cardiovascular complications. In some cases, it allows early diagnosis and treatment of chronic hypertension or diabetes mellitus (Gongora & Wenger, 2015).

Increasing awareness to decrease cardiovascular risk in women. For women to understand that cardiovascular disease is the leading cause of death of women has been a goal of the American Heart Association (AHA, 2013d). The AHA started the Go Red for Women campaign to improve the lack of knowledge that women had regarding heart disease. Women's awareness of cardiovascular disease as the leading cause of death in women has almost doubled since 1997, but still lags behind in minority women's awareness (AHA, 2013d; Mosca et al., 2013). Several studies have shown that by increasing awareness of heart disease risk, you can decrease cardiovascular risk. Studies have shown that being aware of the risks of cardiovascular disease has been linked to taking preventative action in women (Mosca et al., 2013; VanWormer et al., 2012; Villablanca et al., 2010). Studies have also shown by participating in a comprehensive prevention program, high-risk women can improve their knowledge and awareness of cardiovascular risk, therefore reducing the risk of cardiovascular disease (Villablanca et al., 2010; VanWormer et al., 2012).

Health disparities in cardiovascular risk in Native Hawaiians and other Pacific Islanders. Although Hawai‘i has relatively low rates of death from heart disease and stroke, certain ethnic groups such as Native Hawaiians and other Pacific Islanders are plagued with disproportionately higher rates of chronic diseases, such as obesity, diabetes, high blood pressure, and death from heart disease and cancer as compared with the overall state population (Aluli et al., 2007; HSDH, 2011). Previous studies document ethnic disparities in cardiovascular disease mortality and risk factors (Aluli et al., 2007). Studies show that Native Hawaiians had a higher prevalence of hypertension, diabetes, and asthma than other ethnic groups in Hawaii (Aluli et al., 2007). Native Hawaiians also have a higher rate of smoking, alcohol consumption, and obesity (Aluli et al., 2007). To decrease disparities in health, investigators have suggested increased engagement of desperate communities in the identification of health and social problems (Aluli et al., 2007). Future research is needed to identify cardiometabolic risk and cardiovascular disease in this disproportionately affected population, and to search for effective solutions to reduce mortality and morbidity (Aluli et al., 2007). Significant gaps remain in the understanding of cardiometabolic health disparities among Native Hawaiians in the United States. Therefore more interventional studies are needed to examine practical approaches to reversing the incidence of cardiometabolic health disparities in Native Hawaiians.

Health literacy. Health literacy involves skill, knowledge, and the expectation that health professionals have of the public’s interest in and understanding health information and services (Kutner et al., 2006). Health information and services are often unfamiliar, complicated, and technical, even for people with higher education. People of all ages, races, and educational levels are affected by limited literacy. According to the U.S. Education Department, only 12% of the English-speaking adult population in the U.S. has proficient literacy skills (Kutner,

Greenberg, Jin, & Paulsen, 2006). Improving health literacy, which is the degree to which an individual can obtain, process, and understand basic health information and services needed to make appropriate healthcare decision, is critical to achieving the objectives of Healthy People 2020 and the key to our national healthcare agenda (U.S. Department of Health and Human Services, 2010).

Native Hawaiians and Filipino women are disproportionately affected by diseases such as CVD and cancer and are less likely to participate in healthcare screening than white women (Sentell, Dela Cruz, Heo, & Braun, 2013). Limited information exists about health information pathways and health communication challenges as they relate to chronic diseases in these groups. A study of 77 Native Hawaiian and Filipino women over the age of 40 was conducted to investigate gaps in health literacy (Sentell et al., 2013). Participants noted many health information challenges. The challenges included both written and oral health communication. Some of the challenges included the use of “big” words, the complexity of terms, and lack of plain English. The interpersonal issues included doctors rushing, doctors not assessing comprehension, and doctors treating respondents as patients, not people. Some of the women avoided asking questions even when they knew they did not understand because they did not want the provider to have a negative impression of them. Overarching themes to improve health literacy and decrease communication gaps included: the importance of family and community in health information dissemination; the key role women play in interpreting health information for others; the importance of personal experience; and the desire for local cultural relevance in health communication (Sentell et al., 2013).

To prevent disease and promote health, Americans need to make sense of the health information they hear, read, and see from all of these sources. Consequently, no single group or

organization can address health literacy issues on its own. Initiatives from all sectors must be linked and have a mutual goal of achieving measurable improvements in health literacy across all socioeconomic levels (Kutner et al., 2006). Studies show when educating the public, it is important for programs to train and employ women from the community and partner with existing community networks, such as including women from the community in support groups and screening outreach (Kutner et al., 2006). In a health literacy study, Filipino participants felt the inclusion of local language and a local messenger would be helpful (Kutner et al., 2006). Also culturally relevant media was also suggested that included local faces and information relating to Hawaiian ethnic groups. Several Native Hawaiian women noted that they appreciated health education materials developed by and for Native Hawaiians that were being distributed by a local program. They also valued the importance of local context in materials, providers' knowledge, and screening options. Women specifically noted this preference regarding desire for culturally, and locally, relevant materials and also wanted providers to have a strong understanding of local community context (Kutner et al., 2006).

Cultural competence. One of the factors that often is overlooked in research is cultural competence when designing and implementing a study. Cultural competence is defined as being sensitive and responsive to issues related to culture, race, ethnicity, gender, age, socioeconomic status, and sexual orientation (National Institute of Health, 2015). Cultural competence indicates a translation of cultural sensitivity and awareness into credible behaviors and actions (Brant et al., 1999). It involves providing care within the cultural context of the patient. To organize the process of critiquing research articles for cultural competence, the Oncology Nursing Society (ONS) created the Guidelines for Cultural Competency in Oncology Nursing Research (Brant et al., 1999). According to Brant et al. (1999), becoming culturally competent requires moving

through a process that begins with self-awareness. They suggest the importance to becoming self-aware of one's own cultural beliefs or values and how they influence one's behaviors and attitudes. The next step entails focusing on acquiring cultural knowledge. In this stage, the health care provider develops a theoretical understanding of culture and its influence on health beliefs, practices, and utilization of health care (Brant et al., 1999). The concept of cultural competence empowers providers to deliver services that are respectful of and responsive to the health beliefs, practices and cultural needs of diverse populations.

Lifestyle management to reduce cardiovascular risk through diet. Many articles in this review linked cardiovascular disease with a poor diet (Estruch et al., 2013; Fu, Yang, Lin, & Kuo, 2006; Maruthur, Wang, & Appel, 2009; Natale et al., 2009; Sattelman et al., 2011; Vanderwood, Hall, Harwell, Butcher, & Helgersen, 2010, Yang et al., 2012). Heart disease is a preventable chronic disease condition for most and is closely associated with dietary habits. Research has shown an inverse relationship between consuming more fruits, vegetables, and fiber, and the risk for heart disease (Estruch et al.; 2013, Natale et al., 2009; Swain, McCarron, Hamilton, Sack, & Appel, 2008; Yang et al., 2012). Studies show by eating diets high in fruits, vegetables, and fiber such as the Mediterranean, Vegetarian, and Dietary Approaches to Stop Hypertension (DASH) diet, can decrease lipids (Burke et al., 2007; Estruch et al., 2013; Natale et al., 2009; Maruthur et al., 2009; & Swain et al., 2008; Yang et al., 2012), and can also improve blood pressure (Maruthur et al., 2009; Swain et al., 2008; Yang et al., 2012).

Diets such as a vegetarian diet can significantly decrease postprandial plasma glucose, insulin response, and glycemic variability (Natale et al., 2009). Diets high in carbohydrate, fiber, with a low glycemic index can also improve postprandial cholesterol and triglycerides (Benard et al., 2006; Natale et al., 2009). These types of diet are useful in the treatment of diseases such as

CVD and type two diabetes, because of its multiple effects on different cardiac risk factors, including postprandial lipid abnormalities. Many findings showed that healthy dietary choices could help many chronic conditions, such as diabetes, obesity, and cardiovascular disease (Benard et al., 2009; Estruch et al., 2013; Natale et al., 2009; Maruthur et al., 2009; & Swain et al., 2008; Yang et al., 2012). Among persons at high cardiovascular risk, studies show that the Mediterranean diet can reduce the incidence of major cardiovascular events. Results have supported the benefits of the Mediterranean diet for primary prevention of cardiovascular disease (Eckel et al., 2013; Natale et al., 2009). The American Heart Association and the American College of Cardiology have adopted diets high in fruits, vegetables, and fiber, such as the Mediterranean and DASH diet to their dietary guidelines to prevent cardiovascular disease (Eckel et al., 2013).

Lifestyle management to reduce cardiovascular risk through exercise. There is overwhelming evidence that diet, inactivity, smoking, and excessive alcohol use are important determinants of coronary artery disease and that modifying these environmental influences can significantly impact the incidence of cardiovascular disease. Studies show that individuals who engage in moderate-intensity physical activity for 150 minutes per week had a lower risk of coronary heart disease than those that report no leisure-time physical activity. People who engage in 300 minutes of moderate-intensity physical activity had an even lower risk of coronary heart disease. Several studies show that some physical activity is better than none, and with more activity, benefits occur (Hayashi, Farrell, Chaput, Rocha, & Hernandez, 2010; Mora, Cook, Buring, Ridker, & Lee, 2007; Sattelmair et al., 2011). A common theme found in the studies show that the risk of cardiovascular disease decreases linearly as activity levels increase and high activity levels were associated with a better profile. Evidence over the years from a variety of

sources, including, epidemiological, prospective cohort, and intervention studies have shown that diet and physical activity can slow the process of chronic diseases, such a cardiovascular disease and diabetes (Hayashi et al., 2010; Roberts & Davis, 2013).

Life's simple 7 wellness tool. Using the best available evidence, AHA developed a prescription for health called Life's Simple 7 (AHA, 2016a). Life's Simple 7 is a tool, which includes the seven most significant predictors of heart health and is also a pathway for achieving ideal cardiovascular health (AHA, 2016a). The Life's Simple 7 tool includes four modifiable behaviors (not smoking, healthy weight, eating healthy and being physically active) and three biometric measures (blood pressure, cholesterol and blood sugar). These seven factors are classified into three categories: ideal, intermediate and poor. For example, adults with a Body Mass Index (BMI) greater than 30 are classified as "poor," "intermediate" with a BMI 25–29.9 and "ideal" if they have a BMI 18.5-25. Individuals with ideal levels for all seven metrics are considered to have ideal cardiovascular health (AHA, 2016a).

A population-based Atherosclerosis Risk in Communities study was implemented during 1987-1989, using a cohort of 13,462 adults ages 45-64 years (Folsum et al., 2015). From the research, risk factor measurements, they created a Life's Simple 7 score (range 0-14, giving 2 points for ideal, 1 point for intermediate, and 0 points for poor components). The study identified 2218 incident heart failure events using surveillance of hospital discharge and death codes through 2011 (Folsum et al., 2015). The study showed that one in four participants (25.5%) developed heart failure through age 85 years. This lifetime heart failure risk was 14.4% for those with a middle-age Life's Simple 7 score of 10-14 (optimal), 26.8% for a score of 5-9 (intermediate), and 48.6% for a score of 0-4 (poor). Among those with no clinical cardiovascular event, the prevalence of left ventricular hypertrophy in late life was approximately 40% as

common, and diastolic dysfunction was approximately 60% as common, among those with an optimal middle-age Life's Simple 7 score, compared with a low score (Folsum et al., 2015). The study showed that a greater achievement of American Heart Association's Life's Simple 7 in middle age is associated with a lower lifetime occurrence of heart failure and greater preservation of cardiac structure and function (Folsum et al., 2015; Thacker et al., 2014).

Aside from cardiovascular disease, several studies have reported on the relationship between AHA Life's Simple 7 and risk of other outcomes such as diabetes, depression, stroke, and cognitive impairment (Folsum et al., 2015; Thacker et al., 2014). The common underlying pathophysiology leading to the development of cardiovascular and kidney disease suggests that cardioprotective recommendations might also help in preventing kidney disease (Folsum et al., 2015). Approximately a third of study participants with the lack of ideal health factors at baseline developed chronic kidney disease during follow-up, whereas only 6.5% of those with six or seven ideal health factors developed chronic kidney disease (Folsum et al., 2015). There was a relationship between the number of ideal Life's Simple 7 health factors and risk of incident chronic kidney disease after adjusting for age, sex, race, and eGFR (Folsum et al., 2015).

Strengths, weaknesses, gaps, and limitation in knowledge. The biggest gap in the literature is the lack of studies involving women and minorities. Historically most studies and much knowledge are about men and heart disease. While racial and ethnic disparities in cardiovascular risk have been recognized for some time, the growing literature has not integrated socioeconomic status within certain populations with sufficient research on these populations. More research is also needed to develop evidence and effective-based methods to improve adherence of cardiovascular prevention interventions in all women. Research related to the identification of nontraditional risk factors is ongoing and much needed (Roberts & Davis,

2013). Many studies look at the effects of diet on cardiovascular risk (Estruch et al., 2013; Natale et al., 2009; (Sticher, Smith, & Davidson, 2010), and the consequences of exercise on cardiovascular risk (Mora et al., 2007; Sattelmar et al., 2011) but additional research is needed combining diet and physical activity and its effects on lipids, blood pressure, and cardiovascular risk (Hayashi et al., 2010).

Findings showed that a carefully planned vegetarian diet with proper supplementation could be effective for primary prevention of heart disease, and could be a safe, cost-effective, and easy to implement (Benard et al., 2009; Natale et al., 2009; Tonstad, Butler, Yan & Fraser, 2009). The disadvantage of a poorly planned vegetarian diet can lead to decreased levels of vitamin B 12, which could be corrected by taking supplements (Sticher et al., 2012). One study showed that the vegetarian diet decreased postprandial lipids and triglycerides more so than the Mediterranean diet (Natale et al., 2009), but this literature search has resulted in a lack of findings comparing the two diets. The results from recent studies showed that exercise when performed at a sufficient dose and intensity, will reduce LDL (AHA, 2013a). However, additional research is needed to understand the pattern and intensity that may be associated with the reduction in LDL. The length of program intensity, frequency, duration of physical activity that affects cardiovascular risk needs to be further investigated. Despite data showing that physical activity lowers blood pressure and lipids, most of the evidence comes from studies of Caucasian people, with limited data on ethnic or lower socioeconomic status people (AHA, 2013a).

Summary of literature search

A quantitative systematic review was performed evaluating major trends and scientific supports for effective ways to prevent coronary artery disease. Over fifty articles were reviewed.

The combination of these studies has shown that preventing disease is critical to living healthier and longer lives. Primary preventive services can help individuals avoid disease altogether.

Poor nutrition, physical inactivity, chronic stress, obesity, and smoking can lead to unhealthy shorter lives (Benard et al., 2009; Burke et al., 2007; Estruch et al., 2013; Hayashi et al., 2010; Natale et al., 2009; Maruthur et al., 2009; Roberts & Davis, 2013 & Swain et al., 2008; Yang et al., 2012). Some groups within the population are more severely affected by the determinants of obesity, which contribute to obesity health disparities (Feinstein et al., 2012; Karlamangla et al., 2010; Kawachi et al., 2012). Food deserts, which encourage unhealthy eating are also tied to obesity and chronic illness and are usually found in low-income, minority neighborhoods (Estruch et al., 2013; Fu et al., 2006; Maruthur et al., 2009; Natale et al., 2009; Sattelman et al., 2011; Vanderwood et al., 2010, Yang et al., 2012).

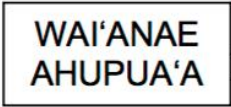
The findings show that healthy dietary choices could help improve many chronic diseases. Many studies show that by eating diets high in fruits, vegetables, and fiber such as the Mediterranean, Vegetarian, and DASH diet, one can decrease lipids (Burke et al., 2007; Estruch et al., 2013; Natale et al., 2009; Maruthur et al., 2009; & Swain et al., 2008; Yang et al., 2012), and can also improve blood pressure (Maruthur et al., 2009; Swain et al., 2008; Yang et al., 2012). Studies also showed that a carefully planned vegetarian diet with proper supplementation could be effective, safe, and easy to implement. Several studies have also shown that vegetarian diets are effective at reducing cardiovascular risk (Benard et al., 2009; Natale et al., 2009; Tonstad et al., 2009), but policies and institutions such as the AHA and the American College of Cardiology have adopted more mainstream diets, such as the Mediterranean and DASH diet (Eckel et al., 2013). The common theme in all three diets is they are all high in fruit, vegetables, and fiber, which many studies have found to prevent cardiovascular disease.

Cardiometabolic risk factor awareness and screening programs have been utilized for many years but are usually limited to the individual level, linking participants to health care. Screening programs can offer much more potential to help population health management (Mosca et al., 2013; VanWormer et al., 2012; Villablanca et al., 2010). Increasing awareness of cardiovascular disease as the leading cause of death of women, has been a goal of the AHA but continues to lag in minority women's awareness (AHA, 2013; Mosca et al., 2013).

A combined effort to increase primary prevention of cardiovascular disease through the translation of research data on the importance of awareness, diet, and exercise to the general public and legislation to urge implementation of primary prevention strategies are essential (Hayashi et al., 2010; Roberts & Davis, 2013). It is commonly argued that it is difficult to change the lifestyle of an obese and sedentary person, but such pessimism may not be justified. Exercising 30 minutes a day, five times a week, and eating five fruits and vegetables a day, will bring significant health benefits (AHA, 2014a). In addition, weight loss will be a beneficial side effect of these lifestyle changes. The focus should be on decreasing the risk of chronic disease, and the weight loss will follow.

Community Assessment

The Leeward Coast is located on the westernmost part of Oahu (see Figure 2). The Wai'anāe Range spreads the length of the West Coast of Oahu and separates it from the rest of the island. Kapolei, Nanakuli, Maili, Lualualei, Wai'anāe and Makaha are a few of the communities that make up the Leeward Coast. Wai'anāe was named after the mullet that was once farmed in the area. The meaning of "Wai" means water and "enae" means large mullet. This community was known for its agriculture, sugar mill, fishing, and religion (Department of Land and Natural Resources [DLNR], 2014).



Located throughout the Upper Wai‘anae Valley are numerous historic sites and residual native forests that are part of the Wai‘anae-Kai Forest Reserve. A number of streams surface from the mountain ridges onto the upper valley at the back of Wai‘anae. In the past, these streams and adjacent slopes were used for farming irrigated taro and other dry land crops such as sweet potato. Houses and religious structures including the large Punanaula Heiau were scattered among these farms. Nearby ridges and areas among the fields were green with native forest and other native plants. These resources are valuable educational and cultural resources for the community and its children (DLNR, 2014).

With depopulation in the 1800s and early 1900s, the farms and houses of the Upper Wai‘anae Valley were abandoned. A few families still retain claim (kuleanas) of the land. Under pressure from changing use of the land, and fires, native forest and plants have been displaced from much of the valley. Modern demands for water have rerouted the stream flow over the last hundred years. This rerouting of water has had a significant impact on the lives of the Wai‘anae community members. The land has become dry and infertile (DLNR, 2014).

The native dry land forest is extremely limited here today, with the best surviving areas located in the Kumaipo, Hiu and Honua drainages. Another of DLNR's major concerns for both the cultural and natural resources of this sustainability hotspot is the maintenance of stream flow. Stream flow is currently extremely limited in Kumaipo Stream, and other streams may have flows reduced in modern times. The preservation of the stream flow is critical for the survival of the native forest, plants, and kalo loi (DLNR, 2014).

Table 1

Population Characteristics 2006-2010

| | Under18 yrs (%) | 65 years and Older` (%) | Foreign Born (%) | Average Per Capita Income (%) |
|-----------------|-----------------|-------------------------|------------------|-------------------------------|
| State of Hawaii | 22.6 | 14.0 | 17.7 | 29,900 |
| Honolulu County | 22.3 | 14.2 | 19.5 | 29,500 |
| Wai‘anae | 32.7 | 8.9 | 7.1 | 17,300 |

Note. modified from HSDH, 2011

Population in Wai‘anae

The total population of Wai‘anae as of 2010 was 46,482, with a median age of 29.8 (United States Census Bureau, USCB, 2010). The population characteristic of Wai‘anae is described as having a high population of inhabitants under the age of 18. Thirty-two percent of the population in Wai‘anae is under the age of eighteen, as compared to the average of 22.6 percent in the state of Hawaii (see Table 1). Wai‘anae has a low population of people under the age of 65 at eight percent, as compared to the state average of 14%. Seven percent of the Wai‘anae population are foreign born, and the average per capita income is \$17,300, which is low as compared to the state average of \$29,900 (HSDH, 2012).

