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# ADDRESSING FILIPINO AMERICAN CARDIOVASCULAR HEALTH DISPARITIES IN HAWAIʻI

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAIʻI AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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## ABSTRACT

Cardiovascular Disease (CVD) is the leading cause of death in the United States (U.S.). Among Filipino Americans (FAs), CVD is the leading cause of death among males and second among females. Research indicates a high prevalence of hypertension and behavioral risk factors associated with CVD. Culturally relevant health interventions targeted for FAs can increase their participation in healthy behaviors, leading to an improvement in their overall health. The purpose of this dissertation was to advise the development of culturally targeted health interventions. Shedding light on FA CVD-related disparities allows for effective programming in Hawai'i's Federally Qualified Health Centers (FQHCs).

This dissertation was comprised of three studies. Study 1 analyzed four years of Hawai'i's Behavioral Risk Factor Surveillance System (BRFSS) data (2011 to 2014). Findings confirmed that FAs in Hawai'i were less physically active, smoked more, and were more obese than other Asian subgroups. Contrary to the national literature, FAs in Hawai'i reported the lowest CVD prevalence of the five ethnic groups in the sample, after controlling for sociodemographic and health care access variables.

Study 2 was a systematic literature review of CVD-related programs tailored to FAs. Few articles were found, confirming need for more published research on improving CVD health of FAs. Described interventions found success by attending to FA cultural values, food, social relationships, and family. Analysis of the articles also suggested that interventions should employ word of mouth recruitment strategies to successfully reach FA communities.

Study 3 used qualitative methods to explore essential strategies to successfully attract FAs to CVD prevention programs in Hawai'i's Federally Qualified Health Centers (FQHCs). Three key themes emerged. First, FQHCs should understand FA issues, context, and culture. Next, multiple levels of buy-in are necessary when creating health programs and interventions. Last, FQHCs should follow specific tips for successful health interventions (e.g., employing FA staff, flexible scheduling).

Taken together, findings confirm the need for culturally tailored programs to support FA populations. Further, FAs experience a high prevalence of disease-related (e.g., hypertension, diabetes) and behavioral risk factors associated with CVD. Hawai'i's FQHCs, are well positioned to implement CVD prevention interventions tailored to the FA community.

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| | |
|---|---|
| BMI | Body Mass Index |
| BRFSS | Behavioral Risk Factor Surveillance System |
| CVD | Cardiovascular Disease |
| CDC | Centers for Disease Control and Prevention |
| DOH | Hawai‘i State Department of Health |
| FA | Filipino American |
| FQHC | Federally Qualified Health Center |
| HbA1c | Hemoglobin A1c |
| NHLBI | National Heart, Lung, and Blood Institute |

# CHAPTER 1

## INTRODUCTION

Asian Americans are the fastest growing minority group in the United States (U.S.), with the population increasing by 46% between 2000 and 2010. Second in size only to Chinese Americans, Filipino Americans (FAs) comprise 20% of the growing Asian American population, totaling 3.4 million in 2010. Over 60% of Filipino immigrants have become naturalized U.S. citizens, and over half have settled in California and Hawai'i (Asian American Center for Advancing Justice, 2011). Waves of Filipino immigration began in response to labor shortages in agriculture, in the U.S. military, and in nursing and other health care professions. As a result, FAs are overrepresented in important workforces, such as health care, the military, and service industries (McNamara & Batalova, 2015).

Despite the large number of FAs, national health data on FAs are limited and often aggregated with other Asian subgroups. When Asian American subgroups are collapsed, disparities in health are masked by the healthier Asian groups (Holland & Palaniappan, 2012). This aggregation of data makes it difficult to accurately reflect the health status of FAs (dela Cruz, McBride, Compas, Calixto, & Van Derveer, 2002).

