The Wahine Heart Wellness Program: A Community Approach to Reducing Women's Cardiovascular Disease Risk

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Abstract

Cardiovascular disease remains the leading cause of death for women in the United States. Although Hawai'i has relatively low rates of death from heart disease and stroke, Native Hawaiians and Other Pacific Islanders (NHOPI) are plagued with disproportionately higher rates of the chronic diseases that contribute to these deaths. This study follows a Practice Inquiry Project framework and aims to improve identification of cardiovascular disease (CVD) risk and promote health literacy of the disease in Asian, Native Hawaiians and Other Pacific Islander women on O'ahu. The study addresses: (a) assessment of current level of awareness of CVD as the leading cause of death for this population; (b) implementation of a CVD risk reduction program; and (c) an evaluation of that program's effectiveness in decreasing CVD risk. The study design used a mixed methods approach. The methods included a cardiovascular awareness questionnaire (pre-test and post-test), a screening process using the American Heart Association's Life's Simple 7 matrix, and 6 educational sessions. With these research methods, the participants' knowledge levels, health perceptions, and behaviors were evaluated. A convenience sample of 20 predominantly Asian, Native Hawaiian, and Pacific Islander women were recruited. At the conclusion of the project, participants showed increased awareness of CVD and improved behaviors to reduce the risk of CVD. The project also demonstrated that collaboration and partnerships between local schools of nursing and community organizations, community-based integrated approaches, incorporating health literacy, and infusing cultural knowledge into practice are important in creating successful and innovative solutions when working with Asian, Native Hawaiian, and Other Pacific Islander women.

Keywords

cardiovascular risk, community-based prevention program, lifestyle management, Native Hawaiian women, primary prevention

Abbreviations and Acronyms

AHA MCI ELT = American Heart Association Multicultural Initiatives and Executive Leadership Team
CAD = coronary artery disease
CVD = cardiovascular disease
PIP = Practice Inquiry Project
RAQ = Risk Awareness Questionnaire
WCCHC = Wai'anae Coast Comprehensive Health Center
WHWP = Wahine Heart Wellness Program

Introduction

Heart disease is the leading cause of death of American women. According to the Centers for Disease Control and Prevention, in the United States heart disease kills more women yearly than all forms of cancer.[-] More than 1 in 3 women in the United States has heart disease. According to the American Heart Association (AHA), the number of cardiovascular disease (CVD) deaths in females has surpassed that in males in every year since 1984. In 2013, CVD was the cause of death in 289,758 women in the United States (U.S.), and women represented 51% of all deaths from CVD. The rate of heart disease triples after menopause. Sixty-four percent of women who died suddenly of CVD had no previous symptoms. Recent data has revealed 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 more embolization in their smaller, distal blood vessels, compared with men.

In Hawai'i, CVD is the leading cause of death. In 2014, 3 out of every 10 deaths in Hawai'i were caused by CVD, about 3,000 deaths each year. Although Hawai'i has relatively low rates of death from heart disease and stroke, Native Hawaiians are plagued with disproportionately higher rates of chronic conditions, such as obesity, diabetes, and high blood pressure, and higher rates of death from heart disease compared with the overall state population.[-] Previous studies have documented ethnic disparities in CVD mortality and risk factors. Studies have shown that Native Hawaiians die at younger ages than Hawai'i residents in other ethnic groups. In 2010, Native Hawaiian female life expectancy at birth was 79.4 years as compared to the state average of 85.6 years. Compared to the state average, Native Hawaiians also have higher rates of smoking (21.3% vs 14.3%), high blood pressure (35.3% vs 27.5%), and obesity (43% vs 23.4%). These statistics show that increased engagement of disparate communities needs to be a priority. Future research is needed to improve cardiometabolic risk in this disproportionately affected population, and to look for effective interventions to reduce mortality and morbidity.