Race/ethnicity in Wai‘anae

The ethnicity of the Wai‘anae Coast is comprised of mostly Native Hawaiian and Other Pacific Islander at a population of 28,404 (58.5.9%) and has the largest percentage of Hawaiians in the state (see Table 2). The other ethnicities include; White at 18,569 (38.3%), Filipino at 13,729 (28.3.9%), Chinese at 9044 (18.6%), Japanese at 5,406 (11.1), and Black at 137 (1.1%), American Indian at 22 (0.2%), and those with two or more races at 4,316 (34.9%) (USCB, 2010). The ethnicity distribution Wai‘anae as compared to the state of Hawai‘i is displayed on Table 3.

Table 2

Population of Native Hawaiian 2010

| <i>Service Area</i> | <i>Annual Total Population(N)</i> | <i>Number Native Hawaiian (N)</i> | <i>Percent Native Hawaiian (%)</i> |
|------------------------|---------------------------------------|---------------------------------------|--|
| <i>State of Hawaii</i> | <i>1,360,301</i> | <i>289,970</i> | <i>21.3</i> |
| <i>Honolulu County</i> | <i>953,201</i> | <i>182,120</i> | <i>19.1</i> |
| <i>Wai‘anae</i> | <i>48,519</i> | <i>28,404</i> | <i>58.5</i> |

Note. modified from HSDH, 2011

Table 3

Ethnicity: Wai‘anae Coast

| | <i>White (%)</i> | <i>Hawaiian (%)</i> | <i>Filipino (%)</i> | <i>Japanese (%)</i> | <i>Chinese (%)</i> |
|----------------------------|------------------|---------------------|---------------------|---------------------|--------------------|
| <i>State of Hawaii</i> | <i>41.5</i> | <i>21.3</i> | <i>25.1</i> | <i>23.0</i> | <i>14.6</i> |
| <i>Honolulu County</i> | <i>36.8</i> | <i>19.1</i> | <i>24.6</i> | <i>25.3</i> | <i>16.3</i> |
| <i>Wai‘anae</i> | <i>38.3</i> | <i>58.5</i> | <i>28.3</i> | <i>11.1</i> | <i>18.6</i> |

Note. modified from HSDH, 2011

Socio-economic

The CDC developed National Healthy People Objectives and Goals to improve the health of society (CDC, 2013b). Fundamental to reaching these objectives will require the elimination of long-standing and pervasive health disparities related to race/ethnicity, socioeconomic status, and other key dimensions of health. The determinants of health are key concerns and are defined in Healthy People 2020 in five categories: 1) Policy Making; 2) Social Factors; 3) Health Services; 4) Individual Behavior; and 5) Biology and Genetics (HSDH, 2011).

Determinants of health reach beyond the boundaries of traditional healthcare and public health sectors. Sectors such as education, housing, transportation, agriculture, and environment play a major role in the improvement of population health. The interrelationships among these impact individual and population health, so interventions that target multiple determinants of health are more likely to be effective (HSDH, 2011). It is also important to look at other determinants of health that can contribute to disparities such as age, race/ethnicity, education, geography, insurance status, household federal poverty level, and medical home (see Table 4).

Percentage of residents living in poverty in 2011 was 18.4% (7.9% for White Non-Hispanic residents, 15.2% for Black residents, 21.7% for Hispanic or Latino residents, 61.1% for American Indian residents, 27.9% for Native Hawaiian and other Pacific Islander residents, 14.8% for other race residents, 15.4% for two or more races residents) (USCB, 2010). The average household size in Wai‘anae consists of 4.3 people, as compared to 2.9 in the state of Hawaii. The percentage of family household is 84.7%, as compared to 68.9% in Hawaii. The percentage of household with unmarried partners in Wai‘anae is 10.3% as compared to 7.3% in the whole state (USCB, 2010). Estimated median house or condo value in 2011 was \$307,851. The mean prices in 2011 was \$335,970 for all housing units, \$349,943 for detached houses,

\$295,500 for townhouses or other attached units, \$136,111 for two-unit structures, and \$234,648 for five-or-more-unit structures. The median gross rent in 2011 was \$1,255 (CityData.com, 2012). For population 15 years and over in Wai‘anae, 35.8% were never married, 46.0% are presently married, 3.3% are separated, 5.7% are widowed, and 9.1 % are divorced.

Table 4

Socioeconomic Characteristics, 2006-2010

| | <100% Federal Poverty Level (%) | Children in Households Receiving SNAP (%) | Households Receiving SNAP (%) | Uninsured (%) | Civilian Labor Force Uninsured (%) | Adults with no High School Diploma (%) |
|--------------------|---|---|--|------------------|---|--|
| State of Hawaii | 9.6 | 17.2 | 8.4 | 7.1 | 4.6 | 10.2 |
| Honolulu County | 8.8 | 16.0 | 7.6 | 6.1 | 4.0 | 10.1 |
| East Honolulu | 9.2 | 9.9 | 4.8 | 4.9 | 3.5 | 7.3 |
| West Honolulu | 12.3 | 20.6 | 12.8 | 6.8 | 3.6 | 19.4 |
| Wahiawa | 12.4 | 13.2 | 13.0 | 5.8 | 7.5 | 13.3 |
| Wai‘anae | 18.7 | 49.2 | 28.9 | 13.3 | 8.9 | 14.8 |

Note. modified from HSDH, 2011

Education level in Wai‘anae

For population 25 years old and over in Wai‘anae, 87.1% had a high school degree or higher, 9.5% had a Bachelor's degree or higher, and 2.0% had a graduate or professional degree (City Data, 2010). The director of the AHA communications, marketing, and government affairs explained even though Hawaii has low heart disease prevalence and death rates, certain ethnic groups have among the highest rates in the country. Native Hawaiians have a high death rate from heart disease, and stroke death rates are high among Filipinos (D. Weisman, personal communication, September 1, 2013). People with less than 12 years of education had a heart disease rate nearly twice as high as college graduates (CDC, 2015). These findings show the

importance of preventing and controlling known risk factors for heart disease, such as high blood cholesterol, tobacco use, physical inactivity, high blood pressure, Type 2 diabetes and obesity (Weisman, 2014).

Unemployed and Uninsured in Wai‘anae

Unemployment has increased in the district of Wai‘anae greatly since 2007. Although unemployment has improved over the past couple years, those on the Leeward Coast suffer from unemployment more so than the rest of the state. Sixteen to 20% living on the Leeward Coast live below the poverty level as compared to the average of 10.8% in the state of Hawaii (USCB, 2010). The Wai‘anae communities are impoverished: per capita income is among the lowest in the State, unemployment is almost double that of the state overall (USCB, 2010). For the year 2010 poverty rate data, 18.7% of Wai‘anae residents live below the federal poverty level (HSDH, 2011). Wai‘anae has one of the highest percentages of people who are uninsured at 13.3 percent as compared to the state average of 7.1%. People in Wai‘anae have the lowest average per capita income at \$17,300 as compared to \$28,000 in the state (HSDH, 2011).

Chronic disease in Wai‘anae

Wai‘anae leads the state with the highest indicators of morbidity. The indicators include obesity, smoking, heavy drinking, inactivity, diabetes, and high blood pressure, all which lead to premature death from cardiovascular disease. Wai‘anae’s obesity rate is an alarming 43.5, as compared to the state’s average of 21.9 (HSDH, 2011). Their adult smoking, heavy drinking, and inactivity rates are also high. Their adult diabetes and hypertension rate are higher than the state’s rate (see Table 5). Wai‘anae’s mortality rate from disease of the heart is alarmingly high at 260.4, and is double the state’s average of 135.2, and almost double of all the counties in the

state. Their mortality rate from stroke is 46.4 as compared to 38.2. This is attributed to all of their health care disparities (see Table 6).

Table 5

Adult Morbidity Indicators, 2005-2010

| | Adults who are Obese | Adults who Smoke | Adults who are heavy Drinkers | Adults with no Physical Activity | Adults with Diabetes | Adults with High Blood Pressure |
|--------------------|-------------------------|---------------------|-------------------------------------|--|-------------------------|---------------------------------------|
| State of Hawaii | 21.9 | 16.1 | 6.9 | 19.2 | 8.8 | 28.4 |
| Honolulu County | 21.3 | 15.3 | 6.3 | 19.5 | 9.0 | 29.0 |
| East Honolulu | 15.6 | 12.9 | 6.0 | 16.8 | 8.3 | 27.7 |
| West Honolulu | 17.7 | 14.3 | 5.5 | 25.0 | 7.8 | 26.5 |
| Wahiawa | 27.5 | 21.0 | 6.3 | 21.9 | 11.2 | 29.1 |
| Wai`anae | 43.5 | 26.0 | 10.4 | 25.2 | 13.7 | 32.6 |

Note. modified from HSDH, 2011

Table 6

Mortality Indicators, 2005-2010

| | Crude Death Rate (per 1,000) | Disease of the Heart Mortality Rate (per 1,000) | Cancer Mortality Rate (per 1,000) | Stroke Mortality Rate (per 1,000) | Unintentional Injury Mortality Rate (per 1,000) |
|--------------------|------------------------------------|--|---|---|--|
| State of Hawaii | 6.8 | 135.2 | 134.7 | 38.2 | 28.7 |
| Honolulu County | 6.9 | 131.5 | 132.7 | 37.7 | 27.7 |
| East Honolulu | 8.6 | 114.4 | 124.9 | 34.2 | 25.5 |
| West Honolulu | 7.4 | 133.6 | 129.7 | 44.0 | 24.3 |
| Wahiawa | 5.2 | 151.1 | 141.9 | 48.0 | 33.6 |
| Wai`anae | 7.3 | 260.4 | 197.0 | 46.4 | 58.6 |

Note. modified from HSDH, 2011

Summary of the Wai`anae community

Population level factors often contribute to disparities in health with significantly higher risks of most adverse outcomes among those living in poverty, some racial/ethnic groups, those with little education and with other factors. The focus of this community assessment was to

identify overall population risk. By showing a brief overview of various race/ethnic groups, it provided assistance for the planning of the community's health care needs. It is important to consider that disparities seen in health are complex in nature and may be related to age, gender, race/ethnicity, socio-economic conditions, and other factors, so a comprehensive approach is needed to improve health and address disparities. In Wai'anāe, just 10% of people over 25 years hold a college degree, which is very low compared to the rest of the nation, where the average among all cities is 21.84%. The per capita income in Wai'anāe in 2010 was \$17,300, which is considered low income relative to Hawai'i, and lower middle income relative to the rest of the US. Those on the Wai'anāe Coast suffer from unemployment more so than the rest of the state and have the highest percentage of people who are uninsured. Wai'anāe also has both very wealthy and very poor people. Wai'anāe is an extremely ethnically diverse town. The people who call Wai'anāe home describe themselves as belonging to a variety of racial and ethnic groups. The greatest number of residents reports their race to be Native Hawaiian. It is important to look at all determinants of health that can contribute to disparities such as age, race/ethnicity, education, geography, insurance status, household federal poverty level, and medical home.

Some of the socioeconomic disparities the Native Hawaiians in Wai'anāe face include lack of livable wages, lack of affordable housing, and food insecurity. Native Hawaiian people also contend with issues of self-determination and federal recognition. Single-parent households, unemployment, financial insecurities, discrimination, and chronic illness are more prevalent in Native Hawaiian households (Department of Native Hawaiian Health, 2013). Toxic stressors include exposures to abuse, neglect, and inadequate social and emotional support, especially occurring at a younger age. Allostatic load often leads to risky behaviors such as

smoking, drinking, overeating, and poor quality sleep, which then leads to chronic diseases, such as, obesity, coronary artery disease, heart attack, and stroke (McEwen, 2008).

The biggest problem noted from this assessment was the high rate of premature death from cardiovascular disease. Wai‘anae has a low population of people under the age of 65 at 8%, as compared to the state average of 14%. This could be attributed to their high mortality rate from diseases such as cardiovascular disease, stroke, and cancer, and their high morbidity indicators such as obesity, smoking, heavy drinking, inactivity, diabetes, and high blood pressure. Of these indicators, Wai‘anae also has the highest morbidity indicators in the state. These are all somewhat modifiable risk factors. Another alarming fact was the lack of knowledge that cardiovascular disease is the leading cause of death for women. After conducting this community assessment, it is indicative that a health promotion program is critically needed to prevent the continued premature death of the citizens of the Wai‘anae Coast.

Chapter 3

Research Design and Methodology

The purpose of this chapter is to explain the methodology used to collect and analyze data to address the following research aims: to assess the current level of awareness of CVD as the leading cause of death in rural Native Hawaiian women; to implement a CVD Risk Program for Asian, Native Hawaiian, and Pacific Island women; and to evaluate program effectiveness to decrease CVD risk. This chapter describes the project description, research design, setting, data collection protocol, survey tools, data analysis plan, and protection of human subjects. The name of the study program was the Wahine Heart Wellness Program (WHWP).

Project Description

The purpose of this PIP was to identify Cardiovascular Disease (CVD) risk early and to improve health literacy on cardiovascular disease in women. The plan was to screen and educate Asian, Native Hawaiian, and other Pacific Island women living in the Leeward Coast District of risk factors of developing cardiovascular disease, including coronary vascular disease. The methods used included a screening process using the Life's Simple 7 matrix, which includes blood pressure and BMI measurements; a cardiovascular awareness questionnaire (pre-test and post-test); and educational sessions to improve health literacy on primary prevention of cardiovascular risks. Evaluating knowledge levels, health perceptions, and behavioral performance underline the research methodology used in this study.

Research Design

The study design was a practice intervention design. The study evaluated the process and the outcomes associated with implementing the WHWP program in a community setting. The total length of the study was six months. The study had three phases. Phase one was the

interpretive and planning phase, with the purpose to modify the intervention protocol for ease of use for the project director. The length of phase one was three months. Phase two was the practice intervention phase. The length of phase two was eight weeks. Phase three was the evaluation phase, which lasted two months.

The WHWP offered six educational sessions, in addition to an initial assessment and a post-intervention session. Baseline data was collected from each participant on the first day of the program, on May 5, 2016. Educational sessions occurred during weeks two to seven and concluded on week eight with post-intervention assessment and a program evaluation session (see Appendix J).

Methodology

The overarching goal of this PIP was to identify CVD risk early, to improve health literacy about cardiovascular disease, and to use evidence-based practices to decrease CVD risk and promote healthy lifestyle changes in women. In this chapter, methods to accomplish the project will be addressed. In particular, the strategies to achieve the three specific aims and their objectives will be outlined. Research methods were divided into four sections: (a) participant selection process; (b) data collection procedures, (c) data analyses plan, and (d) protection of human subjects. The participant selection process described the population, study site, and recruitment and enrollment strategies. Data collection procedures included a study timeline and survey instruments. Lastly, details of the protection of human rights were provided to safeguard study participants, concluding this chapter.

Setting

The study participants were recruited from the Makeke Market. The Makeke Market is located on the Leeward Coast of Oahu. The Mekeke Market is a farmer's and wellness market

that serves a population of lower socioeconomic, predominantly Native Hawaiian people. The Makeke Market is a gathering place for the community, local food producers, and Hawaiian cultural practitioners to connect, learn, teach, entertain, and share values that lead to healthy and affordable habits. The Makeke Market is also one of the farmer's markets that accepts electronic benefit transfer (EBT) cards and gives user double the purchasing power when using the card. There is a large population of Native Hawaiian people who live on Hawaiian homeland property across the street from the Makeke Market in Kapolei. A nonprobability sampling method was used to access Asian, Native Hawaiian, and Pacific Island women from the Makeke Market.

Recruitment

The recruitment goal was to recruit approximately 20 women who live on the Leeward Coast. Flyers about the program were distributed at the Makeke Market one week before the start of the program. Information about the Wahine Heart Wellness program was also provided. A recruitment script was utilized for uniformity. Location, duration purpose of the project, and dates of the program were also provided. The participants were informed that all study information would be kept confidential and participation was strictly voluntary. Women were enrolled in this study, if they claimed to be Asian, Native Hawaiian, or from the Pacific Islands and were free of a CVD diagnosis. Another determining factor was their willingness to discuss health status, current health practices, and knowledge levels of heart disease.

Participants

A lifestyle intervention education on how to decrease the risk of developing CVD was offered at the Makeke Market. The participants in this project included 20 lower income predominantly Asian, Native Hawaiian, and Pacific Island women, living on the Waianae Moku of Oahu, Hawaii. The eligibility criteria included women between the ages of 24-69 years,

English speaking, healthy, of lower socioeconomic status, Asian, Native Hawaiian, and Pacific Islander in ethnicity, and having at least one CVD risk. Exclusion factor included people with known diabetes, previous cardiac event, or SBP > 180 mmHg, DBP > 110 mmHg, total cholesterol > 400mg/dl, or pregnant. Using a demographic questionnaire at the beginning of the project screened for inclusion and exclusion factors (see Appendix D). The participant selection process resulted in a convenience sampling of 20 Asian, Native Hawaiian, and Pacific Islander women, who volunteer to participate in the study. Twenty participants implemented the Wahine Heart Wellness Program (WHWP).

Data Collection Procedures

Timeline

The research timeline is outlined in Table 7, showing a study timeline that consists of three representative phases, plus preliminary preparation that included the Scientific Review Committee (SRC) at the University of Hawaii-Hilo and the Institutional Review Board (IRB) application process for the University of Hawaii-Manoa. Phase I, II, and III were outlined in the study timeline. There was a delay in the start of Phase II, due to the prolonged time it took for the project to be approved by the IRB. Once the IRB was approved, Phase II began immediately with the initiation of the intervention phase of the program.

Phase II lasted eight weeks. During Phase II baseline data was collected at the initiation of the program. Six educational sessions were provided concluding with a post-program participant assessment. An evaluation of the program was also assessed during Phase II. During Phase III, data was compiled and analyzed. Results were disseminated, and feasibility was determined (see Table 7 for the research timeline).

Table 7

Project Timeline

| Task | Timeframe |
|--|-------------------------|
| Phase I: Propose Project | January 2015 |
| Prepare for SRC and IRB | January 2016 |
| Prepare questionnaire | |
| Prepare consents | |
| Prepare patient educational handouts | |
| Prepare education presentation | |
| Obtain permission to use site | |
| Meet with Committee Chair and Co-Chair | January 2015 - May 2016 |
| Meet with Wai‘anae Health Academy to present project | |
| Educate BSN students | |
| Phase I: Submit to SRC and IRB | February 21, 2016 |
| Phase II: Initiate project | May – June 2016 |
| Data collection | |
| Educate participants | |
| Analyze baseline data | |
| Compile questionnaire report | |
| Review individual results with the client | |
| Provide evaluation for participant’s feedback | |
| Complete project with participants | |
| Phase III: Conclude Project | June - July 2016 |
| Review overall result with the community health center | |
| Conclude Project | July 2016 |
| Data Analysis | |
| Complete write-up and discussion | |
| Review overall result with stakeholders | |
| Conclude Project | July-August 2016 |
| Complete Capstone Project | |

Methods**Specific Aim 1**

Specific aim one was to assess the current level of awareness of CVD as the leading cause of death in rural Asian, Native Hawaiian, and other Pacific Island women.

Objective 1. Objective one identified cardiovascular risk awareness of Asian, Native Hawaiian, and other Pacific Island women. To assess awareness of CVD two questionnaires

were utilized. The two questionnaires included the Risk Awareness Questionnaire (RAQ) pre-test and the modified Heart Disease Fact Questionnaire (HDFQ). Interventions includes:

- A. To administer the RAQ pretest. The RAQ questionnaire was prepared by the project director and was written in English. It consisted of knowledge-based questions assessing the participant's ability to identify correctly five modifiable risk factors for CVD. The questionnaire consisted of five multiple-choice questions. Each question had a choice of four answers to select from, labeled “A” through “D.” Sample questions from the RAQ (See Appendix C) included: What is the leading cause of death for women? How much exercise is recommended weekly? What is considered a “good” total cholesterol score? What is a healthy target blood pressure? How many servings of fruits/vegetables should you have daily? The questions were formulated from the AHA Life’s Simple 7 Wellness Guide (AHA, 2016). The questionnaire used as a pretest and a post-test to evaluate health awareness about CVD risk.
- B. To administer the Heart Disease Fact Questionnaire (HDFQ) to the participants.