### Cardiovascular Disease Burden and Risk Factors

Cardiovascular Disease (CVD) is the leading cause of death in the U.S., contributing to about 610,000 deaths annually. CVD risk factors include behavioral risk factors, chronic conditions, and genetics and family history. The behavioral factors that increase CVD risk include physical inactivity, unhealthy diet, obesity, excessive alcohol consumption, and tobacco use. Chronic conditions that increase CVD risk include high blood pressure, high cholesterol, and diabetes. CVD risk increases with age and affects men and women equally. Ethnic disparities in CVD risk factors are well established in the literature. Non-Hispanic Whites, African Americans, and American Indians have among the highest CVD mortality. However, CVD remains the second cause of death (after cancer) among Hispanics and Asian American and Pacific Islanders combined (Centers for Disease Control [CDC], 2015a). When data on Asian Americans and Pacific Islanders are disaggregated, disparities in CVD mortality are revealed. In Henderson and colleagues' (2007) analysis of a multiethnic cohort of African Americans, Native Hawaiians, Japanese Americans, Hispanics, and Whites living in California and Hawai'i, African Americans had the highest CVD mortality rate among the ethnic groups followed by Native Hawaiians (Henderson, Haiman, Wilkens, Kolonel, Wan, & Pike, 2007). In Hawai'i, FAs and Native Hawaiians experience the highest

CVD mortality rate for compared to other ethnic groups (Hawai'i State Department of Health, 2007).

**Cardiovascular Disease Burden among Filipino Americans**

The few researchers who have disaggregated FAs from national datasets have found that FAs experience greater chronic disease burden than whites, blacks, and other ethnic Asian groups. Nationally, FAs have a high mortality due to chronic conditions. In a recent study by Hastings and colleagues (2015), researchers reviewed national mortality records from the 2003 – 2011 to identify the leading causes of death among Asian Americans. Researchers found that the leading cause of death among Filipino females was cancer, followed by cardiovascular disease and cerebrovascular disease. Among Filipino males, heart disease was the leading cause of death, followed by cancer and cerebrovascular disease. Compared to other ethnic groups, Filipino males had the highest cardiovascular disease mortality rate. Jose et al. (2014) observed that Filipino males had the highest proportion of cardiovascular disease mortality at a younger age. Filipino males had the highest mortality due to cerebrovascular disease among the Asian subgroups. Additionally, both Filipino females and males experienced the highest mortality due to diabetes than other Asian subgroups (Hastings et al., 2015). Filipino men have the highest incidence and mortality rates for prostate cancer, and Filipino women have the highest mortality due to breast cancer (McCracken et al., 2007).

Studies also show that FAs have high chronic disease prevalence. In an analysis of the National Health Interview Survey from 2003 to 2005 by Ye and colleagues (2009), authors noted that Filipinos were 18% more likely to have hypertension than all other Asians and non-Hispanic whites in the study. Carlisle (2014) examined data from the Collaborative Psychiatric Epidemiology Surveys, and found that 27.8% of Filipinos reported having cardiovascular conditions, 37.6% had respiratory conditions, and a 45.3% reported chronic pain conditions. A literature review by Abesamis and colleagues (2015) found that Filipino females were at higher risk for heart disease than other ethnic groups, and were 2.02 times more likely than white men and women to have a stroke. Further, Araneta and Barrett-Connor (2005) observed that Filipino women had a significantly higher Type 2 diabetes prevalence (32.1%) than white (5.8%) or African American (12.1%) women. Similarly, Becerra & Becerra (2015) analyzed the California Health Interview Survey data from 2003 through 2011 and found that FAs were diagnosed with diabetes 8.4 years earlier than non-Hispanic white participants.