Women's awareness of CVD as the leading cause of death in women has almost doubled since 1997, but minority women's awareness still lags behind that of other women. Before the start of the current project, a survey was performed at the Makeke Market on the Leeward Coast of O'ahu. 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, only 44% of the respondents 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 No. 1 killer.[1] Several studies have shown that increasing awareness of heart disease risk can lead to decreased cardiovascular risk. Other studies have shown that being aware of the risks of CVD is

linked to taking preventative action in women.[13] Following a Practice Inquiry Project framework, the purpose of this study is to identify CVD risk early, to improve health literacy about CVD, and to promote healthy lifestyle changes in Asian, Native Hawaiian, and Other Pacific Island women. Studies have 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, and then act to reduce their risk of CVD and improve the health of their families.[14-15]

Methods

Setting

The study participants were recruited from the Makeke Market on the Leeward Coast of O'ahu. Makeke Market is a farmer's and wellness market held in several locations and generally serves a population of lower socioeconomic, predominantly Native Hawaiian people. The market is supported by the Wai'anae Coast Comprehensive Health Center, and offers a gathering place where community members, local food producers, and Hawaiian cultural practitioners can meet to connect, learn, teach, entertain, and share values that lead to healthy and affordable habits. The Makeke Market accepts electronic benefit transfer (EBT) cards and gives users double the purchasing power when using the card. Women were recruited for the study at the Kapolei location, which is located across the street from a Hawaiian homeland property, and thus visited by many Native Hawaiian people. A nonprobability sampling method was used to approach Asian, Native Hawaiian, and Pacific Islander women in the Makeke Market.

Participants

The participants in this project included 20 predominantly Asian, Native Hawaiian, and Pacific Islander women, living on the Leeward Coast of O'ahu, Hawaii. The eligibility criteria included female, ages 24-69, English speaking, of lower socioeconomic status, of Asian, Native Hawaiian, or Other Pacific Islander ethnicity, and having at least 1 CVD risk factor. Another inclusion criterion was their willingness to discuss health status, current health practices, and knowledge levels of heart disease. Exclusion criteria included having diabetes, previous cardiac event, systolic blood pressure (SBP) >180 mmHg, diastolic blood pressure (DBP) >110 mmHg, total cholesterol >400mg/dl, or pregnant, all based on self-report. A questionnaire and a demographic information sheet were used to screen women for inclusion and exclusion factors prior to enrolling them in the program.

Of the 40 women who initially expressed interest, 20 consented to participate and completed the study. The most common reasons for declining to participate in the study were perceived time constraints, and not being able to attend all 8 weeks of the program. The participant selection process concluded with a convenience sample of 20 Native Hawaiian, Asian, and Other Pacific Islander women who gave informed consent and voluntarily participated in the study.

Data Collection Procedure and Timeline

The research timeline consisted of 3 phases, including Phase I (planning), II (implementation), and III (analysis). During the first week of phase II, the participants completed a cardiovascular risk awareness questionnaire (RAQ) to evaluate their knowledge about CVD risk. They completed the RAQ twice, first as pre-test to collect baseline data, and then as a post-test. In between these tests, the participants assesed their CVD risk using the AHA's Life's Simple 7 matrix, and completed the 6 educational sessions comprising the Wahine Heart Wellness Program (WHWP). During the eighth week (phase II), the participants completed an evaluation of the program. During Phase III, data were compiled and analyzed. Results were disseminated, and the feasibility of future implementation of the WHWP was determined.

Risk Awareness Questionnaire (RAQ) Pre- and Post-test

The RAQ was prepared by the project director. It consisted of knowledge-based questions aimed at assessing the participant's ability to correctly identify modifiable risk factors for CVD. The questionnaire consisted of 5 multiple-choice questions, each offering a choice of 4 answers, labeled "A" through "D." Questions on the RAQ 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 based on the AHA Life's Simple 7 Wellness Guide.

Life's Simple 7 Assessment Tool

After the participants completed the RAQ to assess their baseline knowledge of CVD risk factors, the participants assessed their CVD risk using the AHA Life's Simple 7 Assessment Tool. The assessment tool was created by AHA using the AHA guidelines and is part of the organization's Life's Simple 7 program, which identifies the 7 most significant predictors of heart health and shows users a pathway for achieving ideal cardiovascular health (Table 1). The AHA's 2020 Impact Goal of improving the cardiovascular health of all Americans by 20 percent and reducing deaths from cardiovascular disease and stroke by 20 percent emphasize the organization's focus on prevention. To complete the Life's Simple 7 assessment tool, participants answer questions about 4 behaviors (not smoking, maintaining a healthy weight, eating healthy, and being physically active) and 3 biometric measures (blood pressure, cholesterol, and blood sugar). This tool classifies their answers about each of these 7 factors into 3 categories of health: ideal, intermediate, and

poor. For example, for body mass index (BMI), adults with a BMI greater than 30 are classified as "poor," those with a BMI of 25–29.9 are classified as "intermediate," and those with a BMI of 18.5-25 are classified as "ideal" (Table 1). Individuals with ideal levels for all 7 metrics were considered to have ideal cardiovascular health. Life's Simple 7 total scores are calculated by assigning each component points (2 points for ideal, 1 point for intermediate, or 0 points for poor), then summing all 7 components to yield a total score ranging from 0 (worst) to 14 points (best). Categories of Life's Simple 7 score were poor (0-6 points), intermediate (7-8 points), and ideal (9-14 points).[17]