Survey instrument. The modified Heart Disease Fact Questionnaire (HDFQ). See Appendix E. Knowledge, or cognitive understanding, of CHD and risk factors was evaluated at the beginning of the program, using the HDFQ developed by Wagner, Lacey, Chyun, & Abbott (2005). The original HDFQ was a 25-item questionnaire. The modified Heart Disease Fact Questionnaire (HDFQ) is a 21-item questionnaire that was developed to assess respondents’ knowledge of major risk factors for the development of coronary heart disease risk factors. Individual knowledge was determined from 21 true-false questions that could be completed in ten minutes. The HDFQ was made readable to the average 13-year old and imposes little burden. It shows good content and face validity. Good internal consistency (Kuder-Richardson

$r = .77$) was demonstrated in a group of 524 ethnically diverse adults with diabetes. Test-retest reliability was .89 (Wagner et al., 2005).

Scoring the HDFQ. The HDFQ instrument is a cognitive measure of CHD knowledge and associated risk factors. Respondents were asked to respond to statements with True, False, or Don't Know. Scores were calculated by summing the total of the correct answers among the 21-items. The "Don't Know" category was scored as an incorrect response. Higher scores indicated a greater degree of knowledge.

Cardiovascular disease risk factors were assessed at enrollment and repeated at the two-month end of program session. Instruments used to collect data included baseline and post intervention collection of blood pressure, obesity risk (BMI) and Cardiovascular Risk Awareness Questionnaire.

Objective 2. Objective two identified individual CVD risk factors (modifiable/non-modifiable risk factors) in Asian, Native Hawaiian, and Pacific Island women (physical, genetic & psychosocial).

- A. Baseline data including blood pressure, obesity risk (BMI), and smoking status were obtained. Baseline data was collected from each participant at the beginning of the program. Participants were able to assess their blood pressure privately using an electronic blood pressure cuff. The participant's BMI was calculated by taking a height measurement with a manual tape measure, and the weight was assessed with the use of an electronic scale. The BMI was calculated using a calculator. The BMI formula measured the height measurements in meters and weight in kilograms. Step one: Multiply the height by itself. Step two: Divide the weight in kilograms by the value calculated in step one. The resulting number was the BMI. There are limitations of the BMI formula. The BMI does not take into account other factors which may affect a person's

height or weight: body builders and athletes with a high proportion of muscle mass, the elderly (whose height and muscle mass may fall over time), frail people, and those affected by certain illnesses, lactating or pregnant women, and children and teenagers who have not reached physical maturity and are still growing. There is also a tendency for natural differences in height and weight ratios between races (Romero-Corral et al., 2008).

- B. Provide participant with their biometric results in comparison with normal values. After assessing the participant's baseline CVD risk factors (modifiable/non-modifiable risk factors), the participant compared their results with the AHA Life's Simple 7 Assessment Tool (see appendix G). The assessment tool was created by AHA using the AHA guidelines and is part of their Life's Simple 7 Wellness Guide. The assessment tool has 7 categories for risk evaluation. The categories include physical activity, cholesterol, healthy diet, blood pressure, healthy weight, blood glucose, and smoking status. For each category, the scores fall into three categories for health; poor health, intermediate health, and ideal health. The participant will see what category of health they currently fall; therefore they can see where they need individual improvements.
- C. Life's Simple 7 Assessment tool: The AHA's 2020 Impact Goal of improving the cardiovascular health of all Americans 20 percent while reducing deaths from cardiovascular diseases and stroke by 20 percent emphasize the organization's focus on prevention. Using the best available evidence, AHA developed a prescription for health called Life's Simple 7. The Life's Simple 7 is a tool, which includes the seven most significant predictors of heart health and is also a pathway for achieving ideal cardiovascular health. The Life's Simple 7 tool includes four modifiable behaviors (not smoking, healthy weight, eating healthy and being physically active) and three biometric measures (blood pressure, cholesterol and blood sugar). These seven factors are classified into three categories: ideal, intermediate and poor (AHA, 2014). For example,

adults with a Body Mass Index (BMI) greater than 30 are classified as “poor,” “intermediate” with a BMI 25–29.9 and “ideal” if they have a BMI 18.5-25 (see Table 8). Individuals with ideal levels for all seven metrics were considered to have ideal cardiovascular health (Thacker et al., 2014). Life's Simple 7 total scores were calculated by assigning each component points (2 points for ideal, 1 point for intermediate, or zero points for poor) then summing all 7 components to yield a total score ranging from zero (worst) to 14 points (best). Categories of Life's Simple 7 score were poor (0-6), intermediate (7-8), and ideal (9-14 points).

Table 8

Life's Simple 7 Metric

| Components | Poor (0 Points) | Intermediate (1 Point) | Ideal (2 Points) |
|--------------------|------------------------------|----------------------------------|----------------------------|
| Physical Activity | No intense physical activity | Up to 149 minutes/week | 150 or more minutes/week |
| Cholesterol | > 240 mg/dL | 200-239 mg/dL | < 170 mg/dL |
| Healthy Diet Score | 4-5 components | 2-3 components | 4-5 components |
| Blood Pressure | SBP > 140 or DBP > 90 | SBP 120-130 or DBP 80-89 mmHg | SBP < 120 or DBP < 80 |
| Body Mass Index | BMI > 30 kg/m ² | BMI of 25-29.9 kg/m ² | BMI < 25 kg/m ² |
| Blood Glucose | > 126 mg/dL | 100-125 mg/dL or treated to goal | Less than 100 mg/dL |
| Smoking | Current | Former <1 year | Never or > 1 year |

Specific Aim 2

Specific aim two was to implement a CVD Risk Program for Asian, Native Hawaiian, and Pacific Island women.

Objective 1. Target health literacy. Interventions to target health literacy included:

- A. The classes were conducted by the project director and the Wai'anae Health Academy (WHA) BSN students. The WHA BSN students were all female and predominantly of Native Hawaiian descent. The classes were taught in a small community base environment. Studies show that programs that promote and educate the importance of healthcare should build in opportunities to

train and employ women from the community and partner with existing community networks. Programs should include women from the community to assist with support groups and screening outreach (Kutner et al., 2006). Local language was also incorporated into the lessons. In a health literacy study, Filipino participants felt the inclusion of local language and a local messenger would be helpful (Kutner et al., 2006). Also culturally relevant media was utilized that included local faces and information relating to Hawaiian ethnic groups. Several Native Hawaiian women noted that they appreciated health education materials developed by and for Native Hawaiians that were being distributed during the program.

- B. Provided participants with culturally sensitive education on how to decrease the risk of developing CVD.
- C. Provided participants educational handouts that were written at a fifth-grade level to impose little burden on readability.
- D. Provided participants with education and handouts on decreasing cardiovascular risk through lifestyle interventions.
- E. Provided participant with dietary education on the DASH diet, the Mediterranean diet, and a Low Sodium Booklet called “Feel Better With Less Salt” created by Queen’s Heart and the Native Hawaiian Health Program. Food demos were demonstrated using healthy recipes and local food options (see Appendix I).
- F. Provided participant with education on AHA Life Simple Seven and Get Moving: Easy Tips to Get Active. The WHWP was based on the American Heart Association guidelines and was part of their Life’s Simple 7 Wellness Guide. The educational classes included 7 topics. The topics included get active, controlling cholesterol, healthy diets, managing blood pressure, maintaining a healthy weight, managing blood glucose, and smoking cessation. For a detailed plan of the

educational session see Appendix F.

Objective 2. Objective two, targeted modifiable/non-modifiable risk factors.

- A. At the initial meeting, baseline data was collected. Baseline data included blood pressure, obesity risk (BMI), and a RAQ (pre-test). The lifestyle intervention education was based on the Heart of the Women WISE WOMEN study (Hayashi et al., 2010) and the American Heart Association Life's Simple Seven (AHA, 2014). The program included education on nutrition, exercise, and cardiovascular disease prevention. It also included behavioral support about barriers to lifestyle changes and problem-solving methods. The diets discussed in the educational group included evidenced-based diets to prevent cardiovascular disease. The AHA and the American College of Cardiology have adopted diets high in fruits, vegetables, and fiber, such as the Mediterranean and DASH diet to their dietary guidelines to prevent cardiovascular disease (Eckel et al., 2013).
- B. If overweight the participants were encouraged to lose at least two percent of their weight through diet and exercise. The participants were also encouraged to follow a healthy diet high in fruits, vegetables, and fiber, such as the Mediterranean and DASH diet. The participants were advised to get clearance from their healthcare provider before starting any exercise plan. The participants were educated about the AHA "Get Moving Easy Tips to Get Active" and a pamphlet will be provided on "Get Moving Easy Tips to Get Active to participants.
- C. The project director and BSN students used motivational interviewing techniques when communicating with the participants, to help them achieve their lifestyle change goals. Motivational interviewing is a person-centered method for strengthening a person's own motivation for a commitment to change. Motivational interviewing uses techniques such as asking open-ended questions, validation, reflective listening and encouraging further self-

exploration. Motivational interviewing is a person-centered method for strengthening a person's motivation for a commitment to change and has been used to predict an individuals' readiness to change. Motivational interviewing can build the necessary intrinsic motivation that is needed to make difficult changes and offers an approach for managing behavioral challenges (Finn & Jones, 2011).

- D. Incentives: Small giveaways such as t-shirts, healthy cooking recipe pamphlets, and pedometers were provided to the participants. These small giveaways were incentives to those who agreed to participate in at least 7 of our 7 Makeke Market lessons.

Specific Aim 3

Specific aim three was to evaluate program effectiveness to decrease CVD risk.

Objective 1. Objective one evaluated health awareness about CVD risk.

- A. The RAQ post-test was administered on the last day of the program. The RAQ was prepared by the project director and was written in English. It consisted of knowledge-based questions assessing the participant's ability to identify correctly five modifiable risk factors for CVD. The questionnaire consists of five multiple-choice questions and two additional evaluation questions using a 5-point Likert-scale. Each question has a choice of four answers to select from, labeled "A" through "D." Sample questions from the Risk Awareness Questionnaire (See Appendix K) include: What is the leading cause of death for women? How much exercise is recommended weekly? What is considered a "good" total cholesterol score? What is a healthy target blood pressure? How many servings of fruits/vegetables should you have daily? The questions were formulated from the AHA Life's Simple 7 Wellness guide. The questionnaire was used as a pretest and a posttest to evaluate health awareness about CVD risk.

Objective 2. Objective two evaluated the participants' perspectives on the program.

- A. At the conclusion of the program a short evaluation questionnaire was provided to the participant asking open-ended questions about how they liked the community-based program, was the environment conducive to learning, what they would like done differently, and what topics or activities they would like added to the program.
- B. On the post-test, there were two additional questions, using a 5-point Likert-scale, to evaluate the program. The two questions asked how likely are they to recommend the program and how likely are they to use the “Life’s Simple 7” strategies.

Objective 3. Evaluate program outcomes.

- A. The project director met with the stakeholders at the completion of the PIP project. At the meeting with staff and members, program results were reviewed. A presentation of the evidence-based project was presented to the administration and the American Heart Association Multicultural Division. A discussion took place about the feasibility to integrate changes to the standard of practice. Results of the project were communicated to administration and collaborating practitioners. Process and outcomes were also discussed.

Select outcome indicators. For the outcome measure, the goal was to see a two-point improvement in the participant’s Life’s Simple 7 score and to have all participants to score 80% or above on the Risk Awareness Post-test. The objectives described above are devised to meet the goal of the practice inquiry project. The overall objective was to help women identify cardiovascular disease (CVD) risk early, to improve health literacy about cardiovascular disease, and to provide culturally appropriate strategies to reduce risk.

Evaluation Plan

The source of data included the patient’s baseline biometric measurements, health prevention, and risk reduction lifestyle practices, and was incorporated into the Life’s Simple 7

tool. Pre and post program results from the Life's Simple 7 tool and the CVD Awareness Questionnaire were compared and discussed individually with the participant. Descriptive statistics and charts were used to present the results of changes in the Life Simple 7 and pre and post-test results. As for validity, the participants included lower income predominantly Asian, Native Hawaiians, and Pacific Islander women, therefore limited for generalizability.

Maintain the Practice Change

The project director met with the stakeholders at the completion of the PIP project. Program results were reviewed at the meeting with staff and members. A presentation of the evidence-based project was presented to the administration and the American Heart Association Multicultural Division. To integrate changes to the standard of practice, results of the project were communicated to the WCCHC administration and collaborating practitioners. To continue to monitor progress and outcomes, this program will be repeated biannually, and former participants will be welcomed.

Informed consent

Consent to participate was provided to the participant prior to the start of the program informing them they can opt out of any part of the program at any time and that their identity and demographic information, will be kept private. Participation in this project study was entirely voluntary.

Protection of Human Subjects and Ethical Considerations

Protection of human subjects was addressed as well as any ethical concerns during the study. Application for Scientific Review Committee (SRC) and the Institutional Review Board (IRB) approval accompanies this PIP (see Appendix O). Permission to conduct this study was obtained from University of Hawai'i at Hilo's SRC and the University of Hawai'i at Manoa

Human Subjects Committee IRB before recruitment and data collection efforts (IRB Approval Number CHS #23947).

Consent to participate was provided to the participant prior to the start of the program informing them they can opt out of any part of the program at any time and that their identity and demographic information, were kept private. All study information was kept in a locked file in a locked office. Electronic information was encrypted and saved on a password-protected computer. Only the University of Hawai‘i at Hilo advisor and project director had access to the information. Names were not connected to any information. If the study is published, the results of the study will not use names or any identifying information. Other agencies such as the University of Hawai‘i Human Studies Program who protect participants in studies had legal permission to review the records.

Chapter 4

Results

In this chapter, the results of the project are presented. The aims and objectives of the project are reintroduced and guide the order of the presentation of results. The detailed research plan with appropriate methodology facilitated reporting of data of study results while maintaining the anonymity of study participants and confidentiality of personal information. Methods used to accomplish the project will be addressed. In particular, the strategies that were used to achieve the three specific aims and their objectives will be outlined. Research methods were divided into three sections: (a) participant selection process; (b) data collection procedures, (c) and data analysis plan. The participant selection process described the study site, and recruitment and enrollment strategies. Data collection procedures included a study timeline and survey instruments. The statistical methods of the data analysis plan systematically report univariate descriptive statistics.

Participant Selection Process

Study Site

A sample of 20 participants residing on the Leeward Coast of Oahu, Hawaii was recruited from the Makeke Market. The Makeke Market is located in the town of Kapolei, on the Leeward Coast of Oahu. The market serves a population of lower socioeconomic, predominantly Asian, Native Hawaiian, and Pacific Island people. There is a large population of Native Hawaiian people who live on Hawaiian homeland property across the street from the market. A nonprobability sampling method was used to access Asian, Native Hawaiian, and Pacific Island women from the Makeke Market.

Enrollment Process

The recruitment goal was to recruit approximately 20 women who live in Hawai'i. Consent to participate was provided at the start of the program informing the participants they can opt out of any part of the program at any time and that their identity and demographic information, will be kept private. A demographic questionnaire was used at the start of the project to determine if the women met the inclusion and exclusion criteria. The eligibility criteria included women between the ages of 24-69 years, English speaking, healthy, Asian, Native Hawaiian, or Pacific Island in ethnicity, and having at least one CVD risk. The exclusion factors included women with known diabetes, previous cardiac event, or SBP > 180 mmHg, DBP >110 mmHg, total cholesterol > 400mg/dl, or pregnant.

There were 40 possible participants. Twenty subjects were not counted in the sample after informed consent was obtained. The most common reason for withdrawal from the study was due to perceived time constraints, and not being able to attend all eight weeks of the program. Another determining factor was their willingness to discuss health status, current health practices, and knowledge levels of heart disease. The remaining subjects all gave consent and voluntarily participated in the study. The participant selection process concluded with a convenience sampling of 20 Asian, Native Hawaiian, and Pacific Island women. Turning in three survey questionnaires plus a demographic information sheet ended the survey session. All participants, including those who withdrew or were ineligible, received a patient education packet containing information about heart-healthy living.

Makeke Market Pre-Program Women's Survey

Before the start of the practice inquiry project, a survey was conducted at the Makeke Market. Ninety-eight women were asked an open-ended question, "What is the leading cause of

death for women in the U.S.?” The survey results yielded 44% of the respondents stating heart disease was the leading cause of death for women (see Table 9).

Table 9

Women were asked, “What is the leading cause of death for women?”

| Leading cause of death | Raw Score | Percentage |
|------------------------|-----------|------------|
| Heart Disease | 43 | 44% |
| Breast Cancer | 26 | 27% |
| Other Causes | 17 | 17% |
| Other Cancer | 8 | 8% |
| Diabetes | 4 | 4% |
| Total Surveyed | 98 | 100% |

Univariate Descriptive Statistics

Sociodemographic Information

The demographic questionnaire was used to collect sociodemographic information and psychosocial factors of the participants enrolled in this study. The sample consisted of 20 participants who self-identified as women of Native Hawaiian, Filipino, Japanese, Korean, Chinese, Other Asian, and White. The ethnicity of the participants was similar to the ethnic background of the Leeward Coast of Oahu (see Figure 3). The sample had a higher number of Native Hawaiians (35%) and Filipinos (25%) and a lower number of Japanese (15%), Korean (10%), Chinese (5%), and Caucasians (5%).

The participant’s ages ranged from 28 to 69 years, with a mean 48.4 years. About 85% of the women were employed, on a full-time (55%) or part-time basis (30%). Income was measured by a question that described financial status, rather than a monetary range. Twenty percent reported making enough to feel comfortable, 55% reported having enough to make ends meet, and 25% did not make enough to make ends meet. All of the respondents had completed high school. Approximately one-third (30%) of the respondents had some college, and 55%

graduated from college. Table 10 presents a summary of socioeconomic status indicators.

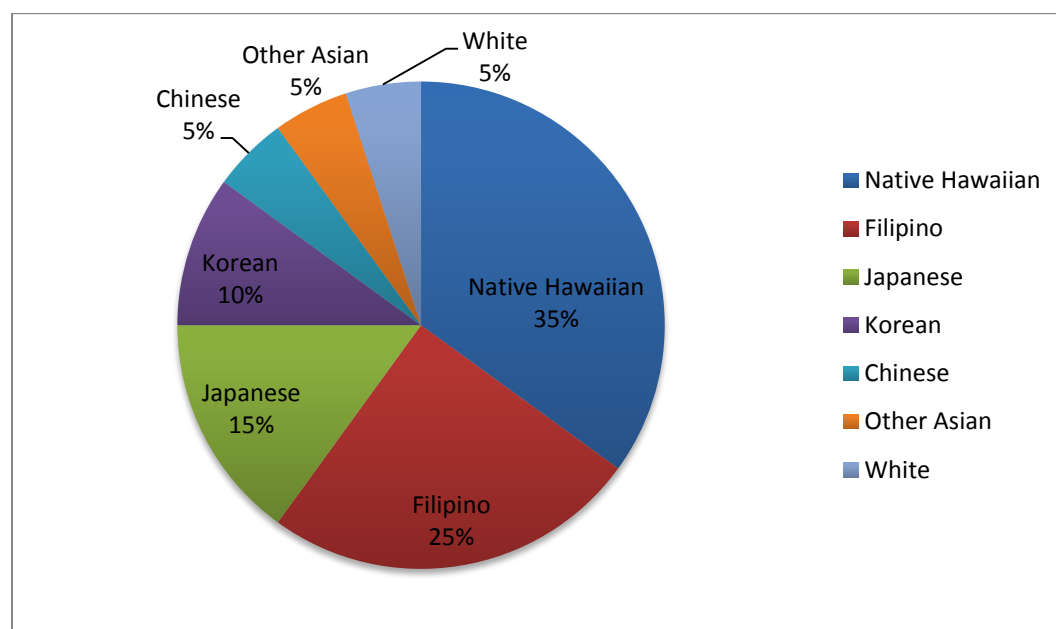


Figure 3. Ethnic distribution according to participant report.

Psychosocial Factors of Study Participants

Other significant study findings, displayed in *Table 4-3*, recognize the contribution of psychosocial factors. Half of the respondents (50%) were pre-menopausal, and 50% were post-menopausal. For a predominantly middle-aged sample of women, more than 55% of respondents considered themselves to be in fair health, while only 35% found themselves in good health, and 10% considered themselves to be excellent health. All participants were able to complete the questionnaire without reading assistance. All questionnaires were written at the 5th-grade reading level. The participant's literacy level was based on whether respondents requested reading assistance. See Table 11 for the respondents' health profiles by self-report.