FAs also have high prevalence of some of the behavioral factors that may increase CVD risk. Ye et al.'s (2009) 2003 – 2005 analysis of the National Health Interview Survey showed that

Filipinos had among the highest prevalence of smoking and binge drinking compared to other Asian ethnic groups. Authors also noted that FAs had the highest obesity prevalence among Asian Americans, and 38.2% of respondents reported being physically inactive, which was second only to Asian Indians in the sample (Ye, Rust, Baltrus, & Daniels, 2009). Araneta and Barrett-Connor (2005) observed that Filipino women had a significantly higher visceral adipose tissue, a known risk factor for diabetes, than white or African Americans. Although no national data are available on Filipino diets, Abesamis and colleagues (2015) suggest that traditional Filipino foods are high in sodium, and immigrants tend to consume more high fat meat because of its availability and affordability in the U.S (dela Cruz & Galang, 2008; National Heart, Lung, and Blood Institute (NHLBI), the Asian & Pacific Islander American Health Forum, & West Bay Pilipino Multi-Services, Inc., 2003; Bhimla, Yap, Lee, Seals, Aczon, & Ma, 2016).

**Filipinos in Hawai'i**

In Hawai'i, FAs are the second largest ethnic group in the state, representing about 24.8% of the total population (U.S. Census Bureau, 2013). Compared to the rest of the state, only 15.2% of FAs complete a bachelor's degree, and only 3.3% complete graduate or professional education. An estimated 39.3% of FAs speak a language other than English at home, with 21.7% reporting speaking English less than "very well." (U.S. Census Bureau, 2014). A report estimates that 13.7% of FAs hold more than one job, which is double the national average (5.4%), and slightly higher than the state average (DBEDT, 2010). Although 71.0% of FAs are employed, the median per capita income is $21,079 for individuals, compared to $39,889 for whites. Further, 8.6% of FA individuals and 6.1% of FA families live in poverty (U.S. Census Bureau, 2014).

There is no existing health profile on FAs in Hawai'i. However, several publications indicate that FAs in Hawai'i experience similar health disparities to those found in the national data. FAs have among the highest prevalence of high blood pressure and diabetes (Hawai'i State Department of Health, 2011). Looking specifically at cancer, FA men have the second highest lung cancer incidence and mortality rates in the state. FA women have one of the highest incidence and mortality rates for cervical cancer (Hawai'i State Department of Health, 2010). Further, cancer screening rates for FA are among the lowest in the state. For example, compared to other ethnic groups in Hawai'i, FA men and women are less likely to be screened for colorectal cancer, and FA women are less likely to be screened for breast cancer than most other groups (Hawai'i State Department of Health, 2010). Further, Sentell et al. (2011) noted that FAs reported the highest rate of low health literacy compared to all other ethnic groups in Hawai'i.

In a study by Pobutsky and colleagues (2015), researchers gathered feedback from 130 Filipino community leaders and community members in Hawai'i to understand their perspectives on chronic disease health disparities and solutions to overcome these disparities. Researchers observed that the majority of Filipinos defined a healthy community as one with strong family units with safe and clean neighborhoods and access and a means to provide necessities for their family (e.g., food, clothing, housing). Further, Filipinos equated health with good spiritual health and access to affordable health care. Nearly half of the respondents identified an unhealthy diet, lack of exercise, work stress, and cultural and language issues as the reasons for high prevalence of chronic conditions.

**Federally Qualified Health Centers**

Federally Qualified Health Centers (FQHCs) are community-based, non-profit health care organizations that provide primary and preventive care and serve low-income and medically underserved populations. In Hawai'i, there are 14 FQHCs that provide services to about 150,000 patients annually. In 2014, 76% of FQHC clients were ethnic minorities, including FAs. In terms of chronic conditions, about 22% of patients served by Hawai'i's FQHCs have hypertension, and 66% of those clients have their blood pressure under control. Another 13% have diabetes, and about 60% of those clients are in control of their diabetes. Looking at preventive health screenings and services, only 53% of women are current with their cervical cancer screenings, and only 31% of clients age 50+ adhere to colorectal cancer screening guidelines. About 78% of clients are screened for tobacco use and receive cessation counseling if they are found to be using tobacco (U.S. Department of Health and Human Services, 2015). Hawai'i's FQHCs are integral to reducing health disparities experienced by FAs, immigrants, and underserved Americans (Association of Asian Pacific Community Health Organizations, 2013).