In the Wahine Heart Wellness Program (WHWP), participants were educated about modifiable and non-modifiable risk factors for CVD. Lifestyle intervention classes based on the AHA Life's Simple 7 Wellness Guide were provided weekly. The participants were advised to get clearance from their health care provider before starting any exercise plan. 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 classes were taught in a small community-based environment. Local language was incorporated into the lessons, while culturally-relevant media were utilized that included local faces and information relevant to Hawaiian ethnic groups.

The diets discussed in the program included evidenced-based diets to prevent cardiovascular disease. The participants were encouraged to follow a healthy diet high in fruits, vegetables, and fiber, such as the Mediterranean or DASH diet, and they were provided with handouts on these diets. Participants were also given a booklet on a low-sodium diet called "Feel Better with Less Salt," which was created by the Department of Native Hawaiian Health at the Queen's Health Systems. This booklet also included culturally-specific disease management information, including concepts such as "*pa'akai"*, salt traditions in Native Hawaiian cultures. Meal preparation demonstrations were provided using AHA healthy recipes and incorporating local foods from the Makeke Market. A variety of local vendors, such as Mao Farms from Wai'anae, donated produce for the demonstrations.

The project director and nursing 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 intrinsic motivation that is needed to make difficult changes and offers an approach for managing behavioral challenges. Small giveaways such as a pedometer, AHA T-shirts, and healthy cooking recipe pamphlets were given to participants during weeks 3, 5, and 6 respectively. These giveaways were used as incentives to encourage participants to return to the weekly classes.

At the conclusion of the WHWP, a short evaluation questionnaire was provided to the participants. There were 7 questions, each with a 5-point Likert-scale to evaluate the program. The questions evaluated 3 domains: the quality of the program, the applicability of the program, and an 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.

Statistical Analyses

Study participants' characteristics were summarized using descriptive statistics. The pre- and post-program RAQ test results were compared by evaluating how many participants answered correctly for each item and overall mean score change. The participants' pre and post Life's Simple 7 scores were examined both in continuous scale and categorical scale (poor; intermediate; and ideal). Paired t-test and McNemar's test were performed to determine whether the participants' RAQ test scores and Life's Simple 7 scores changed significantly before and after the program. A *P*-value of <.05 was considered significant for both paired t-test and McNemar's test. All analyses were conducted in R version 3.6.0 (RCore Team: Vienna, Austria).

Table 1. 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	0-1 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/m2	BMI of 25-29.9 kg/m2	BMI < 25 kg/m2
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 ago

Collaboration

The key stakeholders who played a supportive role in the project included a Family Nurse Practitioner and Director of Nursing Education at the Waiʻanae Coast Comprehensive Health Center, the Multicultural Initiatives and Quality & Systems Improvement Regional Director for the AHA Hawaiʻi Division, the Director of Native Hawaiian Health Program at The Queen's Medical Center, and the Medical Director of the Center for Outcomes Research and Evaluation at The Queen's Medical Center. The key stake holders provided support and feedback for the planning and implementation of the project. The program also partnered with the AHA Hawaiʻi Division, The Queen's Medical Center, and the Waiʻanae Health Academy. The aim of this partnering with local organizations was to enrich the curriculum of the education program while providing greater value to the women who joined. The Makeke Market provided the venue for implementation of the program.

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) was obtained. Permission to conduct this study was obtained at the University of Hawaiʻi at Mānoa Human Subjects Committee IRB before recruitment and data collection efforts (IRB Approval Number CHS #23947).

Results

Study participants ranged in age from 28 to 69 years, with a mean age of 48.5 years. More than one-third of the women identified themselves as Native Hawaiian (35%), with the other women stating their ethnicity as Filipino (25%), Japanese (15%), Korean (10%), Chinese (5%), other Asian (5%) or white (5%). Eighty-five percent of the women were employed (55% worked full time and 30% worked part-time), while 15% were retired. Income was assessed by a question that asked the women to describe their general financial status, rather than give 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, 30% had completed some college, and 55% had graduated from college (Table 2). All participants reported that they were literate and had adequate comprehension skills to complete the questionnaires without assistance.