Table 10

Socioeconomic Status Indicators of Study Participants

| Descriptor variable | Number | Mean | Minimum | Maximum |
|---------------------|------------------------------|-------------|----------------|---------|
| Age (years) | 20 | 48.4 | 28 | 69 |
| Descriptor Variable | Number | Percent (%) | Cumulative (%) | |
| Education Level | Less than high school | 0 | 0% | 0% |
| | High school | 3 | 15% | 15% |
| | Some college | 6 | 30% | 45% |
| | College graduate | 11 | 55% | 100% |
| Employment Status | Unemployed | 0 | 0% | 0% |
| | Employed Fulltime | 11 | 55% | 55% |
| | Employed Part-time | 6 | 30% | 85% |
| | Home Maker | 0 | 0% | 85% |
| | Retired | 3 | 15% | 100% |
| | Student | 2 | 10% | 110% |
| Income | Comfortable | 4 | 20% | 20% |
| | Enough to make ends meet | 11 | 55% | 75% |
| | Not enough to make ends meet | 5 | 25% | 100% |

Table 11

Psychosocial Factors of Study Participants

| Descriptor Variable | | Number | Percent (%) |
|-----------------------|------------------------------|--------|-------------|
| Present Health Status | Excellent | 2 | 10% |
| | Good | 7 | 35% |
| | Fair | 11 | 55% |
| | Poor | 0 | 0% |
| Menopausal Status | Pre-menopausal | 10 | 50% |
| | Post-menopausal | 10 | 50% |
| Literacy Level | No reading assistance | 20 | 100% |
| | Reading assistance requested | 0 | 0% |

Prevalence of Cardiovascular Risk for Study Participants

Personal health profiles were screened using the Wahine Heart Wellness Program Demographic Questionnaire (see Appendix D). Fifty-five percent of respondents had high blood pressure, 25% had diabetes, 30% had high cholesterol, and 10% reported smoking cigarettes, 60% identified themselves as being overweight or obese, while 85% said they had a family history of heart disease. Table 12 contains the results of the respondents' health profiles by self-report. Exclusion factors were also screened for using the demographic questionnaire on Appendix D. None of the participants reported a history of heart disease, heart attack, or stroke.

Table 12

Prevalence of Cardiovascular Risk for Study Participants

| Condition | Number | Percent |
|---------------------------------|--------|---------|
| High Blood Pressure | 11 | 55% |
| High Cholesterol | 6 | 30% |
| Diabetes | 5 | 25% |
| Do you take Insulin | 0 | 0% |
| Heart Disease | 0 | 0% |
| Heart Attack | 0 | 0% |
| Stroke | 0 | 0% |
| Family History of Heart Disease | 17 | 85% |
| Overweight/Obese | 12 | 60% |
| Cigarette Smoker | 3 | 15% |

On the screening questionnaire, the participants were asked the question, “What gets in your way from taking care of your health?” to assess barriers to self-care. The most common responses included “not enough time” (50%), “taking care of my family” (45%) and lack of motivation (50%). For the participants that answered other, some of the comments included “no exercise facility nearby,” “kids and stress prevent self-care,” “lack of programs to address senior activities,” “needs a partner to exercise with,” and “not enough money to buy healthy foods.”

Table 13 contains participant's response to the question, "*What gets in your way from taking care of your health?*"

Table 13

Obstacle to Taking Care of Health

| What gets in your way from taking care of your health? | | |
|--|----|-----|
| Not enough time | 10 | 50% |
| No motivation | 10 | 50% |
| Taking care of family members | 9 | 45% |
| Other/Comments | 6 | 30% |
| Not knowing what to do | 3 | 15% |
| Not enough money | 1 | 5% |

Analyses of Study Aims

The following section details the findings for each of the three research aims. The section is organized by each study aim with an explanation of findings.

Specific Aim 1

Assess the current level of awareness of CVD as the leading cause of death in women.

Objective 1. Identify cardiovascular risk awareness of women living on the Wai`anae Coast.

To assess awareness of CVD two questionnaires were utilized. The two questionnaires included the Risk Awareness Questionnaire (RAQ) pre-test and the Heart Disease Fact Questionnaire (HDFQ). The Risk Awareness Questionnaire (RAQ) was prepared by the PIP director and was written in English. It consisted of knowledge-based questions assessing the participant's ability to identify correctly five modifiable risk factors for CVD. The questionnaire consists of five multiple-choice questions. Each question has a choice of 4 answers to select from, labeled "A" through "D." Sample questions from the RAQ include: What is the leading

cause of death for women? How much exercise is recommended weekly? What is considered a “good” total cholesterol score? What is a healthy target blood pressure? How many servings of fruits/vegetables should you have daily? The questions were formulated from the AHA Life’s Simple 7 Wellness Guide (AHA, 2016). The questionnaire was used as a pretest and a post-test to evaluate health awareness about CVD risk. See *Appendix C* for the RAQ pretest.

The mean score on the RAQ pre-test was 2.5. The possible range of scores on this scale was 0-5. The number of correct item responses ranged from one to five items. For the pre-test, 20% of the participants had one out of five questions correct, 30% had two out of five questions correct, 35% had three questions correct, 15% had four questions correct, while none had all five questions correct. See Table 4-10 on page 72 for pre and post-test results of individual questions.

The Heart Disease Fact Questionnaire (HDFQ)

The Heart Disease Fact Questionnaire (HDFQ) was administered to the participants on the first day of the program (see Appendix E). The Heart Disease Fact Questionnaire (HDFQ) is a 21-item questionnaire that was developed to assess respondents’ knowledge of the main risk factors for the development of coronary heart disease risk factors. Individual knowledge was determined from 21 true-false questions. The possible range of scores on this scale was 0-21. The mean score on the HDFQ was 17. The minimum score was 12, and the maximum score was 21. The majority of the women (70%) answered 14 to 18 of the questions correct, two women (10%) answered 14 out of 21 questions correct, while four women (20%) answered 18 out of 21 questions correct. It was noted that 100% (20) of participants knew that smoking was a risk factor for heart disease; however, only 60% (12) of participants knew that older age was associated with an increased risk of heart disease; and only 45% (9) knew if “good” cholesterol

(HDL) is high, you are at a lower risk for heart disease. Figure 4 presents the frequency of scores on the HDFQ.

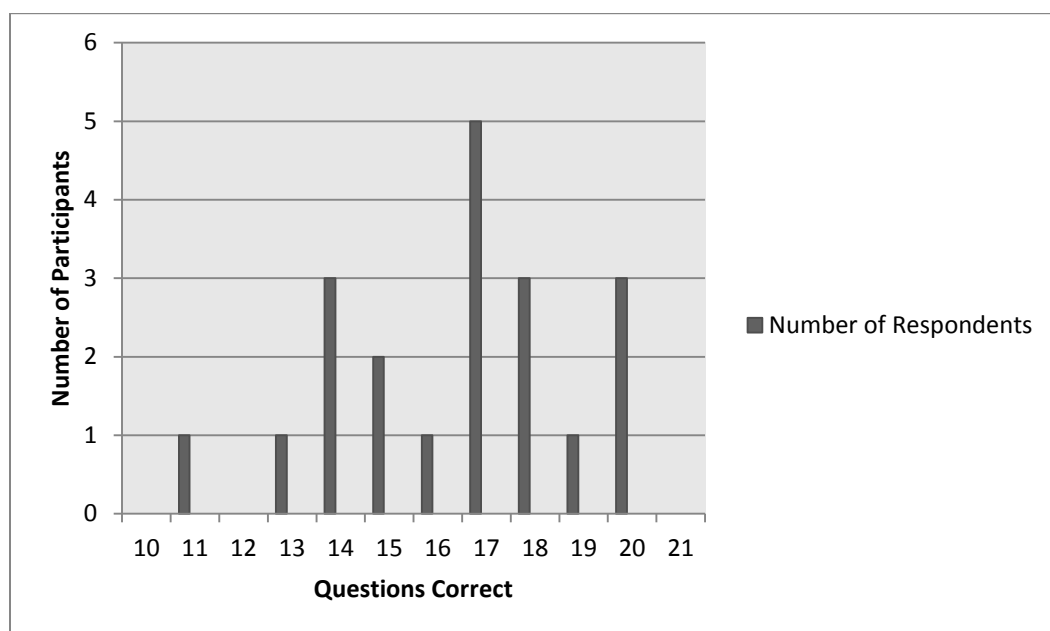


Figure 4. Heart disease fact questionnaire.

Health knowledge domains in the HDFQ ranges from general awareness of the disease process to specific details about risk factors, as well as self-management of chronic conditions and health-promoting behaviors. To differentiate between heart disease knowledge domains, Table 14 displays results for each survey question. Some domains showed high knowledge levels, such as the effects of high blood pressure, weight control, physical activity, and smoking on cardiovascular risk. Having a family history of heart disease as a risk factor also showed a high level of knowledge. Other domains showed lower levels of knowledge. Those domains lagging behind are the effects of “good” cholesterol HDL and other lipids, and the consequences of “high blood sugar” on the heart, and how “stress” affects your blood sugar, blood pressure, and cholesterol levels. Table 14 presents the responses that were answered correctly most and least often on the HDFQ.

Table 14

Heart Disease Fact Questionnaire

| <i>Heart Disease Fact Questionnaire (HDFQ)</i> | | Frequency Correct | Percent Correct |
|---|--|------------------------------|----------------------------|
| 1 | A person always knows when they have heart disease? | 18 | 90% |
| 2 | If you have a family history of heart disease, you are at risk for developing heart disease? | 20 | 100% |
| 3 | The older a person is, the greater their risk of having heart disease? | 12 | 60% |
| 4 | Is smoking a risk factor for heart disease? | 20 | 100% |
| 5 | A person who stops smoking will lower their risk of developing heart disease? | 18 | 90% |
| 6 | High blood pressure is a risk factor for developing heart disease? | 19 | 95% |
| 7 | Keeping blood pressure under control will reduce a person's risk for developing heart disease? | 20 | 100% |
| 8 | High cholesterol is a risk factor for developing heart disease? | 20 | 100% |
| 9 | If your "good" cholesterol (HDL) is high, you are at risk for heart disease. | 9 | 45% |
| 10 | If your "bad" cholesterol (LDL) is high, you are at risk for heart disease? | 20 | 100% |
| 11 | Eating fatty food does not affect blood cholesterol levels? | 16 | 80% |
| 12 | Being overweight increases a person's risk for heart disease? | 20 | 100% |
| 13 | Regular physical activity will lower a person's chance of getting heart disease? | 20 | 100% |
| 14 | Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease? | 12 | 60% |
| 15 | Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease? | 12 | 60% |
| 16 | Diabetes is a risk factor for developing heart disease? | 17 | 85% |
| 17 | High blood sugar makes the heart work harder? | 9 | 45% |
| 18 | A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control? | 17 | 85% |
| 19 | Abdominal obesity (fat belly) is a risk factor for developing heart disease? | 15 | 75% |
| 20 | Stress causes an increase in blood sugar, blood pressure, and cholesterol levels? | 8 | 40% |
| 21 | Slow, deep breathes, counting to 10 before speaking, going for a walk are examples of stress stoppers? | 20 | 100% |

Objective 2.

Identify individual CVD risk factors (modifiable/non-modifiable risk factors) in Asian, Native Hawaiian, and Pacific Island women (physical, genetic & psychosocial).

Cardiovascular disease risk factors were assessed at the start of the program and repeated at the end of program session. The instruments used to collect data included the Life's Simple 7 tool, and the Cardiovascular Risk Awareness Questionnaire. This objective included collecting baseline data including blood pressure, obesity risk (BMI), and smoking status. Baseline data was collected from each participant on the first day of the program. After assessing the participant's baseline CVD risk factors (modifiable/non-modifiable risk factors), the participant compared their results with the AHA Life's Simple 7 Assessment Tool (see Appendix G).

The Life's Simple 7 tool includes four modifiable behaviors (not smoking, healthy weight, eating healthy and being physically active) and three biometric measures (blood pressure, cholesterol and blood sugar). These seven factors are classified into three categories: ideal, intermediate and poor (see Table 8). Life's Simple 7 total scores were calculated by assigning each component points (2 points for ideal, 1 point for intermediate, or zero points for poor), then summing all 7 components to yield a total score ranging from zero (worst CVH) to 14 points (best CVH). Categories of Life's Simple 7 score were 0 to 6 (low), 7 to 8 (middle), and 9 to 14 points (high). At the start of the program, the mean score for the women on the Life's Simple 7 Metric was 8.2. The possible range of scores on this scale was 0-14. The scores ranged from four to 12 points. The minimum score was four, and the maximum score was 12. Fifty percent of the women scored in the seven to eight point range (intermediate), 15% of them scored in the four to six (low) range, while 35% scored in the nine to 14 points (high) range (see Table 15).

Table 15

Life's Simple 7 Metric Pre-Program Results

| Score | Number of Participants | Percent |
|-------|------------------------|---------|
| 4 | 1 | 5% |
| 5 | 1 | 5% |
| 6 | 1 | 5% |
| 7 | 3 | 15% |
| 8 | 7 | 35% |
| 9 | 2 | 10% |
| 10 | 2 | 10% |
| 11 | 2 | 10% |
| 12 | 1 | 5% |
| 13 | 0 | 0% |
| 14 | 0 | 0% |

Specific Aim 2 Implement a CVD Risk Program for Native Hawaiian women**Objective 1.** Target health literacy

To target health literacy, culturally sensitive evidenced-based practice teaching theories were incorporated into the weekly lessons. The classes were conducted by a project director and the Wai‘anae Health Academy (WHA) BSN students. The WHA BSN students are all female and predominantly of Native Hawaiian descent. The classes were taught in a small community base environment. Local language was incorporated into the lessons, while culturally relevant media was utilized that included local faces and information relevant to Hawaiian ethnic groups. Participants were provided with culturally sensitive education on how to decrease the risk of developing CVD. Participants were provided with educational handouts that were written at a fifth-grade level to impose little burden on readability. Participants were provided with education and handouts on decreasing cardiovascular risk through lifestyle interventions.

As for dietary education, participants were provided with handouts on the Dietary Approaches to Stop Hypertension (DASH) diet and the Mediterranean diet. Participants were also given a low sodium booklet called “Feel Better With Less Salt,” created by Queen’s Heart

and the Native Hawaiian Health Program (Queen's Heart, 2016). Food demonstrations were provided using AHA healthy recipes and incorporating local foods from the Makeke Market (see appendix I). A variety of vendors, such as Mao Farms from Wai'ananae, donated local produce to contribute to our healthy heart food demonstrations.

For exercise options, participants were provided with education on AHA Life Simple Seven and Get Moving: Easy Tips to Get Active. The Get Moving program is a walking program anyone can do, at anytime and anywhere. Information about nearby exercise classes was also provided. Handouts on "YOGA4EWA" were available to the women interested in taking a yoga class. YOGA4EWA provides a variety of yoga classes, including a baby and me class, gentle yoga, and an annual surf yoga retreat.

Objective 2. Target modifiable/non-modifiable risk factors

The participants were educated about modifiable and non-modifiable risk factors for CVD. A lifestyle intervention education classes based on the American Heart Association Life's Simple Seven Wellness Guide were provided weekly. The program included education on nutrition, exercise, hands-only CPR, and cardiovascular disease prevention. It also included behavioral support about barriers to lifestyle changes and problem-solving methods. The diets discussed in the educational group included evidenced-based diets to prevent cardiovascular disease. If overweight the participants were encouraged to lose at least two percent of their weight through diet and exercise. The participants were encouraged to follow a healthy diet high in fruits, vegetables, and fiber, such as the Mediterranean and DASH diet. The participants were advised to get clearance from their healthcare provider before starting any exercise plan. The project director and BSN students used motivational interviewing techniques when communicating with the participants, to help them achieve their lifestyle change goals.

Motivational interviewing is a person-centered method for strengthening a person's motivation for a commitment to change and has been used to predict a persons' readiness to change.

Motivational interviewing can build the necessary intrinsic motivation that is needed to make difficult changes and offers an approach for managing behavioral challenges (Finn & Jones, 2011). Small giveaways such as a pedometer, AHA T-shirts, and healthy cooking recipe pamphlets were given to regular participants during week three, 5 five, and 6]six respectively. These small giveaways were used as incentives to encourage participants to return to the weekly classes. Free weekly blood pressure screening was also offered to the community. Many market goers reported liked having their blood pressure checked on a weekly basis and incentivized them to return.

Specific Aim 3. Evaluate program effectiveness to decrease CVD risk.

Objective 1. Evaluate health awareness about CVD risk.

The RAQ post-test was used to evaluate the participant's level of awareness of CVD risk at the end of the program. The RAQ questionnaire was prepared by the project director and was written in English. The RAQ consisted of the same knowledge-based questions as in the RAQ Pre-test. The mean score on the RAQ post-test increased from 2.5 (pre-test mean) to 4.5. The possible range of scores on this scale was 0-5. The number of correct item responses ranged from three to five. For the pre-test 20% of the participants scored one out of five questions correct, 30% had two out of five questions right, 35% had three questions correct, and 15% had four questions correct, while none had all five questions correct. For the post-test, none of the participants scored one out of five questions correct, none had two out of five questions correct, 10% had three questions correct, 35% had four questions correct, while 55% had all five questions correct. *Figure 5* shows the results of the Risk Awareness Pre and Post-test.

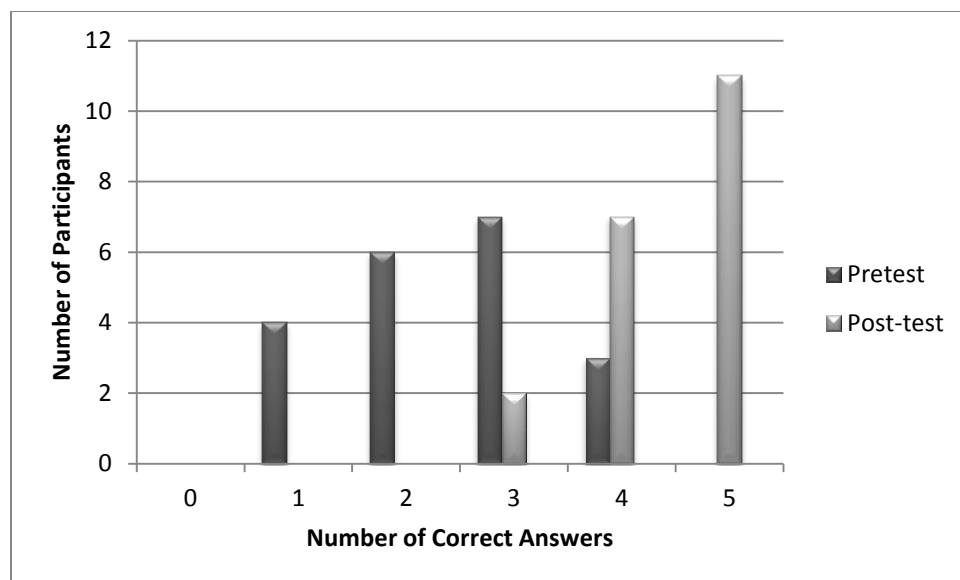


Figure 5. Risk awareness pre and post survey frequency chart.

For the RAQ pre and post-test questions, the question the majority of the participants had incorrect was the question about “*What is considered a good total cholesterol score?*” Twenty percent of the participant had it correct on the pretest (less than 170mg/dL), and 70% had it correct on the post-test. Another question the participants did poorly on was the question, “*How many servings of fruits/vegetables should you have daily?*” For the pretest, 25% answered correctly (4-5 servings/day) and 70% had it correct for the post-test. The question most participants answered correctly was the question, “*What is a healthy target blood pressure?*” Eighty-five percent of the participants had it correct on the pretest (120/80), and 90% had it correct on the post-test. See Table 16 for the RAQ Pre and Post-test individual questions and results.

Table 16

Risk Awareness Questionnaire (RAQ) Pre and Post-test

| Questions | Number Correct | Percent | Number Correct | Percent |
|-----------|----------------|---------|----------------|---------|
|-----------|----------------|---------|----------------|---------|

| | Pretest | | Post-test | |
|---|---------|-----|-----------|-----|
| What is the leading cause of death for women? | 11 | 55% | 19 | 95% |
| How much exercise is recommended weekly? | 12 | 60% | 19 | 95% |
| What is considered a “good” total cholesterol score? | 4 | 20% | 14 | 70% |
| What is a healthy target blood pressure? | 17 | 85% | 18 | 90% |
| How many servings of fruits/vegetables should you have daily? | 5 | 25% | 14 | 70% |

At the end of the program, participant’s biometrics were collected and compared to their Life’s Simple 7 pretest results. The group’s mean score for the Life’s Simple 7 Metric was 10.5, as compared to 8.2 at the beginning of the program. The possible range of scores on this scale was 0-14. The post program scores ranged from 8 to 13 points. The minimum score was 8, and the maximum score was 13. None of the women (0%) scored in the poor range (4-6 points), as compared to 15% on their pre-program score; 5% of the women scored in the intermediate range (7-8 points), as compared to 55% on their pre-program score; while 95% scored in the ideal range (9-14), as compared to 35% on their pre-program score. See Table 17 for the post program results and Figure 6 for the pre and post-program comparison.