FQHCs are an ideal health care setting to implement preventative health programs. In a study by Allen and colleagues (2013), authors explored the barriers and facilitators to cancer screening promotion in FQHCs. Findings show that FQHCs identified diabetes care as their top clinical priority. Some urban FQHCs utilized patient navigators or health coaches to promote healthy behaviors, such as cancer screening, tobacco cessation, and lifestyle-related prevention efforts (e.g., improving diet and increasing exercise). Authors concluded that FQHCs provide a unique setting to promote healthy lifestyle interventions in culturally appropriate ways. Further, FQHCs are mandated to report quality improvement metrics to the Bureau of Primary Health Care at the Health Resources & Services Administration (HRSA) to measure prevalence of hypertension,

diabetes, and cardiovascular disease and are tasked to improve management of these chronic conditions (Health Resources & Services Administration [HRSA], 2016).

Locally, FQHCs are working with the Hawai'i State Department of Health's Chronic Disease Prevention Branch and Hawai'i Primary Care Association on a four-year CDC grant to prevent and reduce disparities in obesity, diabetes, and cardiovascular disease through community and health systems interventions (CDC, 2015b). This CDC initiative will provide a unique opportunity to improve CVD health disparities in FQHCs in Hawai'i.

**Potential Solutions to Filipino Health Disparities**

In a white paper on FA health status, dela Cruz et al. (2002) outlined key recommendations for research to improve the health status of FAs. First, dela Cruz and colleagues suggested that research should focus on advocating the inclusion and dissemination of FA data in local and national surveillance programs. Second, research should focus on identifying the health needs, barriers to accessing care, culturally relevant models of health promotion, and health impact of immigration policies on FAs and their families. Similarly, Pobutsky et al.'s (2015) study on Hawai'i FA health perceptions, participants recommended strategies to overcome barriers to health, which included increasing education and outreach in FA community and promoting healthier alternatives within the traditional diet. FA respondents also reported that interventions should "tap into the strengths of Filipino families".

Third, research should develop and validate culturally and linguistically appropriate instruments measuring various aspects of health and wellbeing. Fourth, research should be community-based, incorporating Filipino cultural values and measuring individual and community behaviors. Fifth, research should investigate the psychosocial and occupational health needs of Filipino health care workers. Lastly, authors recommend training of FA researchers to conduct, lead, and mentor other future FA researchers.

This dissertation explores three research questions of relevance to the Federally Qualified Health Centers in Hawai'i who serve FAs. It addresses many of the recommendations by dela Cruz et al. (2002) by disaggregating FAs from local surveillance data with the intent to disseminate findings to the broader scientific community (Study 1). Study 2 identifies known strategies to incorporate FA values to develop culturally relevant CVD prevention programs. Further, Study 3 examines the role FQHCs play in addressing specific barriers to health care access and FA health needs. Lastly, as an aspiring FA health disparities researcher currently employed to serve Hawai'i's

FQHCs, this dissertation builds my capacity to conduct future research and lead research that addresses FA disparities.

## Conceptual Framework

Dougherty and Conway (2008) propose the "3 T's Roadmap" to transform health care delivery. This framework focuses on the translation of biomedical research to clinical research and into clinical practice. In the first translation phase (T1), biomedical research findings are informing clinical research. In the second phase (T2), clinical research then assesses the effectiveness treatments in different patient populations to inform the development of clinical practice guidelines. The last phase (T3) focuses on how these effective treatments and interventions can be applied in populations to improve their overall health (Dougherty & Conway, 2008). Fishbein (2016) proposes additional phases of translational research that applying it to prevention science. In Fishbein's framework, T0 begins with the basic science research and applies it to a theory. T1 takes those findings and translates them into the development of programs. T2 tests those programs to establish the effectiveness of the program or intervention. T3 research applies those evidence based practices to replicate into real-world settings. T4 research focuses on implementing the intervention widely to establish new guidelines, practices, and policies. The final stage T5 translates the research globally, shifting attitudes, policies, and social systems.