The participants showed significantly improved awareness of CVD in the 4 items in RAQ except for the question "What is a healthy target blood pressure?", for which 85% of the women already had correct answer from the beginning. The mean score on the RAQ post-test significantly increased from 2.4 to 4.5 (Table 3).

Table 2. Socioeconomic Status Indicators of Study Participants (N=20)

Variable	Mean ± SD or n (%)
Age (years)	48.5 ± 13.9
Ethnicity	
Native Hawaiian	7 (35%)
Filipino	5 (25%)
Japanese	3 (15%)
Korean	2 (10%)
Chinese	1 (5%)
Other Asian	1 (5%)
White	1 (5%)
Education Level	
Less than high school	0 (0%)
High school	3 (15%)
Some college	6 (30%)
College graduate or higher	11 (55%)
Employment Status	
Unemployed	0 (0%)
Employed Full-time	11 (55%)
Employed Part-time	6 (30%)
Home maker	0 (0%)
Retired	3 (15%)
Income	
Comfortable	4 (20%)
Enough to make ends meet	11 (55%)
Not enough to make ends meet	5 (25%)

Table 3. Risk Awareness Questionnaire (RAQ) Pre- and Post-test (N=20)

Questions	Number Correct Pretest	Percent	Number Correct Post-test	Percent	*P*-value[a]
What is the leading cause of death for women?	**11**	**55%**	**19**	**95%**	**.0077**
How much exercise is recommended weekly?	**12**	**60%**	**19**	**95%**	**.0133**
What is considered a "good" total cholesterol score?	**4**	**20%**	**14**	**70%**	**.0026**
What is a healthy target blood pressure?	**17**	**85%**	**18**	**90%**	**.9999**
How many servings of fruits/vegetables should you have daily?	**5**	**25%**	**14**	**70%**	**.0015**
Total Score (Mean ± SD)	**2.40 ± 1.05**		**4.45 ± 0.69**		**<.0001**

[a] *P*-values are based on the McNemar's test for each questionnaire item, and the paired t-test for total score.

The participants showed significant improvements in their Life's 7 Simple scores. At the end of the program, the mean score for the Life's Simple 7 Metric was 10.5 with the standard deviation of 1.6, as compared to the average of 8.2 with the standard deviation of 2.0 at the beginning of the program ($P<.0001$). The post-program scores ranged from 8 to 13 points. None of the women scored in the poor range (0 to 6 points) after completing the program, as compared to 3 participants (15%) on their pre-program score; 2 (10%) of the women scored in the intermediate range (7-8 points) on their post-program score, as compared to 10 (50%) on their pre-program score; while 18 (90%) women scored in the ideal range (9-14 points) after completeing the program, as compared to 7 (35%) on their pre-program score ($P=.0046$) (Figure 1).

At the conclusion of the program, a short evaluation questionnaire was provided to the participants. The majority of the participants (95%) 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 responses included, "I liked the information about watching my salt intake, and learned a lot about salt in local foods," "I learned how I can prevent heart disease," and "I attended the Makeke Market program weekly and found it helpful to have weekly follow-ups."

For outcome measures, the goal was to have all participants score 80% or above on the RAQ post-test and to see a 2-point improvement in the participants' Life's Simple 7 scores. At the conclusion of the program, 90% of the participants scored an 80% or above on the RAQ post-test, and 75% of the participants improved their Life's Simple 7 score by 2 points.