Table 17

Life’s Simple 7 Metric Post-Program Results

| Score | Number | Percent |
|-------|--------|---------|
| 7 | 0 | 0% |
| 8 | 1 | 5% |
| 9 | 5 | 25% |
| 10 | 6 | 30% |
| 11 | 2 | 10% |
| 12 | 3 | 15% |
| 13 | 3 | 15% |
| 14 | 0 | 0% |

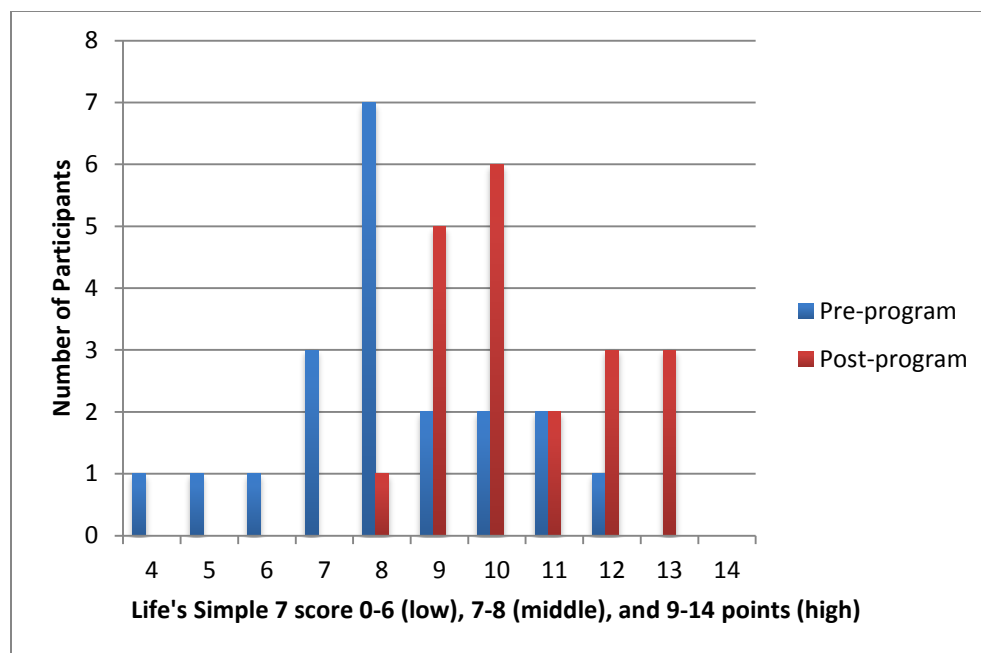


Figure 6. Life's simple 7 metric pre and post-program frequency chart.

Objective 2. Evaluate participants' perspectives on the program.

At the conclusion of the program, a short evaluation questionnaire was provided to the participant. There were seven questions, using a 5-point Likert-scale to evaluate the program. The questions evaluated three domains; the quality of the program; the applicability of the program; and the overall assessment. There were also open-ended questions asking how the participants liked the community-based program, if the environment was conducive to learning, what they would like done differently, and what topics or activities would they like added to the program (see Appendix L).

Table 18 summarizes responses from all 20 participants. The first column provides the domain to be evaluated. The following rows under the domain provided the questions pertaining to that domain. The overall range of score was 4-5, and the mean was 4.9. The last column provided the total number of points scored over the total possible points. The majority of the participants (99%) scored the program a 5 out of 5 in all domains. A score of "one" was

equivalent to “poor,” whereas the score of “five” was equivalent to “very good.” All of the women (100%) rated the quality of the program a 5 out of 5, and the applicability of the program a 5 out of 5. In the overall assessment, 100% of the participants evaluated the program as very good and would recommend the program.

Table 18

Program Evaluation

| Domain | Range | Mean | Total |
|--|--------------|-------------|-------------------|
| Domain 1. Quality of Program | | | |
| Teaching tools used | 5 | 5 | 20/20 (100%) |
| Program topics | 5 | 5 | 100/100 (100%) |
| Domain 2. Applicability of Program | | | |
| Overall benefit to you | 5 | 5 | 20/20 (100%) |
| How helpful was the information you learned during this program? | 5 | 5 | 20/20 (100%) |
| How likely are you to use the “Life’s Simple 7” strategies? | 4-5 | 4.95 | 19/20 (99%) |
| Domain 3. Overall Assessment | | | |
| Overall program evaluation | 5 | 5 | 20/20 (100%) |
| Would you recommend this program to other women? | 5 | 5 | 20/20 (100%) |

For the open-ended program evaluation questions, the most common answers for the question “*What topic did you find most useful to improve your health,*” included lessons on healthy eating, sodium reduction, controlling blood pressure, smoking cessation, Life’s Simple 7, information on how to get more active, reading food labels, and sodium count in local foods. One participant responded, “ The topic I found most useful was identifying what areas need improvement towards my health in preventing heart disease,” For the question, “*What topic did you find the least useful to improve your health,*” the majority of the participants responded “none” or all topics were useful. One respondent said the session about smoking was least useful

because she stated she didn't smoke. For the question "*What topics would you like to add to this program,*" the most common responses were "more information on easy, healthy local recipes," "more information about diet, nutrition, and healthy recipes that are simple to cook," and "more information about exercise programs." For the final question, "*Do you have any additional comments,*" the response included, "this is a great program," "great learning experience," "wished this program was here all the time," "I liked the information about watching my salt intake, and learned a lot about salt in local foods," "I learned a lot about preventing heart disease," "I attended the Makeke Market program weekly and found it helpful to have weekly follow-ups," and "I think the program is great. I love that you have this here!"

Objective 3. Evaluate program outcomes.

For the outcome measure, the goal was to have all participants score 80% or above on the Risk Awareness Post-test and to see a two-point improvement in the participant's Life's Simple 7 score. At the conclusion of the program, 90% of the participants scored an 80 or above on the Risk Awareness post-test, and 75% of the participants improved their Life's Simple 7 score by 2 points or more (see Appendix M). The objectives described above were devised to meet the goal of the practice inquiry project. The overall objective is to help women identify cardiovascular disease (CVD) risk early, to improve health literacy about cardiovascular disease, and to provide culturally appropriate strategies to reduce risk.

At the conclusion of the PIP program the project director met with stakeholders. A meeting with staff and members of the Wai'anāe Health Academy was conducted to review results and revisions. A presentation of the evidence-based project was presented to the administration of the Wai'anāe Coast Comprehensive Health Center (WCCHC). A discussion took place about the feasibility to integrate changes to their standard of practice. The results of

the project were communicated to administration and collaborating practitioners, including the Medical Director, the Director of Preventative Health, and the WHA Nursing Director. It was agreed upon to continue the Makeke Market Wahine Heart Wellness program at the Kapolei Market, where monitoring for process and outcomes will continue. Requests from the Makeke Market coordinators were made to offer additional programs at the Makeke Market Wai'anāe Mall location and the Wai'anāe Coast Comprehensive Community Health Center's Makeke Market. A presentation of the evidence-based project was also presented to the American Heart Association Multicultural Division board members. It was agreed upon to incorporate the Makeke Market Wahine Heart Wellness program into their 2016-2017 initiatives. The board members of the AHA Multicultural Initiatives and Executive Leadership Team decided upon the continued support for the WHWP and to reapply for the Atherton Foundation Grant to support the program financially.

Summary of Study Findings

In summary, study findings revealed a wide age range of participants, ranging from ages 28 to 69 years, with a mean 48.4 years. The majority of the women identified themselves as Native Hawaiian (35%) and Filipino (25%), as compared to Japanese (10%), Korean (5%), Chinese (5%) or White (5%). About 80% of the women were employed, 45% working full time and 30% working part-time, while 15% were retired. Income was measured by a question that described financial status, rather than a monetary range. Twenty percent reported making enough to feel comfortable, 55% reported having enough to make ends meet, and 25% did not make enough to make ends meet. All of the respondents had completed high school. Approximately one-third (30%) of the respondents had some college, and 55% graduated from college. Their literacy level ranked at 100%, meaning these women possessed adequate

cognitive understanding and comprehension skills to complete the questionnaires without any reading assistance.

Improvements in awareness of CVD were evaluated by comparing the Risk Awareness Questionnaire (RAQ) pre and post-test scores. The mean score on the RAQ post-test increased from 2.5 (pre-test mean) to 4.5. For the pre-test, 20% of the participants scored one out of five questioned correct, 30% had two out of five questioned correct, 30% had three questioned correct, 20% had four questions correct, while none had all five questions correct. For the post-test, none of the participants scored one out of five questioned correct, none had two out of five questioned correct, 10% had three questioned correct, 35% had 4 questions correct, while 55% had all five questions correct.

At the end of the program, the mean score for the Life's Simple 7 Metric was 10.5, as compared to 8.2 at the beginning of the program. The possible range of scores on this scale was 0-14. The post program scores ranged from eight to 13 points. The minimum score was eight, and the maximum score was 13. None of the women scored in the low range (4 to 6 points), as compared to 15% on their pre-program score; five percent of the women scored in the intermediate range (7-8 points), as compared to 55% on their pre-program score; while 95% scored in the ideal range (9-14 points), as compared to 35% on their pre-program score.

At the conclusion of the program, a short evaluation questionnaire was provided to the participant. The majority of the participants (99%) scored the program a 5 out of 5 in all domains. All of the women (100%) rated the quality of the program a 5 out of 5, and the applicability of the program a 5 out of 5. In the overall assessment, 100% of the participants evaluated the program as very good and would recommend this program to other women. For the final comments at the end of the program response included, "this is a great program," "great

learning experience,” “wished this program was here all the time,” “I liked the information about watching my salt intake, and learned a lot about salt in local foods,” “I learned a lot about preventing heart disease,” “I attended the Makeke Market program weekly and found it helpful to have weekly follow-ups,” and “I think the program is great. I love that you have this here!”

For outcome measures, the goal was to have all participants to score 80% or above on the Risk Awareness post-test and to see a two-point improvement in the participant’s Life’s Simple 7 score. At the conclusion of the program, 90% of the participants scored an 80% or above on the Risk Awareness post-test, and 80% of the participants improved their Life’s Simple 7 score by 2 points. The objectives described above were devised to meet the goal of the practice inquiry project. Recommendations will be addressed in the discussion.

Chapter 5

Discussions of Data

Existing research confirms minority women are underserved and under-researched with inadequate resources, knowledge deficits, and disadvantaged living conditions that lead to cardiovascular risk. In recent years, there has been more focus on cardiovascular disease in racial-ethnic groups and studies involving women. But significant gaps remain in the understanding of cardiometabolic health disparities among Native Hawaiians and minority women. This PIP extends what is known about cardiovascular health promotion and disease prevention in underserved women and minority populations, and adds depth by incorporating Native Hawaiian cultural considerations and practices to improve health literacy to women living on the Leeward Coast of Oahu. This chapter provides an overview of study findings based on study aims and objectives, and by comparing key finding to previous research, study limitations, implications for clinical practice, and directions for future research. In this chapter, interpretation of the results of the project are presented. The Rosswurm and Larrabee's Model for Change to Evidence-Based Practice will be reintroduced and guide the discussion of results.

Conceptual Framework: Rosswurm and Larrabee's Model for Change to Evidence-Based Practice

The model selected for the framework for the implementation of the practice inquiry project (PIP) was the Rosswurm and Larrabee's Model for Change to Evidence-Based Practice. This model was selected based on its comprehensive six-step process that guides practitioners through the entire process of changing to evidenced-based practice. This model was chosen to guide the project director of the project to implement a practice inquiry project, to differentiate it from a research project, and to incorporate best evidence as a priority component of the project.

The six steps of the Rosswurm and Larrabee's Model for Change to Evidence-Based Practice includes: Step 1, assessing the need for change; Step 2, link the problem with intervention and outcomes; Step 3, synthesize the best evidence; Step 4, Design a change in practice, Step 5, implement and evaluate the practice change; Step 6, integrate and maintain the practice change.

Step 1: Assessing the Need for Change and Identifying the Problem

In step one of the Rosswurm and Larrabee's Model for Change, the practitioner collects internal data or new research data. When a problem is noted with an aspect of practice, the practitioner can gather a team of stakeholders to participate in a discussion. Stakeholders can include a multidisciplinary team who has an interest in the practice. Group success can be enhanced by group process techniques such as brainstorming and the use of flow charts. Practitioners review the evidence by using sources such as program evaluations and customer satisfaction surveys. After examining internal data, practitioners assess the need for change in practice (Rosswurm & Larrabee, 1999).

Cardiovascular disease continues to be a growing health problem in the United States, as well as in Hawaii. The incidence of cardiovascular disease in high-income countries, such as the United States is higher in populations with lower socioeconomic status (SES) and in minority ethnic groups (Karlman, A., et al., 2010). After completing the community assessment of the Wai'anae Coast, the assessment revealed a high incidence of chronic diseases such as cardiovascular disease, diabetes, hypertension, and obesity.

The community assessment showed that Wai'anae has a low population of people under the age of 65 at 8%, as compared to the state average of 14%. The biggest problem noted from this assessment was the high rate of premature death from cardiovascular disease. This could be attributed to a high mortality rate from diseases such as cardiovascular disease, stroke, and

cancer, and high morbidity indicators such as obesity, smoking, heavy drinking, inactivity, diabetes, and high blood pressure. Of these indicators, Wai‘anae also has the highest morbidity indicators in the state (HSDH, 2013). These are all somewhat modifiable risk factors. There are considerable racial and ethnic disparities with adults in the United States in the incidence of cardiovascular disease, which includes coronary artery disease, heart failure, and stroke. Prevalence of cardiovascular disease risk factors and mortality is significantly higher in women and minority groups with lower socioeconomic status. Although overall mortality from cardiovascular disease has decreased in the United States in the past decade, mortality in women and minorities has declined at a much slower rate (Karamangla, A., et al., 2010).

Another alarming fact was the lack of knowledge that cardiovascular disease is the leading cause of death for women. Women’s awareness of cardiovascular disease as the leading cause of death in women has almost doubled since 1997, but still lags behind in minority women’s awareness (AHA, 2013; Mosca et al., 2013). Before the start of the PIP, a survey was performed at the Makeke Market. Ninety-eight women were asked an open-ended question, “What is the leading cause of death for women in the U.S.?” According to the survey performed at the Makeke Market, 44% of the respondent’s stated heart disease was the leading cause of death for women. This is below the national average of 54% of women recognizing that heart disease is their number one killer (CDC, 2016). After the implementation of the WHWP program, the post-test results of the RAQ showed the participants recognized that heart disease is the leading cause of death rose to 95%. Several studies have shown that by increasing awareness of heart disease risk cardiovascular risk decreases (Mosca et al., 2013; VanWormer et al., 2012). Studies have also shown that being aware of the risks of cardiovascular disease has been linked

to taking preventative action in women (Mosca et al., 2013; VanWormer et al., 2012; Villablanca et al., 2010).

Recommendation

The Life's Simple 7 tool used during the study included four modifiable behaviors (not smoking, healthy weight, eating healthy and being physically active) and three biometric measures (blood pressure, cholesterol and blood sugar). These seven factors are classified into three categories of cardiovascular health: ideal, intermediate and poor. The purpose of using the Life's Simple 7 tool was to summarize several modifiable factors into a single score to promote and measure individual and population-level improvements in cardiovascular health. At the end of the program, the majority of the women (95%) scored in the ideal range of the Life's Simple 7 matrix and none scored in the low range. Previous research has shown that better cardiovascular health, according to Life's Simple 7 factors, is associated with lower risk of heart disease and stroke (Thacker et al., 2014). According to the REGARDS study, looking at Life's Simple 7 scores in relationship to cognitive impairment, people with intermediate and high scores were both associated with substantially lower incidence of cognitive impairment. The REGARDS study did not observe a dose-response pattern, so individuals with intermediate and high scores had a similar incidence of cognitive impairment (Thacker et al., 2014). The results were encouraging because for population health promotion, scoring in the intermediate range in the Life's Simple 7 matrix is a more realistic target than the ideal range for many individuals (Thacker et al., 2014).

After conducting the community assessment, it was indicative that a health promotion program would be beneficial to prevent the continued premature death of the citizens of the Leeward Coast. Studies have shown by participating in a comprehensive prevention program

high-risk women can improve their Life's Simple 7 scores and awareness of cardiovascular risk, therefore reducing their risk of cardiovascular disease (Thacker et al., 2014; VanWormer et al., 2012; Villablanca et al., 2010). This project showed that the need for a community prevention program, like the Wahine Heart Wellness Program, was essential in improving the health of Native Hawaiian and other minority women living in the Leeward District.

Importance of Stakeholders

Collaborating with the principal stakeholders within the community played an essential role in the success of this project. Without making bonds with key stakeholders, this project would not have been possible. The first step in the process of creating the Wahine Heart Wellness Program was to seek advice from an experienced researcher. A meeting with the Medical Director of Center for Outcomes Research and Evaluation was planned during the conception of the program. The medical director found interest in the program and agreed to be the physician champion for the program. His first advice was to make contact with the American Heart Association and the Queens Medical Center to support the program.

The next step in the program development was to contact the Hawaii Government Relations Director at the American Heart Association Hawaii Chapter. The director of relations was interested in the program and provided many recent articles from AHA relating to community health and the prevention of heart disease. It was then recommended to contact the AHA Multicultural Division Director to discuss financial support for the program by applying for grants. The director of the multicultural division was extremely helpful in providing educational support and incentives for the program.

Another key stakeholder was the Director of Nursing at the Wai'anāe Health Academy (WHA), who was also a provider at the WCCHC for over 20 years and a long time community

member. The director of nursing showed great interest and supported the need for a program like the Wahine Heart Wellness Program. A discussion took place regarding the advantages of utilizing BSN students from the local community and nursing academy. The collaboration with the director of nursing and the WHA played a major role in the success of the program. The WHA provides education and training in the healthcare field and operates with the goal of “growing our own healers.” The WHA BSN students were utilized to help provide education for the programs participants. There were two reasons for the use of the WHA BSN students. The students provided a connection to the community and also provided a source of continuous volunteers for the sustainability of the program. The discussion to incorporate the University of Hawaii-Hilo RN to BSN student further enhanced the program. This collaboration of the WHA Director of Nursing, the project director, the RN to BSN students, and the WHA BSN students brought a synergy of experience and enthusiasm to the program. In return, the Wahine Heart Wellness Program provided the nursing students the opportunity to be health care leaders in their community.

After the discussion with the Director of the WHA, a meeting was planned with the WCCHC Medical Director, to see if a program like the Wahine Heart Wellness Program would be feasible. The WCCHC Medical Director approved the program and agreed to trial the program at the Makeke Market at Kapolei. Meanwhile, AHA assisted with the attainment of a grant from the Atherton Family Foundation to financially support the project. Another meeting with the Senior Regional Director for the American Heart Association San Francisco branch, Multicultural Initiatives came to the site to visit and gave her stamp of approval for the program.

During a search for funding for the Wahine Heart Wellness Program (WHWP), several ideas were contemplated. After careful consideration, a decision on funding the WHWP project

would be by applying for private grants. The purpose of the grant was to fund the start-up costs and annual operating expenses for WHWP. The Atherton Family Foundation supports a broad spectrum of programs and projects that benefit the people of Hawaii. See Appendix N for the budget report.

The second fund to be utilized was the Walmart's Healthier Food Initiatives Fund. In February 2012, Walmart and the Walmart Foundation announced the availability of grants totaling \$9.5 million to organizations providing education classes, cooking demonstrations, and nutritional recipes, and essential tools to living healthier lives. These grants were part of the Walmart's Healthier Food Initiatives, which included a commitment to increase funding for nutritional programs. The Walmart Foundation donates to help U.S. families access the information needed to live healthier lives. The Walmart Fund was a perfect match for the WHWP because the fund supported nutritional education programs that provide classes focused on learning to cook and shop for healthier foods on a budget. The American Heart Association's Multicultural Initiatives Division assisted with grant writing and the management of the funds for the project.

Overall, the amount of community support available to make the project a reality was impressive. The Leeward Coast has a strong network of organizations, such as the Wai'anāe Coast Comprehensive Health Center, working toward the goal of promoting health for the community and looking for new initiatives. Based on the responses from the Leeward community, the realization that there is a great need for a project like this was confirmed. Through partnering with local schools of nursing and existing community organizations (Wai'anāe Health Academy, University of Hawaii-Hilo Nursing program, AHA, Wai'anāe Coast Comprehensive Health Center, and the Queen's Medical Center), the Wahine Heart Wellness

Program achieved its goal of creating a heart wellness community program for low-income women living on the Leeward Coast of Oahu.