These two translational research models served as the overall conceptual framework for my dissertation (Figure 1). Applying this framework within the public health context, T1 served as the discovery of problem. Epidemiology is considered the scientific foundation in public health. Therefore, T1 focused on understanding the epidemiology of CVD-related disparities among FAs compared to other ethnic groups in Hawai'i. In the T2 phase, strategies to increase FA participation in heart-health promotion programs were identified, ascertaining components to inform tailored programs for FA communities. In the T3 phase, approaches to help FQHCs tailor CVD prevention programs to attract and better serve FAs in Hawai'i were observed, which helped to advise the development of CVD prevention programs tailored to FAs served by FQHCs.

As informed by this translational conceptual framework, the central hypothesis driving this research is that culturally relevant health interventions tailored for FAs will increase their participation in healthy behaviors, leading to an improvement in the overall health of FAs. In support of this hypothesis, Fisher and colleagues (2007) report that cultural tailoring of interventions can be effective in reducing health disparities. The rationale for this proposed dissertation research is that identifying FA health disparities will allow for effective program planning and evaluation in

Hawai'i's FQHCs, where many underserved FAs seek care (Association of Asian Pacific Community Health Organizations, 2013).

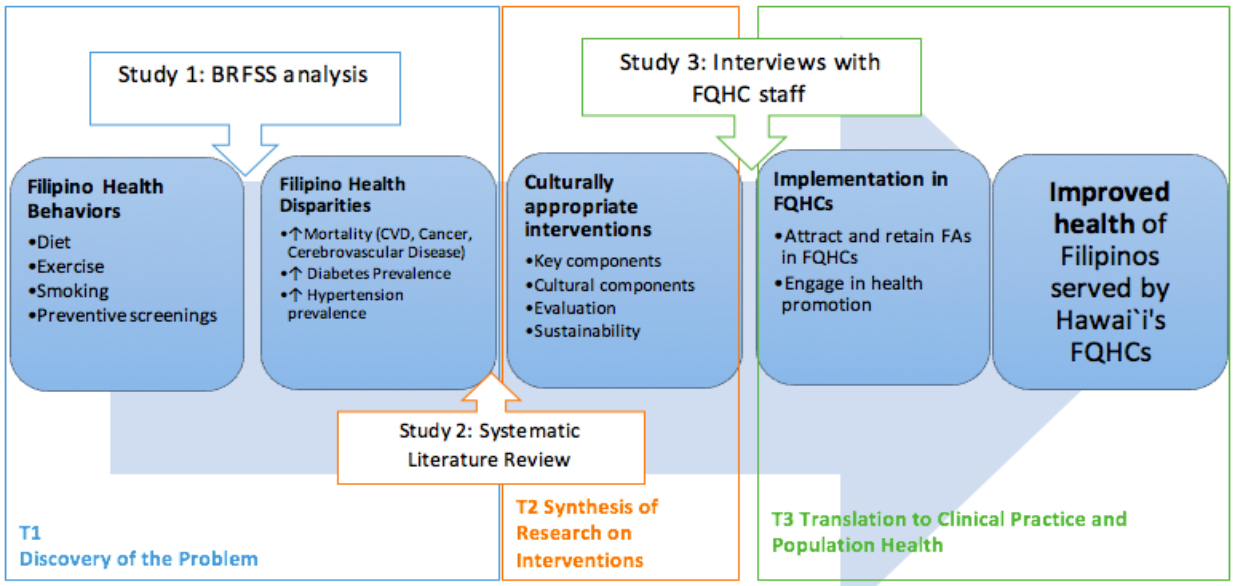


**Figure 1. Conceptual Framework for Dissertation**

## Purpose

This dissertation focused on understanding the landscape of cardiovascular health among Filipino Americans (FAs). The purpose of this dissertation was to fill the gaps in locally available information on FAs and to inform the development of culturally tailored interventions aimed at reducing CVD disparities of FAs in Hawai'i. Building on the recommendations of dela Cruz and colleagues (2002), dissertation research focused on identifying strategies to prevent and manage CVD among FAs served by Hawai'i's Federally Qualified Community Health Centers (FQHCs).