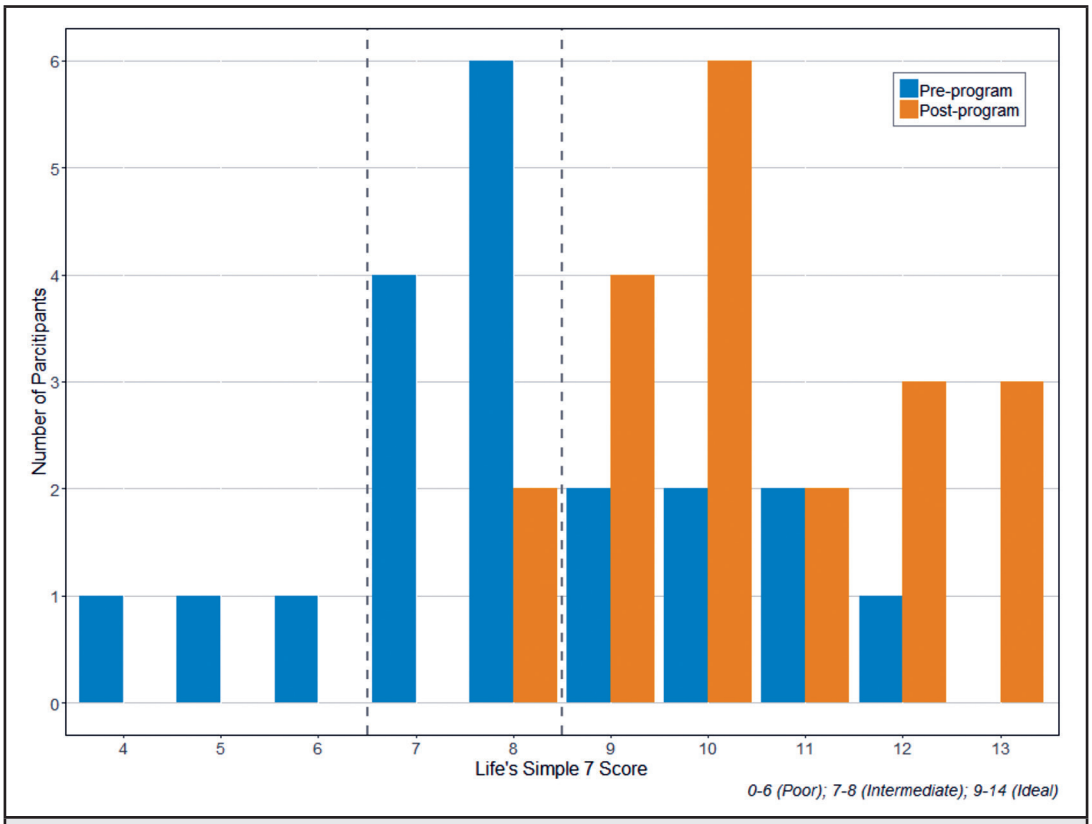

Figure 1. Life's Simple 7 Metric Pre- and Post-program Frequency Chart.

Discussion

Research confirms minority women are underserved and underresearched with inadequate resources, limited health literacy, and disadvantaged living conditions that lead to cardiovascular risk. In recent years, there has been more focus on studying cardiovascular disease in diverse racial-ethnic groups and in women. However, significant gaps remain in the understanding of cardiometabolic health disparities among Native Hawaiians and minority women. This practice inquiry project (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, such as the concepts such as *pa'akai*, salt traditions, and practices to improve health literacy among women living on the Leeward Coast of O'ahu.

Women's awareness of cardiovascular disease as the leading cause of death in women has almost doubled since 1997, but minority women's awareness still lags behind that of all women.[-] After the implementation of the WHWP, the post-test results of the RAQ showed that 95% of participants recognized that heart disease is the leading cause of death. Several studies have shown that by increasing awareness of heart disease risk, cardiovascular risk decreases.[18,25] Studies have also shown that being aware of the risks of cardiovascular disease has been linked to taking preventative action in women.[14,15,25] Public awareness campaigns, like the AHA's "Go Red for Women" and the WHWP, can help to increase awareness of the incidence of heart disease among women.

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 in the current study (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.[17] Moreover, the REGARDS study found a relationship between Life's Simple 7 scores and cognitive impairment: People with intermediate and high scores had a lower incidence of cognitive impairment. The REGARDS study did not observe a dose-response pattern; individuals with intermediate and high scores had a similar incidence of cognitive impairment.[18] This result was encouraging for population health promotion, because scoring in the intermediate range in the Life's Simple 7 matrix is a more realistic target than scoring in the ideal range for many individuals.[17]

At the conclusion of the project, a meeting with staff and members of the Wai'anae Health Academy/Wai'anae Coast Comprehensive Health Center (WCCHC) was conducted to review results. A discussion took place about the feasibility of integrating changes to their standard of practice. Because of the positive results and feedback from the participants, it was agreed upon to continue the WHWP at the Kapolei location. With the continuation of the program, its process and outcomes can continue to be monitored. The Makeke Market coordinators requested that the program also be offered at 2 other locations, Wai'anae Mall and the WCCHC.

A presentation of the evidence-based project was also given to the AHA Multicultural Initiatives and Executive Leadership Team (AHA MCI ELT) board members, and the board agreed to incorporate the WHWP into future initiatives and to continue support for the WHWP. An AHA MCI ELT meeting was held at the end of the fiscal year to discuss the progress to date and provide an update on healthier environments. Ongoing communication with the stakeholders is vital to the acceptance of change.