Recommendation

Partnering with local organizations enriched the curriculum of the education program and provided greater value to the women who joined. A similar study was conducted to evaluate a community-based 12-week healthy lifestyle program in Moloka'i, Hawaii. The program was called 'Ano Ola, which means healthy lifestyle. The program was developed to decrease the risk of chronic disease through health education, which emphasized weight loss, exercise, and risk factor reduction for Native Hawaiian people. The key elements to the success of the program included the program leader's strong commitment, positive role modeling, social and group support, and community involvement (Gellert, Aubert, & Mikami, 2010). Without the backing from the key stakeholders, the Wahine Heart Wellness Program project would not have come to fruition.

Similarly, support from a broad range of stakeholders is a good predictor that a project will be successfully executed (Kaplan & Garrett, 2005). It is important to understand not only who potential stakeholders are, but also the nature of their interest in their effort, to gain stakeholder participation and support. With that understanding, stakeholder involvement is encouraged, their concerns are addressed, and benefits to them are demonstrated. It's important to get early buy-in from key stakeholders and to involve them in the development of the program. Developing an effective program is not easy. Factors that can affect the quality of a program include needs of clientele, content and sequence of educational activities, and availability of resources and coordination among community leaders, stakeholders, and funders.

In essence, an effective program gets the right information to right people in a way that they can understand and apply it (Kaplan & Garrett, 2005).

Internal Data about Current Practice

Prior to the project, a cardiac wellness program did not exist at the Wai‘anae Coast Comprehensive Health Center (WCCHC), or in the Wai‘anae District. Currently, the WCCHC has a center for Native Hawaiian Traditional Healing Center, which promotes traditional Native Hawaiian healing and cultural education, practices, and traditions. The primary practices of the Native Hawaiian Traditional Health Center include Lomilomi (Hawaiian massage therapy), Laau Lapaau (herbal medicine), Laau Kahea (spiritual healing), and Hooponopono (conflict resolution). With the success of this project, the Wahine Heart Wellness Program could be incorporated into the WCCHC healing programs, and could complement the services the WCCHC provides.

Step 2: Link the Problem With Interventions and Outcomes

In step two of the Rosswurm and Larrabee’s Model for Change, practitioners need to define the problem and then link the problem with the classification of intervention and outcomes. Classification systems help define the concepts of science and research to organize knowledge. Using classification systems can also contribute to facilitate communication between practitioners (Rosswurm & Larrabee, 1999).

The American Heart Association’s Life’s Simple 7 Plan was selected as the intervention program. The Life’s Simple 7 Plan was selected for its ease of use, readability, and portability. The Life’s Simple 7 Plan also addressed all the morbidity indicators the Leeward community possessed, such as obesity, smoking, inactivity, diabetes, and high blood pressure. Using the best available evidence, AHA developed a prescription for health called Life’s Simple 7 (AHA,

2014). The Life's Simple 7 is a tool, which includes the seven most significant predictors of heart health and is also a pathway for achieving ideal cardiovascular health (AHA, 2016). The Life's Simple 7 tool includes four modifiable behaviors (not smoking, healthy weight, eating healthy and being physically active) and three biometric measures (blood pressure, cholesterol and blood sugar). These seven factors are classified into three categories: ideal, intermediate and poor. Individuals with ideal levels for all seven metrics were considered to have ideal cardiovascular health (AHA, 2016).

Recommendation

The Life's Simple 7 was found to be appropriate for the clientele and venue at Makeke Market. It was a program that could be taught in a short period and was simple enough to follow, to see where the areas for health improvement were needed. The assessment tool not only gives a Heart Health Score but also an opportunity to create a plan for forming new, healthy habits. The tool includes options for goal setting and tracking progress. At the end of the program, the majority of the participants improved their score by two points, meeting the outcome goals. Several studies showed that a greater achievement of American Heart Association's Life's Simple 7 in middle age is associated with a lower lifetime occurrence of heart failure and greater preservation of cardiac structure and function (Folsum et al., 2015). A high heart health score is not only associated with a lower risk of heart disease and stroke, but it also has additional benefits that include a lower risk of cancer and cognitive decline, and improvements in quality of life, depression, and productivity (Folsum et al., 2015; Thacker et al., 2014).

The focus of the present project was to evaluate and compare the results of evidenced-based studies, examining the effects of physical activity, dietary intervention, obesity and

cigarette smoking on cardiovascular health and the prevention of CVDs. Prophylactic measures must be looked at in combination because there is overwhelming evidence that the occurrence of CVDs can be reduced by approximately 80% by making lifestyle modifications (Weintraub et al., 2011). Preventive strategies against CVDs must be started at a primary health promotion level before CVD seriously affects a person health. Preventive approaches could help reduce employee absenteeism, and avoid hospital and drug costs burdening the health care systems (Weintraub et al., 2011).

Step 3: Synthesize the Best Evidence

In step three of the Rosswurm and Larrabee's Model for Change, selected interventions and outcomes are refined. A review of literature is conducted, and the best evidence is synthesized and combined with clinical judgment. Potential interventions and desired outcomes become significant variables for reviewing the literature. The steps that should be taken before starting a literature search should include identification of concepts, such as "primary prevention," and identifying criteria for including a reference. In the critical appraisal of the literature, the practitioner should evaluate strengths, weakness, gaps, and conflicts in the literature reviewed (Rosswurm & Larrabee, 1999).

Prior to the development of the program, a quantitative systematic review was performed evaluating major trends and scientific supports for effective ways to prevent coronary artery disease. The combination of these studies has shown that preventing disease is critical to living healthier and longer lives. Many articles in this review linked cardiovascular disease with a poor diet (Estruch et al., 2013; Fu et al., 2006; Maruthur et al., 2009; Natale et al., 2009; Sattelmair et al., 2011; Vanderwood et al., 2010, Yang et al., 2012). Primary preventive services can help individuals avoid disease altogether. Poor nutrition, physical inactivity, chronic stress, obesity,

and smoking can lead to unhealthy shorter lives (Benard et al., 2009; Burke et al., 2007; Estruch et al., 2013; Hayashi et al., 2010; Natale et al., 2009; Maruthur et al., 2009; Roberts & Davis, 2013). Some groups within the population are more severely affected by the determinants of obesity, which contribute to obesity health disparities (Feinstein et al., 2012; Karlamangla et al., 2010; Kawachi et al., 2012). Food deserts, which encourage unhealthy eating are also tied to obesity and chronic illness, and are usually found in low-income, minority neighborhoods (Estruch et al., 2013; Fu et al., 2006; Maruthur et al., 2009; Sattelman et al., 2011; Vanderwood et al., 2010, Yang et al., 2012).

The findings show that healthy dietary choices could help improve many chronic diseases. Many studies show that by eating diets high in fruits, vegetables, and fiber such as the Mediterranean, Vegetarian, and DASH diet, one can decrease lipids (Burke et al., 2007; Estruch et al., 2013; Yang et al., 2012), and can also improve blood pressure (Yang et al., 2012). The common themes in all three diets are all high in fruits, vegetables, and fiber, which many studies have found to prevent cardiovascular disease.

Cardiometabolic risk factor awareness and screening programs have been utilized for many years but are usually limited to the individual level, linking participants to health care. Screening programs can offer much more potential to help population health management (Mosca et al., 2013; VanWormer et al., 2012; Villablanca et al., 2010). Awareness of cardiovascular disease as the leading cause of death of women, by women, has been a goal of the American Heart Association but continues to lag in minority women's awareness (American Heart Association, 2013; Mosca et al., 2013).

Recommendation

A joint effort to increase primary prevention of cardiovascular disease through the

translation of research data on the importance of awareness, diet, and exercise to the general public and legislation to urge implementation of primary prevention strategies are essential (Hayashi et al., 2010; Roberts & Davis, 2013). For our healthcare system to be sustainable, a successful public health approach to chronic disease prevention is necessary. A method that implements long-term sustainable behaviors that encourage healthy lifestyles is essential, instead of just relying on medication to treat symptoms. It is possible to achieve primary prevention of chronic diseases in a community setting. It is important to recommend interventions that are achievable (Sattelmair et al., 2011; Vanderwood et al., 2010). Exercising thirty minutes, five times a week, and eating five fruits and vegetables a day, will bring substantial health benefits. Also, weight loss will be a beneficial side effect of these lifestyle changes. The focus should be on decreasing the risk of chronic disease, and the weight loss will follow (Hayashi et al., 2010; Roberts & Davis, 2013). Chronic illness not only impacts life expectancy but also seriously affects the quality of life.

The biggest gap in the literature is the lack of studies involving women and minorities. Historically, most studies and much knowledge are about men and heart disease. While racial and ethnic disparities in cardiovascular risk have been recognized for some time, the growing literature has not integrated socioeconomic status within certain populations with sufficient research on these populations. More research is also needed to develop evidence and effective-based methods to improve adherence to cardiovascular prevention interventions in Native Hawaiian women. This project was based on the literature and supported improving health through an educational program.

Step 4: Design a Change in Practice

In step four of the Rosswurm and Larrabee's Model for Change, after synthesizing the best evidence, the practitioner describes the process variables or sequence of care activities in the change in practice, usually in the format of protocol, procedure, or standard. Only activities addressed in the evidenced-base are included in the protocol (Rosswurm & Larrabee, 1999).

During the design of the project, three aims with objectives were identified. The aims of the project were to identifying cardiovascular disease risk early, to improve health literacy on cardiovascular disease, and to evaluate the effectiveness of the program. The outcome objectives included performing initial screenings to identify cardiovascular risk factors, identifying global CVD risk through the use of the Life's Simple 7 tool, determining cardiovascular risk awareness through the utilization of the RAQ, and providing education on how to decrease CVD risk.

The design selected for this PIP was a practice intervention design. The study evaluated the process and the outcomes associated with implementing the WHWP program in a community setting. The study had three phases. Phase one was the interpretive and planning phase, with the purpose to modify the intervention protocol for ease of use for the project director and BSN students. The project director executed the WHWP program and selected a convenience sample of 20 adult females at risk for cardiovascular disease from the Makeke Market. The participants included 20 low-income, predominantly Native Hawaiian women, living on the island of Oahu, Hawaii.

The design of the program utilized a variety of teaching modalities to reach the participants in the program. Pre and post-test were used to measure improvements in learning. Weekly educational sessions were provided to increase knowledge about CVD risk. Food demonstrations and recipe pamphlet were provided to give hands-on learning. Free weekly

blood pressure screenings were offered so participants could correlate their behaviors with blood pressure results.

Recommendation

When designing change, there is a great need for research into the effectiveness of a broader range of behavioral interventions in the community settings that have the potential to assist patients in achieving sustained control of cardiovascular disease, in particular for women and minorities (Cawley, 2011). Financial incentives can stimulate initiation of health-promoting behaviors by reducing or eliminating financial barriers, but may not produce long-term behavior change without additional interventions. New approaches, such as a culturally sensitive community health program to encourage providers to engage in innovation, need to be researched. Interventions are often described as "nudges" because they seek to preserve people's freedom to choose among options while being guided toward choices that are in their best interest (Cawley, 2011).

Research shows that people often have difficulty making wise choices, particularly in the context of their health and care since these involve uncertainty, emotion, and complex trade-offs between current and future costs and benefits (Mogler et al., 2013). Some patients may need multiple strategies to stimulate initiation of control, followed by different strategies at later stages. Treatments may need to be given in combinations and be delivered sequentially. Chronic disease care, such as the prevention of cardiovascular disease is far from routine. Changing behaviors to achieve chronic disease control can be challenging and complex, and may benefit by using a broad range of behavioral tools (Mogler et al., 2013). Although initially, these behavioral interventions could add costs to the healthcare system, they may ultimately prove cost-effective for society in the long run.

Step 5: Implement and Evaluate the Practice Change

Step five of the Rosswurm and Larrabee's Model for Change involves implementing the change in practice. It can be carried out in the form of a pilot study or intervention program. Follow-up reinforcement of the modification by the coordinator is essential. After the protocol has been implemented, patient or staff surveys are conducted. Then the data is analyzed to facilitate interpretation. The decision to adapt, adopt, or reject the change is then decided. Feasibility, benefits, and risks are also considered during step five (Rosswurm & Larrabee, 1999).

Prevalence of Cardiovascular Risk for Study Participants

Personal health profiles suggest this study sample appeared to have several risk factors for developing CVD. High blood pressure and obesity, and having a family history of heart disease were common risk factors. *Table 4-4* contains full details of the respondents' health profiles by self-report. Based on these self-reports, respondents seem to have moderate CVD risk. Pretest scores on the Risk Awareness Questionnaire (RAQ) indicated the majority of the women had a low to average level of awareness about heart disease and associated risk factors at the beginning of the program. However, the mean score on the Heart Disease Fact Questionnaire (HDFQ) was 17 out of a possible score of 21 points, suggesting the participants had an average to a higher level of knowledge about heart disease and associated risk factors. Participants were aware of the smoking and heart disease connection but did not link older age as a risk factor. Participants did not link "good" cholesterol (HDL) as a lower risk of cardiovascular disease.

Health knowledge domains in the HDFQ ranges from general awareness of the disease process to specific details about risk factors, as well as self-management of chronic conditions and health-promoting behaviors. Some domains showed high knowledge levels, such as the

effects of high blood pressure, weight control, physical activity, and smoking on cardiovascular risk. Having a family history of heart disease as a risk factor also showed a high level of knowledge. High knowledge levels demonstrate a strong cognitive understanding of those domains. Other domains showed lower levels of knowledge, resulting in poorer cognitive understanding. Those domains lagging behind are the effects of high cholesterol and other lipids, and the consequences of diabetes and stress as a risk factor for heart disease. The lack of awareness of risk factors for heart disease can lead to not living a heart healthy lifestyle, which can seriously affect health status and self-efficacy (Stuart-Shor, Berra, Kamau, & Kumanyika, 2012). Self-efficacy is the individual's perceived ability to make the desired changes such as incorporating lifestyle changes, and has been associated with positive behavioral outcomes (Stuart-Shor et al., 2012).

Health Literacy

Specific aim two involved the implementation of a CVD Risk Program for Asian, Native Hawaiian, and Pacific Island women and targeting health literacy. Improving health literacy about cardiovascular risk was one of the priority aims for the project. Before the start of the program, education of the BSN students on coaching behavioral change, and some training in motivational interviewing skills were provided. It was important for the BSN students to have the ability to assess the participant's readiness to change. Health literacy involves skill, knowledge, and the expectation that health professionals have of the public's interest in and understanding health information and services (Kutner et al., 2006).

Health information and services are often unfamiliar, complicated, and technical, even for people with higher education. People of all ages, races, and educational levels are affected by limited literacy. According to the U.S. Education Department, only 12% of the English-speaking

adult population in the U.S. has proficient literacy skills (Kutner et al., 2006). Improving health literacy, which is the degree to which an individual can obtain, process, and understand basic health information and services needed to make appropriate healthcare decision, is critical to achieving the objectives of Healthy People 2020 (U.S. Department of Health and Human Services, 2010).

Native Hawaiians and Filipino women are disproportionately affected by diseases such as CVD and are less likely to participate in healthcare screening than white women. Comments and feedback from the participants included an appreciation to have information with local considerations, such as the low-sodium handout incorporating local foods. The participants also liked having the project director and BSN nursing student available in a non-threatening atmosphere to answer questions regarding their health. Studies show when educating the public, it is important for programs to train and employ women from the community and partner with existing community networks, such as including women from the community in support groups and screening outreach (Kutner et al., 2006). In a health literacy study, Filipino participants felt the inclusion of local language and a local messenger would be helpful (Kutner et al., 2006).

Overarching themes to improve health literacy and decrease communication gaps included: the importance of family and community in health information dissemination; the key role women play in interpreting health information for others; the importance of personal experience; and the desire for local cultural relevance in health communication (Sentell et al., 2013).

To prevent or manage disease and promote health, Americans need to make sense of the health information they hear, read, and see from all of these sources. Unfortunately, no single group or organization can address health literacy issues on its own. Initiatives from all sectors

must be linked and have a mutual goal to achieve measurable improvements in health literacy across all socioeconomic levels (Kutner et al., 2006). Also culturally relevant media was also suggested that included local faces and information relating to Hawaiian ethnic groups. Several Native Hawaiian women noted that they appreciated health education materials developed by and for Native Hawaiians that were being distributed by a local program. The final critical theme was the importance of local context in materials, providers' knowledge, and screening options. Women specifically noted this preference regarding the desire for culturally, and locally, relevant materials as well as a stated desire for providers to have a strong understanding of local community context (Kutner et al., 2006).

Cultural Competent Care

One factor that is often overlooked in research is cultural competence when designing and implementing a study or program. Cultural competence is defined as being sensitive and responsive to issues related to culture, race, ethnicity, gender, age, socioeconomic status, and sexual orientation (NIH, 2015). Cultural competence indicates a translation of cultural sensitivity and awareness into credible behaviors and actions. It involves providing care within the cultural context of the patient (Brant et al., 1999).

In the WHWP, a multidisciplinary team of practitioners was formed. It was required for the group members to have a strong affinity for the Native Hawaiian culture to address the health care of the Native Hawaiian people. The members of the team also had a long history of experience working with this population. The Director of the Native Hawaiian Health Program at the Queen's Medical Center was consulted for administrative support. The purpose of this program was to evaluate the impact of a multidisciplinary and culturally sensitive effort to improve the quality of care. The purpose was based on the awareness that there is little available

data that indicate that these ethnic groups have a higher rate of risk factors for cardiovascular related conditions including hypertension, diabetes, and obesity. The aim was based on knowledge gained through a review of literature that provided evidence suggesting multidisciplinary and culturally sensitive effort can improve the quality of care of Native Hawaiian/Pacific Islanders with heart disease (Cook et al., 2010).

The project director acknowledged the health care disparities of Native Hawaiian/Pacific Islanders with heart disease had been understudied. The design of the teaching modules included developing educational material that included culturally specific disease management information for the participants, including concepts such as “pa‘akai” (salt) traditions. According to Brant et al. (1999), becoming culturally competent requires moving through a process that begins with self-awareness. Self-awareness of one’s own cultural beliefs or values, and how they influence one’s behaviors and attitudes are deemed important. The next step to becoming a culturally competent clinician focuses on acquiring cultural knowledge. In this stage, the health care provider develops a theoretical understanding of culture and its influence on health beliefs, practices, and utilization of health care (Brant et al., 1999). The concept of cultural competence enabling providers to deliver services that are respectful of and responsive to the health beliefs, practices and cultural and linguistic needs of diverse populations (NIH, 2015).

Collaboration

Key members of the target community were involved throughout all phases of the research process, ranging from initial planning of the project to the dissemination of results. For example, the Department of Native Hawaiian Health was involved in creating the low sodium educational pamphlet, which recognized the appreciation of the cultural significance of

“pa‘akai” or salt. The Medical Director of the Center for Outcomes Research and the Director of the Native Hawaiian Health Program at the Queen’s Medical Center were involved in various phases of the study. A multidisciplinary team of key stakeholder from the WHA and WCCHC collaborated with AHA Association Multicultural Division in the strategic planning phase of the project and bimonthly meeting continued throughout the duration of the project.

What was learned from this project was cultural knowledge must inform the entire study process. Merely including a particularly underserved population in the sample or targeting an underserved population does not make a study cross-cultural. Cultural competence must infuse and suffuse in the entire research process of planning, theory development, instrumentation, analysis, and interpretation to ensure cross-cultural validity and reliability (Brant et al., 1999). Improvements in health status will come through community-based integrated approaches to health and well being and initiatives that incorporate cultural knowledge and practice, and health literacy. Collaboration and partnership is a key to innovative and sustainable solutions (Healthy People 2020, 2013).

Evaluate Program Effectiveness

The purpose of the WHWP intervention program was to explore whether increased awareness of lifestyle interventions could decrease the global risk of cardiovascular disease. The mean score on the Risk Awareness Questionnaire (RAQ) improved from the start to the end of the program, suggesting the participants had a higher level of awareness about heart disease and associated risk factors at the end of the program. Studies have shown that preventing disease is critical to living healthier and longer lives. Preventive services can help individuals avoid disease altogether (Whittemore et al., 2009). Poor nutrition, physical inactivity, chronic stress, obesity, and smoking can lead to unhealthy shorter lives (Maruthur et al., 2009).