## Research Questions

This dissertation was comprised of three studies that aimed to answer the follow three research questions. Findings from each study are presented in Chapters 2 – 4.

1. What CVD disparities are experienced by FAs compared to other ethnic groups in Hawai'i, and what are the determinants of these disparities? (Chapter 2)
2. What is known about increasing FA access to and participation in health promotion programs? (Chapter 3)
3. How can Hawai'i's FQHCs better attract and retain FA clients and engage them in CVD prevention and control programs? (Chapter 4)

# CHAPTER 2

## ASSESSING CARDIOVASCULAR HEALTH DISPARITIES AMONG FILIPINO AMERICANS IN HAWAIʻI


### Abstract

About 3.4 million Filipino Americans (FAs) live in the US. The FA group is one of the fastest-growing, Asian-American subgroups. National research indicate that FAs experience a high heart disease, cerebrovascular disease, and diabetes prevalence and have a high prevalence of behavioral risk factors associated with these chronic conditions, such as obesity and physical inactivity. This secondary data analysis utilized Hawaiʻi's BRFSS data from 2011 to 2014 (N=23,498). Multiple logistic regression was used to explore ethnic differences in heart attacks, heart disease, and stroke prevalence. FAs and Native Hawaiians reported among the lowest income and lowest educational attainment compared to other ethnic groups. FAs reported the lowest prevalence of physical activity compared to other ethnic groups. About 40% of FAs were categorized as obese, second only to Native Hawaiians. Surprisingly, Filipinos consistently reported the lowest prevalence of any CVD-related events compared to other ethnic groups. Specifically for FAs, fair to poor self-rated health, unemployment, diabetes prevalence, obesity, and annual income were significant predictors of CVD status. Sociodemographic and health care access, regardless of ethnicity, pose unique challenges and solutions for FAs residing in Hawaiʻi. More research using claims data or patient records could help to provide a more accurate picture of CVD disparities among FAs in Hawaiʻi.

## Background

About 3.4 million Filipino Americans (FAs) live in the US. The FA group is one of the fastest-growing, Asian-American subgroups (Asian American Center for Advancing Justice [AAJC], 2011). More than 60% of Filipino immigrants have become naturalized U.S. citizens, and over half have settled in California and Hawai'i (McNamara & Batalova, 2015; AAJC, 2011). Because Filipino immigration to the US began in response to labor shortages in agriculture, the US military, and nursing, FAs are overrepresented in these important workforces (US Census Bureau, 2014).

Cardiovascular Disease (CVD) is the leading cause of death in the U.S., contributing to about 610,000 deaths annually. CVD risk factors include behavioral risk factors, chronic conditions, and genetics and family history. The behavioral factors that increase CVD risk include physical inactivity, unhealthy diet, obesity, excessive alcohol consumption, and tobacco use. Modifying these behaviors is essential to reducing the risk of developing CVD. Chronic conditions that increase CVD risk include high blood pressure, high cholesterol, and diabetes. While CVD affects men and women equally, risk increases with age beginning at age 45 for men and 55 for women (Centers for Disease Control [CDC], 2015a). Further, research suggests that childhood obesity and physical inactivity contribute to manifestation of CVD at younger ages (Mozaffarian et al., 2015).