When designating limited resources to community health programs, public and private sector leaders need to consider both the health of the community and the economic value of a program that is aimed at CVD prevention. The ability to develop and prioritize policy measures is often impeded by significant gaps in health economics data. The Policy Research Implementation Group of the National Forum for Heart Disease and Stroke Prevention suggests that more focus needs to be directed towards expanded CVD surveillance, advances in evaluation, and economic modeling of primary prevention.[24] Enhanced policy, funding, and leadership support are essential to realizing these research goals. Research needs to be targeted towards the health impact and economic value of CVD prevention, to eliminate CVD disparities.

Recent considerations of the 2010 Affordable Care Act emphasize the need for population-wide change outside the health care system. It is estimated that only 10% to 15% of preventable deaths in the United States are affected by medical care. The CDC's Public Health Action Plan to Prevent Heart Disease and Stroke includes policy and environmental changes affecting the entire U.S. population as a way to change unhealthy 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.[26] Health care needs to move beyond the walls of hospitals and clinics. Community-based programs like the WHWP, which encourages healthy lifestyles, are essential for underserved and understudied populations such as the study population.

The next step is to collaborate with the AHA and the University of Hawai'i at Hilo School of Nursing to discuss a plan to offer a program like the WHWP to communities on Hawai'i Island. Rural communities including Ka'u and Kalapana may benefit from a culturally-sensitive program to help high-risk women

improve their knowledge and awareness of cardiovascular disease, which may help them to engage in behaviors that reduce their risk of cardiovascular disease as well as improve the health of their families.

Currently, the WHWP continues in partnership with the Hawai‘i Pacific University, the University of Hawai‘i Hilo, and the Wai‘anae Health Academy. The nursing students volunteer at the Makeke Market, a Kupuna Program in Wai‘anae, and at the Wai‘anae High School Health Academy, educating the community about lifestyle choices to prevent CVD. The goal of this project is to make the program portable so that it can be offered to communities on all the islands of Hawai‘i. The collaboration with nursing schools and community stakeholders will play an integral role in the success of this program.

Studies about cardiovascular risk are needed involving women and minorities, in particular with Native Hawaiian women. Although racial and ethnic disparities in cardiovascular risk have been recognized, the growing literature has not sufficiently integrated data on the socioeconomic status of these populations into CVD research. More research is also 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.

Study Limitations and Generalizability

The use of a convenience sample and the small sample size of the study may have been limiting factors. The participants were selected from a single community farmer's market. The participants included lower income predominantly Asian, Native Hawaiian, and Pacific Islander women, therefore the study is limited in its generalizability. Women who felt they were not at risk for CVD 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. This study targeted a group of women of certain ethnicities and socioeconomic status in order to address the specific factors that put them at risk for CVD and to offer culturally-sensitive interventions.

Conclusion

Women's awareness of CVD as the leading cause of death in women has improved, but minority women's awareness remains suboptimal.[21] This study showed that educational sessions to increase awareness of CVD can encourage women to make behavioral changes to decrease cardiovascular risk. Women need hands-on solutions that are easy, quick, affordable, and accessible to incorporate into their busy lives. Tangible solutions need to be provided, along with a place that women can gather to learn about their CVD risk, primary prevention strategies, and ways to promote a healthy lifestyle. Additional data are needed in diverse ethnic/socioeconomic population of women. Future CVD and prevention studies for women should focus on incorporating culturally-relevant interventions to reduce mortality and morbidity.

The next step for the WHWP is to focus on making the program portable so it can be implemented in other communities, such as rural communities on islands other than O‘ahu. The AHA MCI Committee is interested in collaborating with other School of Nursing programs to implement a similar program to other desperate communities. The use of evidence-based initiatives, having a solid conceptual framework, and the goal of creating a sustainable program increased the success of the program. One contribution a Doctor of Nursing Practice provider can offer a community is to translate research findings into programs such as the WHWP. This study showed that collaboration between local schools of nursing and community organizations, as well as integrating community-based approaches, health literacy, and cultural knowledge into models of practice are key to successful, innovative, and sustainable solutions. It takes a community to build a village, and as exemplified by the Hawaiian language phrase, *‘A‘ohe hana nui ke alu ‘ia*, which means, "No task is too big when done together by all."

Conflict of Interest

None of the authors identify a conflict of interest.

Disclosure

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