Some groups within the population are more seriously affected by the determinants of obesity, which contribute to obesity health disparities. The Leeward community assessment revealed a high incidence of obesity compared to the rest of the state. Communities that lack available healthy food options encourage unhealthy eating and are often tied to obesity and chronic illness. These conditions are usually found in low-income and minority neighborhoods (Maruthur et al., 2009). The preprogram participant demographic questionnaire showed that 60% of the participants were either overweight or obese. In the United States, obesity has been on the rise for the last twenty years and has reached epidemic proportions. In 2014, all 50 states had obesity prevalence rates of more than 20% and 19 states had rates equal to or greater than 30% (CDC, 2015b). Low-income and minority neighborhoods have a higher incidence of obesity, as noted in the Leeward Coast community assessment. The prevalence of having two or more chronic conditions increases with obesity. In the U.S., more than half of Native Hawaiian and other Pacific Islanders are either overweight (31.7%) or obese (31.0%) (Department of Native Hawaiian Health, 2014). This rate is higher than most other racial groups in Hawaii (DNHH, 2014).

Recommendation

Leading a healthy lifestyle, such as being physically active, eating well, and avoiding tobacco use, can greatly reduce a person's risk of developing chronic illness. Access to preventive measures, can decrease morbidity and mortality, reduce disabilities, and lower healthcare cost (CDC, 2013a). Results from lifestyle change trials emphasize the importance of lifestyle in the prevention of cardiovascular disease (Estruch et al., 2013). A strong correlation has been seen between the ability to prevent chronic diseases such as diabetes and cardiovascular disease, and the degree in which the participant made the recommended changes in lifestyle such

as diet and exercise (Vanderwood et al., 2010; Tonstad et al., 2009).

A community-based culturally sensitive program to help women identify heart disease risk early can help women prevent cardiovascular disease. Women need hands-on solutions that they can use that are easy, quick, affordable, and accessible to incorporate into their busy lives. Tangible solutions need to be provided, along with a place women can gather to learn about current CVD risk information, primary prevention strategies, and ways to promote a healthy lifestyle. The Wahine Heart Wellness Program is an example of a culturally sensitive program with hands-on solutions that if continued at the Makeke Market has the potential to increase risk awareness of CVD and can diminish risk of heart disease in women.

Select Outcome Indicators

For the outcome measures, the goal was to have all participants to score 80% or above on the Risk Awareness post-test and to see a two-point improvement in the participant's Life's Simple 7 score. At the conclusion of the program, 90% of the participants scored an 80 or above on the Risk Awareness post-test, and 80% of the participants improved their Life's Simple 7 score by 2 points. This project showed that an increase in awareness can improve cardiovascular disease (CVD) risk and encourage women to make behavioral changes to decrease cardiovascular risk.

Decide to Adopt, or Reject Practice Change

Community-based programs to encourage healthy lifestyle behaviors have the potential to reach large audiences and can be incorporated into multiple settings, including the community at-large, health care organizations, and worksites. Programs can be tailored in response to the population's knowledge, attitudes, perceptions and socioeconomic interventions. Prevention programs are important tools in lowering high blood pressure, maintaining those establish

population-based interventions to ensure early detection of CVD risk factors, encourage modification of lifestyle behaviors, and promote self- management of chronic conditions (HSDH, 2011).

One of the priorities of Hawaii's Plan for the Prevention of Heart Disease and Stroke Program is to enhance community resources and education to improve self-management among adults at high risk for cardiovascular disease. One of their objectives is to increase by 20 percentage points adults reporting lifestyle changes to lower their high blood pressure and high cholesterol in one or more of the following areas; changing eating habits from 70% (2009) to 90%; eating fruits and vegetables at least five times per day; cutting down on salt from 76% (2009) to 96%; and exercising from 70% (2009) to 90% (HSDH, 2011). Their strategies to accomplish this is to partner with the health care community to develop and promote a public education campaign, like the Life's Simple 7 program, for all individuals "to know their numbers" including blood pressure and cholesterol, and to collaborate to increase community capacity to deliver evidence-based programs that support prevention and management of cardiovascular disease and risk factors among high-risk populations. The WHWP has met these objectives and goals. Therefore the decision to adopt this practice change is a major step in building a statewide program to address CVD prevention in men and women living in Hawaii.

Step 6: Integrate and Maintain the Practice Change

Lastly, step six of the Rosswurm and Larrabee's Model for Change is where the results are presented to the stakeholders. Ongoing communication with the stakeholders is vital to the acceptance of change. Continuing education of the staff is important to reinforce the change. The Rosswurm and Larrabee's Model for Change provides a practical, theory-driven framework for guiding clinicians in the process of evidence-based practice (Rosswurm & Larrabee, 1999)

Communicate Recommended Change to Stakeholders

At the conclusion of the PIP project, a meeting with staff and members of the Wai‘anae Health Academy was conducted to review results and revisions. A presentation of the evidence-based project was presented to the administration of the Wai‘anae Coast Comprehensive Health Center (WCCHC). A discussion took place about the feasibility to integrate changes to their standard of practice. The results of the project were communicated to administration and collaborating practitioners, including the Medical Director, the Director of Preventative Health, and the coordinator of the nurse practitioner program. Because of the positive results and positive feedback from the participants, it was agreed upon to continue the Makeke Market Wahine Heart Wellness program at the Kapolei Market. With the continuation of the program process and outcomes can continue to be monitored. Requests from the Makeke Market coordinators were made to offer additional programs at the Makeke Market Wai‘anae Mall location and the Waianae Coast Comprehensive Community Health Center’s Makeke Market.

A presentation of the evidence-based project was also presented to the American Heart Association Multicultural Division board members. It was agreed upon to incorporate the Makeke Market Wahine Heart Wellness program into their 2016-2017 initiatives. The board members of the AHA Multicultural Initiatives and Executive Leadership Team (MCI ELT) agreed upon the continued support for the WHWP and to reapply for the Atherton Foundation grant to support the program financially. An MCI ELT members meeting was held at the end of the fiscal year to talk about the progress to date with the grant project and an update on healthier environments. Ongoing communication with the stakeholders is vital to the acceptance of change. Continuing education of the staff is also important to reinforce the change. Team

members will be updated to current evidence-based changes in the prevention of cardiovascular disease.

The next step is to collaborate with the American Heart Association and the University of Hawaii at Hilo School of Nursing to discuss a plan to offer a program like the Wahine Heart Wellness Program to rural communities on the Big Island. Rural communities like Kau and Kalapana on the Big Island can benefit from a culturally sensitive program to help high-risk women improve their knowledge and awareness of cardiovascular disease, therefore reducing their risk of cardiovascular disease and improving the health of their families. The goal of this project is to make the program portable so that it can be offered to other desperate communities on all the islands of Hawaii. The collaboration with nursing schools on the different islands and community stakeholders will play an integral role in the success of this program.

Study Limitations and Generalizability of Results

This project had some limitations. The use of a convenience sample and the small sample size of the study may have been limiting factors. A limitation that can threaten the study's validity was the selection criteria of convenience sampling. The participants were selected from a single community farmer's market. As for validity, the participants included lower income predominantly Asian, Native Hawaiians, and Pacific Islander women, therefore limited for generalizability. Patients who felt they were not at risk or, conversely, were at high risk may have self-selected not to participate. Also, the sample could have consisted of people interested in improving their health and may be different from those not interested in improving their health. These are factors that could interfere with the generalizability of a study, but in the case of this study targeting a group of women with similar ethnicities and socioeconomic status were

purposefully chosen to address their unique reasons that put them at risk for CVD. Therefore unique culturally sensitive treatment plans could be offered.

More studies about cardiovascular risk are needed involving women and minorities, in particular with Native Hawaiian women. While racial and ethnic disparities in cardiovascular risk have been recognized for some time, the growing literature has not integrated socioeconomic status within certain populations with sufficient research on these populations. More research is needed to develop evidence-based methods to improve adherence to cardiovascular prevention interventions, especially in high-risk women. Research related to the identification of nontraditional risk factors is ongoing and much needed (Roberts & Davis, 2013).

Implications for Practice

Nurse Practitioners are uniquely positioned to identify those at risk for cardiovascular disease, assess and screen for risk, educate, and treat as appropriate. Health care providers need to be particularly careful screening women for cardiovascular disease and should target interventions on the risk factors that contribute to the development of heart disease. Adequately caring for these patients can be challenging due to the shortage of primary care clinicians. Advanced practice nurses can play an important role filling this gap as they are experts in preventive health care and patient education, both of which improve chronic disease health outcomes (Lathrop & Hodnicki, 2014). Nurses should advocate for policy changes in making preventive programs accessible and for further research in education stratification. Nurses Practitioners should utilize innovative teaching strategies, such as culturally sensitive community-centered programs to empower patients to adhere to a heart-healthy lifestyle.

The Wahine Heart Wellness program primary focus was to address the causes of cardiovascular disease and prevent disease. It is possible to achieve primary prevention of

chronic diseases in a rural community setting (Mora et al., 2007; Sattelman et al., 2011; Vanderwood et al., 2010). It is important for the Wahine Heart Wellness program to recommend interventions that are achievable. Performing moderate exercise for 30 minutes, five times a week, controlling cholesterol, eating five fruits and vegetables a day, managing blood pressure, maintaining a healthy weight, managing blood glucose, and stop smoking, will bring important health benefits (Hayashi et al., 2010; Roberts & Davis, 2013).

The role of the nurse practitioner (NP) has successfully been incorporated in the cardiology community in response to alleviating gaps in cardiac care, such as heart failure management and structural heart programs. As providers, NPs excel in patient education and health promotion. In addition, many nurse practitioners are first-line providers for rural women. As the number of NPs practicing in primary care and cardiology continues to grow, NPs will play a pivotal role in both improved patient awareness and adherence to recommended clinical guidelines by using tools such as AHA's Life's Simple 7 Wellness Guide.

For our healthcare system to be sustainable, a successful public health approach to chronic disease prevention is necessary. Programs like the Wahine Heart Wellness Program are essential to improving population health. Constructs, like the use of local nursing students, gaining the trust of community stakeholders and infusing culturally competent teaching methods to improve health literacy are vital to the success of the program. It is important to continue to target high-risk communities to gain trust and eventually improving accessibility to other family members at risk. With continuity in the community, familiarity will develop and others will come so the program can expand beyond expectations.

Directions for Future Research

The overarching goal of the Practice Inquiry Project was to identify cardiovascular disease risk early, to improve health literacy about cardiovascular disease, and to use evidence-based practice to decrease CVD risk and to promote healthy lifestyle changes in Asian, Native Hawaiian, and other Pacific Island women. A joint effort to increase primary prevention of cardiovascular disease through the translation of research data on the importance of awareness, diet, and exercise to the general public and legislation to urge implementation of primary prevention strategies are essential (Hayashi et al., 2010; Roberts & Davis, 2013).

In order for our healthcare system to be sustainable, an approach that implements long-term, sustainable behaviors that encourage healthy lifestyles is essential. It is important to treat the cause and not only mask the symptoms. Previous studies document ethnic disparities in cardiovascular disease mortality and risk factors (Aluli et al., 2007). The community assessment and other studies confirm that Native Hawaiians have a higher prevalence of hypertension, diabetes, and asthma than other ethnic groups in Hawaii (Aluli et al., 2007; Kobayashi, 2013). Native Hawaiians also have a higher rate of smoking, alcohol consumption, and obesity (Aluli et al., 2007). There needs to be an increased engagement of desperate communities in the identification of health and social problems (Aluli et al., 2007). Future research is needed to refine cardiometabolic risk and cardiovascular disease in this disproportionately affected population, and to search for effective means to reduce mortality and morbidity, especially in the Native Hawaiian communities (Aluli et al., 2007; Kobayashi, 2013).

Conclusion

The American Heart Association's 2020 Impact Goal of improving the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke

by 20% emphasizes the organization's focus on prevention (AHA, 2014a). Public awareness campaigns, like the AHA's "Go Red for Women" and the Wahine Heart Wellness Program, can help to increase awareness of the incidence of heart disease among the public, especially in women. Even with the best of intentions many Americans still fumble in their effort to improve heart health. Traditional economic theories are based on the belief that given adequate information, we should all make decisions that are best for ourselves. Behavioral economics examine why observed behaviors don't always seem rational based on traditional economic models of how we should act, given adequate information or education (Rahavi, 2011).

When designating limited resources, public and private sector leaders need to consider both the health and economic value of new measures for cardiovascular disease (CVD) prevention. The ability to develop and prioritize policy measures is often impeded by significant gaps in health economics data (Ferdinand et al., 2011). The Policy Research Implementation Group of the National Forum for Heart Disease and Stroke Prevention suggest that more focus needs to be directed towards expanded CVD surveillance, advances in evaluation, and economic modeling of primary prevention (Ferdinand et al., 2011). Enhanced policy, funding, and leadership support are essential to realizing these research goals. Research needs to be targeted towards the health and economic value of CVD prevention, especially to eliminate CVD disparities.

Recent considerations of the 2010 Affordable Care Act emphasize the need for population-wide change outside the healthcare system. It is estimated that only 10 to 15% of preventable deaths in the United States are affected by medical care (Pearson, 2011). The Public Health Action Plan to Prevent Heart Disease and Stroke includes policy and environmental changes affecting the entire US population as a way to change adverse behavioral patterns. The

goal is to make a comprehensive public health strategy to prevent heart disease and stroke. The contribution to the recent advances in Preventive Cardiology and Lifestyle Medicine series focuses on behavioral interventions that facilitate population-wide cardiovascular health through public policy, environmental change, and legislation (Pearson, 2011). Healthcare needs to move beyond the walls of hospitals and clinics. An approach that implements long-term sustainable behaviors, like the Wahine Heart Wellness Program, that encourages healthy lifestyles, is essential.

The next step for the Wahine Heart Wellness Program will focus on making the program portable so it can be implemented in other rural communities, such as communities on the outer islands. The American Heart Association Multicultural Initiatives Committee is interested in collaborating with other School of Nursing Programs to implement a similar program to other desperate communities. The use of evidenced-based initiatives, having a solid conceptual framework and creating a sustainable program made a difference in the success of the program. The biggest contribution a doctorate of nursing practice provider can offer a community is to translate research into programs like the Wahine Heart Wellness Program. This study showed that collaboration and partnerships between local schools of nursing and existing community organizations, community-based integrated approaches, incorporating health literacy, and infusing cultural knowledge into practice are key to the successful, innovative, and sustainable solutions. It takes a community to build a village, and as exemplified by the phrase, *‘A‘ohe hana nui ke alu ‘ia*, no task is too big when done together by all.

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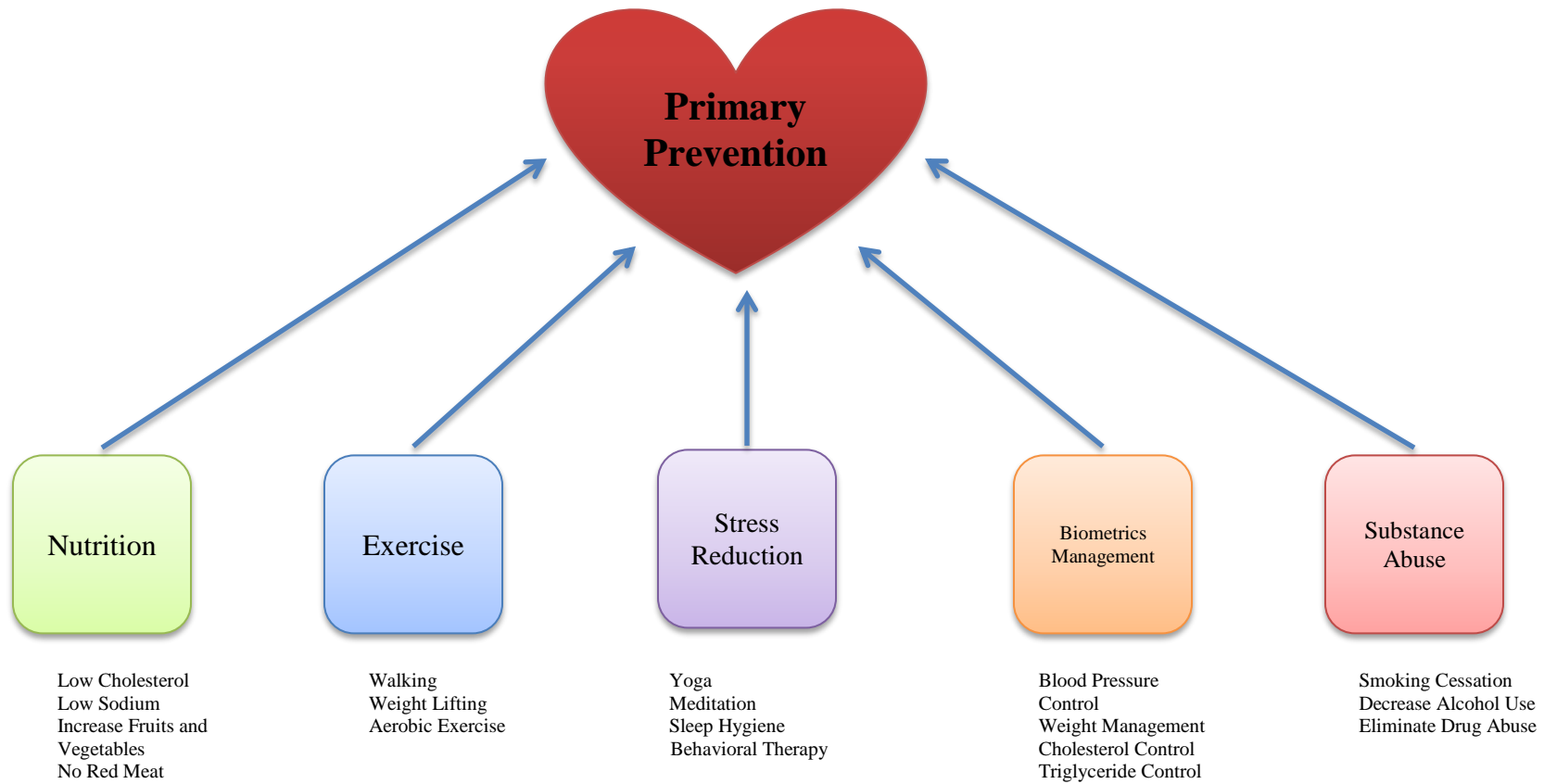
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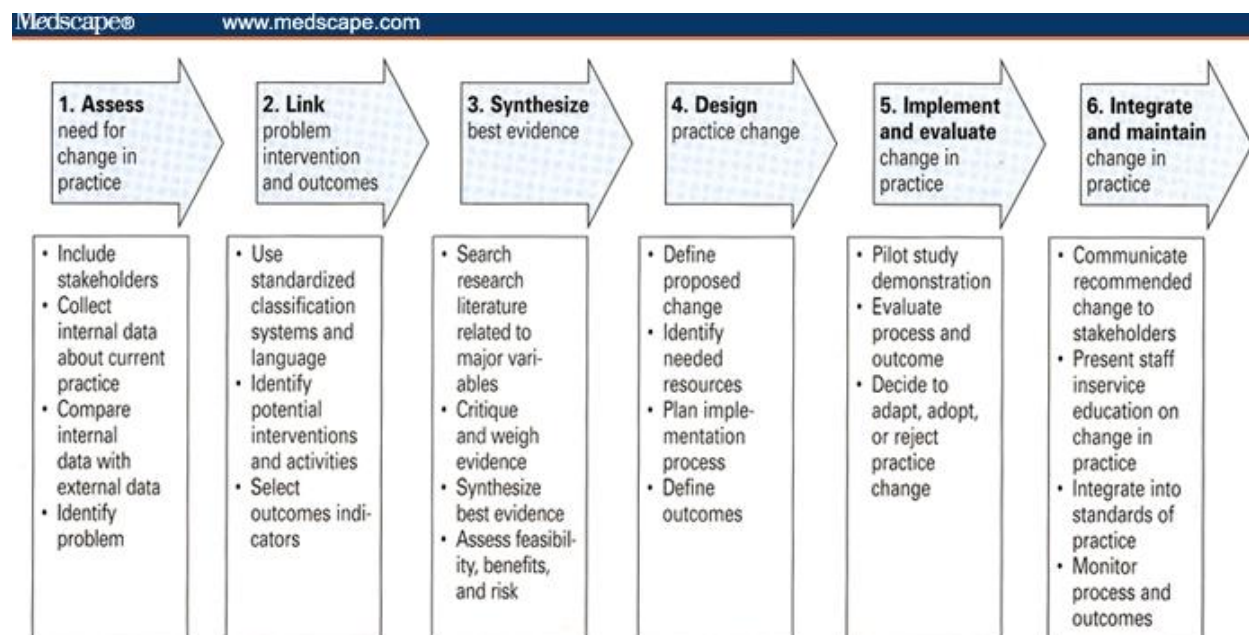
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Appendix A**Preventing Cardiovascular Disease Through Primary Prevention**

Appendix B

Rosswurm and Larrabee's Model for Change to Evidence-Based Practice



Appendix C**Wahine Heart Wellness Program
RISK AWARENESS PRE-SURVEY**

Circle One

1. What is the leading cause of death for women?
 - a. Motor Vehicle Accident
 - b. Breast Cancer
 - c. Heart Disease
 - d. Diabetes

2. How much exercise is recommended weekly?
 - a. 30 minutes, 5 times per week
 - b. 60 minutes, 4 times per week
 - c. 10 minutes, 7 times per week
 - d. 45 minutes, 5 times per week

3. What is considered a “good” total cholesterol score?
 - a. 240
 - b. 200
 - c. 160
 - d. 180

4. What is a healthy target blood pressure?
 - a. 160/90
 - b. 140/90
 - c. 120/80
 - d. 100/70

5. How many servings of fruits/vegetables should you have daily?
 - a. 0-1 servings
 - b. 4-5 servings
 - c. 6-8 servings
 - d. 2-3 servings

Appendix D**Wahine Heart Wellness Program Information Sheet**

The purpose of this survey is to learn about you. Thank you for taking the time. Please respond to the following questions about yourself:

Age: _____ **Gender:** (please circle one) Female / Male / Other

With what ethnicity do you most identify? _____

How far did you go in school?