National research indicate that FAs experience a high heart disease, cerebrovascular disease, and diabetes prevalence (McCracken, Olsen, Chen, Jemal, Thun et al., 2007; Ye, Rust, Baltrus, & Daniels 2009; Carlisle, 2014; Abesamis, Fruh, Hall, Lemley, & Zlomke, 2015; Araneta & Barrett-Connor, 2005). Subsequently, FAs experience a high mortality due to these conditions (Jose, Frank, Kapphahn, Goldstein, Eggleston et al., 2014; Hastings, Jose, Kapphahn, Frank, Goldstein et al., 2015).

Further, FAs have a high prevalence of behavioral risk factors associated with these chronic conditions, such as obesity, alcohol consumption, and physical inactivity (Holland & Palaniappan, 2012; Carlisle, 2014). In a recent literature review, Abesamis, Fruh, Hall, and Lemley (2015) investigated the current recommendations for cardiovascular disease risk factor management. Researchers found that high rates of smoking, low levels of high-density lipoprotein, high body mass index (BMI), physical inactivity, stress, previous family history of cardiovascular disease, high sodium diets, and high prevalence of diabetes contributed to high risk of hypertension among FAs (Abesamis et al., 2015; Ursua et al., 2013; Ursua et al., 2014). Further, researchers found that FA women were at highest risk for heart disease (Holland et al, 2011).

In a study on hypertension prevalence and predictors among FAs at community health screenings in New York, Ursua and colleagues (2013) found that 53% of participants were hypertensive, and 50% of hypertensive FAs were uninsured. Multivariate logistic regression showed that predictors of hypertension among this subset of FAs were older age, being male, living in the U.S. for more than five years, having a BMI greater than 23.0 $kg/m^2$, and having elevated blood glucose. A family history of hypertension and fair or poor self-rated health also were predictors of hypertension. Further, researchers found that FA women were at highest risk for heart disease (Holland et al, 2011). In a cross-sectional study of Asian American women, Ancheta and colleagues (2014) found that FA women had four or more CVD risk factors compared to other Asians in the sample. Moreover, researchers noted that these risk factors were observed in BMIs as low as 23 to 24.9 $kg/m^2$, suggesting that BMI is an important predictor of CVD among FA women (Ancheta et al., 2014).

Although FAs comprise the second largest ethnic group in Hawai‘i, there is little research on the cardiovascular health of FAs (State of Hawai‘i Department of Business, Economic Development & Tourism [DBEDT], 2016). This study focused on cardiovascular health disparities because CVD and CVD-related risk factors significantly impact the FA community. The purpose of this study was to build upon the existing literature on CVD among the FA community and evaluate CVD associated risk factors (e.g., exercise, tobacco and alcohol use) across the ethnic groups in Hawai‘i using a state-based survey data. This study aimed to answer the following research question: What cardiovascular health disparities are experienced by Filipino Americans (FAs) compared to other ethnic groups in Hawai‘i and what are the determinants of these disparities?

## Methods

### Study Design

This secondary data analysis utilized Hawai‘i’s BRFSS data from 2011 to 2014. BRFSS is a state-based telephone survey that captures the health-related risk behaviors, preventive service utilization, and health care access among non-institutionalized adults that is administered by the Hawai‘i State Department of Health (Centers for Disease Control [CDC], 2013). BRFSS collects data from a stratified random sample of Hawai‘i residents, employing random-digit dialing of cellphones and landlines. Data are weighted to reflect the distribution of the Hawai‘i’s population. Between 2011 and 2014, the overall survey response rate fluctuated from 38.0% to 44.8% (Nguyen & Salvail, 2012; Nguyen & Salvail, 2013; Nguyen & Salvail, 2014; Nguyen & Salvail, 2015).

Study Sample

This study sample included all Hawai'i adults between 18 and 75 years of age that responded to BRFSS survey between 2011 and 2014. Only cases with ethnicity data were included in the final analysis. The final, unweighted sample size was N=23,498. This study was approved by Hawai'i State Department of Health and the University of Hawai'i Institutional Review Board.