- a. Less than high school
- b. High school graduate
- c. Some college
- d. College graduate

Do you have (circle one):

High Blood Pressure Yes / No

Diabetes Yes / No

Do you take Insulin Yes / No

High Cholesterol Yes / No

Heart Disease Yes / No

Heart Attack Yes / No

Stroke Yes / No

Family history of heart disease Yes / No

Overweight Yes / No

Menopause Yes / No

Do you smoke? Y/N

Do you consider your health to be:

- a. Excellent
- b. Good
- c. Fair
- d. Poor

What gets in your way from taking care of your health?

- a. Taking care of family members
- b. Not enough time
- c. Not enough money
- d. Not knowing what to do
- e. No motivation
- f. Other _____

Are you working?

- a. Unemployed
- b. Fulltime
- c. Part-time
- d. Retired
- e. Homemaker
- f. Student

Household Income?

- a. Comfortable
- b. Have enough to make ends meet
- c. Don't have enough to make ends meet?

Appendix E

Wahine Heart Wellness Program
Heart Disease Fact Questionnaire (HDFQ)

| | <u>TRUE</u> | <u>FALSE</u> | <u>DON'T KNOW</u> |
|--|--------------------|---------------------|------------------------------|
| 1 A person always knows when they have heart disease? | | | |
| 2 If you have a family history of heart disease, you are at risk for developing heart disease? | | | |
| 3 The older a person is, the greater their risk of having heart disease? | | | |
| 4 Smoking is a risk factor for heart disease? | | | |
| 5 A person who stops smoking will lower their risk of developing heart disease? | | | |
| 6 High blood pressure is a risk factor for developing heart disease? | | | |
| 7 Keeping blood pressure under control will reduce a person's risk for developing heart disease? | | | |
| 8 High cholesterol is a risk factor for developing heart disease? | | | |
| 9 If your "good" cholesterol (HDL) is high, you are at risk for heart disease. | | | |
| 10 If your "bad" cholesterol (LDL) is high, you are at risk for heart disease? | | | |
| 11 Eating fatty food does not affect blood cholesterol levels? | | | |
| 12 Being overweight increases a person's risk for heart disease? | | | |
| 13 Regular physical activity will lower a person's chance of getting heart disease? | | | |
| 14 Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease? | | | |
| 15 Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease? | | | |
| 16 Diabetes is a risk factor for developing heart disease? | | | |

| | | | | |
|----|--|--|--|--|
| 17 | High blood sugar makes the heart work harder? | | | |
| 18 | A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control? | | | |
| 19 | Is abdominal obesity (fat belly) a risk factor for developing heart disease? | | | |
| 20 | Does stress cause an increase in blood sugar, blood pressure, and cholesterol levels? | | | |
| 21 | Slow, deep breathes, counting to 10 before speaking, going for a walk are examples of stress stoppers? | | | |

Appendix F

Wahine Heart Wellness Program (WHWP): A Community Approach 8-Week Plan

Week 1

- Orientation
- Biometric Intake (height, weight, BMI, waist circumference, blood pressure). Done by NP student and BSN students.
- Pretest: Risk Awareness Questionnaire
- Risk factors for heart disease in women

Week 2

- AHA 7 Small Steps to BIG Change
- DNP student speaker on Women and Heart Disease
- Hands only CPR

Week 3

- Get Active Hand out
- The role of physical activity in health and wellness
- Go Red For Women Exercise Workout
- Exercising 30” a day, 5 times a week
- Maintaining a Healthy Weight
- Fruit Yogurt Parfaits Cooking Demo
- Provide Pedometer

Week 4

- Eat Better
- Speaker Nutritionist/Dietician (DASH, Mediterranean Diet)
- Discussion: strategies on shopping for healthy meals.
- Making a healthy pantry

Week 5

- Managing blood pressure
- Lowering Sodium Intake booklet (local foods)
- Reading food labels
- Cooking Demo: Fruit infused water
- Provide AHA T-Shirt

Week 6

- Managing Diabetes
- Reducing blood sugar
- Cooking demo with Heart Healthy recipes
- Provide Healthy Cooking Pamphlet

Week 7







- Cholesterol: Know your Numbers (HDL, LDL, etc.)
- Cooking strategies to lower cholesterol
- Stop smoking
- Managing Stress

Week 8

- Pau Hana
- Post test: Risk Awareness Questionnaire
- Post Life's Simple 7 with biometric measurements (height, weight, BMI)
- Provide Heart Healthy Cooking Recipes

Appendix G

Life's Simple 7 Wellness Guide

| Life's Simple 7 Health Factor or Behavior | Poor Health (Warning) | Intermediate Health (Needs Improvement) | Ideal Health (Excellent) |
|---|--|---|---|
| 1. Physical Activity Walking, swimming, running, basketball, tennis, etc. | | |  |
| Adults over 20 years of age | Little to none | Up to 149 min/wk moderate or up to 74 min/wk vigorous or both | 150 or more min/wk moderate or 75+ min/wk vigorous |
| Children 12-19 years of age | Little to none | Up to 60 minutes of moderate or vigorous activity every day | More than 60 minutes of moderate or vigorous activity every day |
| 2. Cholesterol Blood plasma levels | | |  |
| Adults over 20 years of age | 240 or more mg/dL | 200-239 mg/dL or treated to goal | Less than 170 mg/dL |
| Children 6-19 years of age | 200 or more mg/dL | 170-199 mg/dL | |
| 3. Healthy Diet Better choices | | |  |
| <u>Portions per day:</u> <ul style="list-style-type: none"> 5 cups fruit/vegetables 4oz whole wheat Less than 1,500mg of sodium <u>Portions per week:</u> <ul style="list-style-type: none"> 2-3 servings of fish Less than 450 calories from sugared drinks | 0-1 components | 2-3 components | 4-5 components |
| 4. Blood Pressure Systolic and Diastolic | | |  |
| Adults over 20 years of age | Systolic 140 or more Diastolic 90 or more mm Hg | Systolic 120-139 Diastolic 80-89 mm | Systolic less than 120 Diastolic less than 80 |
| Children 8-19 years of age | More than 95th percentile | 90th-95th percentile or Systolic 120 or more Diastolic 80 or more | Less than 90th percentile |
| 5. Healthy Weight Body Mass Index (BMI) | | |  |
| Adults over 20 years of age | 30 or more kg/m ² | 25-29.9 kg/m ² | Less than 25 kg/m ² |
| Children 2-19 years of age | 95 th or more percentile | 85th-95th percentile | Less than 85 th percentile |
| 6. Blood Glucose Blood sugar levels while fasting | | |  |
| Adults over 20 years of age | 126 mg/dL or more | 100-125 mg/dL or treated to goal | Less than 100 mg/dL |
| Children 12-19 years of age | 126 mg/dL or more | 100-125 mg/dL | Less than 100 mg/dL |
| 7. Smoking Status Smoking or use of tobacco products | | |  |
| Adults over 20 years of age | Current smoker | Quit less than 12 months ago | Never smoked or quit more than 12 months ago |
| Children (12-19) | Tried prior 30 days | | |

Appendix H

Teaching Topics

Wellness Guide

7 small steps to BIG changes.



1. Get Active

Lower blood pressure and other risk factors: visit www.startwalkingnow.org
Decrease bad cholesterol; increase "good" HDL cholesterol
Reduce feelings of stress; increases self-confidence

Walk 30 minutes a day all at once or in sessions of 10 minutes each
Take an evening walk with your family instead of watching TV
Listen to audio books and walk instead of seating with a paper book



2. Control Cholesterol

Reduce the risk of excessive fat flowing in your bloodstream
Prevent your arteries narrow or block
Reduce your risks

Eat more fruits, grains, and vegetables which contain no cholesterol
Limit saturated fats, trans fats & cholesterol from meats, butter, and dairy
Know your numbers and what they mean: www.heart.org/conditions



3. Eat Better

Keep a balanced diet for a healthier heart www.heart.org/nutritioncenter
Vegetables are high in vitamins, minerals, nutrients, and fiber
Control your risk of heart disease by lowering sugar and cholesterol

Limit foods and drinks that are high in calories but low in nutrients
Avoid processed meals; bake or broil instead of frying
Split your plate in 3 sections: veggies, lean meat, whole grains



4. Manage Blood Pressure

High blood pressure shows no symptoms; it can injure or kill you
Young adults and children can also have high blood pressure
Protect your body so tissue receives supplies of blood rich in oxygen

Don't trust how you feel. Know your numbers! normal reads 120/80mmHg
Consume a healthy diet, decrease salt intake, manage stress
Visit your doctor, medication maybe needed to control blood pressure



5. Maintain a Healthy Weight

Lower your risk of heart disease, stroke, diabetes, high blood pressure
Control your Body Mass Index get your measure at www.heart.org/bmi
Enjoy more physical activities

Burn as many calories as you eat
Monitor your progress, keep motivated, involve friends in the challenge
Set short term goals to lose weight; reward your self with fun activities



6. Reduce Blood Sugar

Insulin resistance or diabetes increase the risk of heart disease & stroke
Adults with diabetes are 2-4 times more at risk of heart disease or stroke
High blood pressure encourages growth of plaque in your arteries

Eat small portions more frequently during the day
Choose longer-to-digest carbohydrates: whole wheat, fruits, vegetables
Drink enough water; reduce refined carbohydrates: donuts and sugar



7. Stop Smoking

Smokers have higher risk of suffering from heart disease and stroke
Smoking decreases the "good" HDL cholesterol
Smoking is the single most preventable cause of death in the U.S.

Focus on the positive aspects of quitting; manage stress
Start by smoking less cigarettes; know your triggers: driving, drinking
Involve someone else for support

Learn and Live

Visit www.MyLifeCheck.org

Take the simple test to assess your health
Share the site with your friends, and family

Appendix I

Get Moving: Easy Tips to Get Active!

Take the first step. Start with walking! Why? It's easy, it works and it pays! And visit **StartWalkingNow.org** to find tools and resources to get you on the right path to a healthier lifestyle.

It's Easy

1. Walking is the simplest way to start and continue a fitness journey.
2. Walking costs nothing to get started.
3. Walking has the lowest dropout rate of any type of exercise.
4. Walking is easy and safe.

It Works

7. Studies show that for every hour of walking, life expectancy may increase by two hours.
8. Walking for as few as 30 minutes a day provides heart health benefits.
9. Walking is the single most effective form of exercise to achieve heart health.

It Pays

1. Physically active people save \$500 a year in healthcare costs.
2. Employers can save \$16 for every \$1 they spend on health and wellness.
3. Fitness programs have reduced employer healthcare costs by 20 – 55%.
4. Reducing just one health risk in the workplace increases productivity by 9%.
5. Reducing one health risk decreases absenteeism by 2%.

And walking isn't your only option. Try these tips for increasing physical activity wherever you are. You may be surprised at all your opportunities to increase your physical activity every day. Consider carrying this list with you for one day. Check off the ways you notice that you could increase your physical activity (American Heart Association [AHA], 2013c).

Appendix J

AHA Recipes Card

Banana Split Berry Yogurt Parfaits

157 Calories

75 mg Sodium

\$1.24 Per Serving

This Simple Cooking with Heart simple but indulgent-tasting banana split recipe might become your new favorite dessert.

**Ingredients****Banana Split Berry Yogurt Parfaits**

2 6 - oz. packaged, fat-free pineapple yogurt

1 cup sliced strawberries **OR**

1 cup sliced mango

1 large banana (about 1 cup sliced)

optional 1/2 tsp. coconut flakes

1/4-cup low-fat granola (4 Tbsp.)

1 Tbsp. cocoa, unsweetened

1 Tbsp. confectioner's sugar

2 tsp. hot water

**Directions****Total Time:** 0**Banana Split Berry Yogurt Parfaits**

1. To assemble parfaits, in small dish, layer about 1/3 cup yogurt, 1/4 cup sliced strawberries, 1/4 cup sliced bananas and sprinkle with 1-tablespoon granola.
2. In small cup, stir together cocoa, confectioners' sugar and hot water until smooth. Drizzle 1 teaspoon over each parfait.

Appendix K**Wahine Heart Wellness Program
RISK AWARENESS POST-SURVEY**

1. What is the leading cause of death for women?
 - a. Motor Vehicle Accident
 - b. Breast Cancer
 - c. Heart Disease
 - d. Diabetes
2. How much exercise is recommended weekly?
 - a. 30 minutes, 5 times per week
 - b. 60 minutes, 4 times per week
 - c. 10 minutes, 7 times per week
 - d. 45 minutes, 5 times per week
3. What is considered a “good” total cholesterol score?
 - a. 200
 - b. 160
 - c. 240
 - d. 180
4. What is a healthy target blood pressure?
 - a. 120/88
 - b. 100/70
 - c. 120/80
 - d. 160/90
5. How many servings of fruits/vegetables should you have daily?
 - a. 0-1 servings
 - b. 6-8 servings
 - c. 2-3 servings
 - d. 4-5 servings
6. On a scale of 1-5 how likely would you recommend this program?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
7. On a scale of 1-5 how likely are you to use the “Life’s Simple Seven” strategies?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5

Appendix L

WHWP Program Evaluation Form

Please let us know your thoughts about the program. Mahalo!

Rating Scale: 1= Poor, 2= Fair, 3= Satisfactory, 4= Good, 5= Very Good

Please circle your answers

Overall program evaluation 1 2 3 4 5

Teaching tools used 1 2 3 4 5

Program Topics 1 2 3 4 5

Overall benefit to you 1 2 3 4 5

How helpful was the information you learned during this program?

1 2 3 4 5

How likely are you to use the “Life’s Simple 7” strategies?

1. Not likely
2. Somewhat likely
3. Likely
4. Very likely
5. Most likely

What topic did you find *most useful* to improve your health? _____

What topic did you find the *least useful* to improve your health? _____

What topics would you like to add to this program?

Do you have any additional comments?

Mahalo for your participation!

Appendix M

Life's Simple 7 Participants Pre and Post-Program Results

| Age | Ethnic | Physical activity | Choles | Diet Fruits +Veg | BP | Health y Wt | Blood Glucose | Smoke | Pre Score | Post Score | Change |
|-----|-----------------|-------------------|--------|------------------|-----|-------------|---------------|-------|-----------|------------|--------|
| 28 | Native Hawaiian | 0/1 | 1/2 | 1/2 | 0/1 | 0/0 | 0/1 | 2/2 | 4 | 9 | +5 |
| 29 | Native Hawaiian | 0/1 | 2/2 | 1/2 | 1/2 | 0/0 | 2/2 | 2/2 | 8 | 11 | +3 |
| 31 | Filipino | 0/1 | 2/2 | 1/2 | 1/1 | 2/2 | 2/2 | 2/2 | 10 | 12 | +2 |
| 31 | Native Hawaiian | 2/2 | 0/0 | 0/2 | 1/1 | 0/0 | 2/2 | 2/2 | 7 | 9 | +2 |
| 35 | Native Hawaiian | 1/2 | 1/1 | 1/2 | 1/0 | 1/1 | 2/2 | 2/2 | 9 | 10 | +1 |
| 37 | Japanese | 1/2 | 1/1 | 1/2 | 2/2 | 2/2 | 2/2 | 2/2 | 11 | 13 | +2 |
| 37 | White | 1/1 | 1/1 | 1/2 | 0/1 | 2/2 | 2/2 | 0/0 | 7 | 9 | +2 |
| 39 | Native Hawaiian | 0/1 | 1/1 | 1/2 | 1/2 | 0/0 | 2/2 | 0/0 | 5 | 8 | +3 |
| 46 | Native Hawaiian | 1/2 | 1/1 | 1/1 | 0/2 | 0/0 | 2/2 | 2/2 | 7 | 10 | +3 |
| 48 | Filipino | 0/1 | 2/2 | 1/1 | 0/1 | 1/1 | 2/2 | 2/2 | 8 | 10 | +2 |
| 53 | Japanese | 2/2 | 1/1 | 2/2 | 1/2 | 2/2 | 2/2 | 2/2 | 12 | 13 | +1 |
| 55 | Filipino | 1/1 | 2/2 | 1/2 | 1/2 | 0/0 | 2/2 | 2/2 | 8 | 9 | +1 |
| 56 | Korean | 0/2 | 2/2 | 1/2 | 1/2 | 1/1 | 1/1 | 2/2 | 8 | 12 | +4 |
| 60 | Filipino | 1/2 | 2/2 | 1/2 | 1/2 | 0/1 | 2/2 | 2/2 | 9 | 13 | +4 |
| 61 | Chinese | 0/1 | 2/2 | 1/1 | 2/1 | 2/2 | 1/1 | 2/2 | 10 | 10 | 0 |
| 63 | Asian | 1/2 | 2/2 | 1/1 | 0/2 | 2/2 | 2/2 | 0/0 | 8 | 11 | +3 |
| 63 | Filipino | 1/2 | 2/2 | 1/2 | 1/1 | 0/0 | 1/1 | 2/2 | 8 | 10 | +2 |
| 64 | Korea | 1/1 | 2/2 | 1/2 | 1/1 | 2/2 | 2/2 | 2/2 | 11 | 12 | +1 |
| 64 | Japanese | 1/2 | 1/1 | 1/2 | 0/0 | 0/1 | 2/2 | 2/2 | 7 | 10 | +3 |
| 69 | Native Hawaiian | 0/1 | 1/1 | 0/1 | 1/1 | 0/0 | 2/2 | 2/2 | 6 | 8 | +2 |

Appendix N

Budget Report

| <u>Agency</u> | <u>Contract Terms</u> | <u>Contract Amount</u> |
|---------------------------------|-----------------------|------------------------|
| The Walmart Foundation | 2015-2016 | \$500.00 |
| Atherton Family Foundation Fund | 2015-2016 | \$20,000.00 |

Estimated Start Up and Annual Expenses

Start Up Expenses

Research, planning, grant writing, office supplies and printing fees: \$500.00

Subtotal = \$500.00

Annual Expenses

Costco membership to buy bottled water and healthy snacks, and food for demos = \$50.00

Expense for bottled water, ingredients for cooking demo, and snacks = 500.00

Office supply expense for flyers and recipe cards = \$500.00

Educational brochures = \$200

Space at the Makeke Market = Donated by the WCCHC

2 10 X 10 Tents for Makeke Market set-up = Donated by APRN and DNP student

Tables and chairs = Borrowed from WHA

Cooler for Food Demo = Borrowed from WHA

Cooking supplies = \$500.00

Electronic BP monitors = \$500.00

Weigh Scale to provide to patients = \$50.00

Subtotal = \$2,300

Grand Expense Total = \$ 2,800

Appendix O



UNIVERSITY
of HAWAII
MĀNOA

Office of Research Compliance
Human Studies Program

May 5, 2016

TO: Sandra Bourgette-Henry
Alice Davis, Ph.D.
Principal Investigators
UH Hilo – School of Nursing

FROM: Denise A. Lin-DeShetler, MPH, MA
Director

A handwritten signature in black ink, appearing to read "D. Lin-DeShetler".

SUBJECT: CHS #23847 - "The Wahine Heart Wellness Program"

This letter is your record of the Human Studies Program approval of this study as exempt.

On May 3, 2016, the University of Hawai'i (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45 CFR 46.101(b) (Category 2).

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at the OHRP Website www.hhs.gov/ohrp/humansubjects/guidance/belmont.html.

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via email at uhirb@hawaii.edu. (The subject line should read: Exempt Study Modification.) The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program at 956-5007 or uhirb@hawaii.edu. We wish you success in carrying out your research project.

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