**Dependent Variable**

BRFSS consistently collects data on the prevalence of select CVD conditions of heart attacks, coronary heart disease, and stroke. Participants are asked whether a health care professional informed them of any of the three CVD conditions and are provided with four response options (yes, no, not sure, refused). A CVD status variable was constructed to include any respondent reporting "yes" to any of the three diseases listed above. Those responding "not sure" or "refused" (<2.0%) were excluded from the analysis.

**Independent Variable**

The primary independent variable was ethnicity. Hawai'i's BRFSS captures detailed ethnicity data, including the breakdown of Asian and Pacific Islander subgroups. Ethnicity data were collapsed into the five ethnic categories reflective of Hawai'i's general population (White, Filipino, Chinese, Japanese, and Native Hawaiian).

**Covariates**

Additional covariates were investigated to assess confounding and effect modification. Covariates included age (continuous variable between 18 and 75 years), gender, marital status (married, not married), income (<$50,000, ≥$50,000), employment status (employed, not working), educational attainment (not college graduate, college graduate), survey year, county of residence (Honolulu, not Honolulu), self-rated health status (dichotomized into very good/excellent vs fair/poor).

**Health Care Access**

Analysis also assessed the effect of covariates on health care access variables. Health care access variables included health care coverage (yes, no), access to regular health care provider (yes, no), inability to see doctor because of cost (yes, no), and length of time since routine check-up (less than two years, more than two years, never).

**Behavioral Risk Factors**

Physically active respondents were defined as those who responded that they engage in physical activity outside of their regular job. Respondents are able to select "yes", "no", "don't

know/not sure" or "refuse". Those responding "do not know/not sure" or "refuse" were excluded from the analysis.

Smoking status variable (dichotomized into current smokers or not) was constructed following BRFSS convention. "Current smokers" was defined as respondents who have smoked at least 100 cigarettes in their lifetime and who smoke either every day or some days (Centers for Disease Control [CDC], 2015c).

Alcohol consumption was defined using the National Institute of Alcohol Abuse's guidelines for heavy drinking. Responses were dichotomized into heavy drinkers or not. The "heavy drinkers" variable were recoded and defined as respondents who consume more than five drinks a day for more than five days (National Institute for Alcohol Abuse and Alcoholism, 2016).

A Body Mass Index (BMI) was calculated for each respondent using their corresponding height and weight. Each respondent was assigned a BMI category following CDC guidelines (CDC, 2015). Non-Asian respondents with BMI between 18.5 and 24.9 were categorized as "healthy weight". Those with BMI between 25.5 and 29.9 were categorized as "overweight". Participants with BMIs greater than 30 were categorized as "obese" (CDC, 2015). Asian respondents were categorized based on the World Health Organization's Asian BMI cut points. Those with BMIs of 18.5-22.9 were categorized as "healthy weight", 23 – 27.5 as "overweight", and greater than 27.5 as "obese" (World Health Organization, 2004). Those responding "not sure" or "refused" (2.2%) were excluded from the analysis.

**Diabetes Prevalence**

Diabetes status was determined by participants' responses when asked about the presence or absence of diabetes and were provided with six response options (yes, yes, but only during pregnancy, no, no but prediabetes, not sure, refused). Those responding "not sure" or "refused" were excluded from the analysis. Of the remainder, those responding "yes" were categorized as diabetes, prediabetes, and all others were categorized as not having diabetes (CDC, 2015).

**Data Analysis**

Data were analyzed using SPSS (version 23.0; SPSS, Inc., Chicago, IL) Complex Sample Module that incorporated the stratum, primary sampling units, and weights to account for the complex sample design and to provide population estimates. Descriptive statistics were calculated for the participants using weighted population percentages. Chi-square tests were used to assess the associations between health risk behaviors, CVD prevalence, and ethnicity. Continuous variables, such as age, were compared using ANOVA.

Following bivariate analysis, multiple logistic regression was used to explore ethnic differences in heart attacks, heart disease, and stroke prevalence. All variables were included in a logistic regression to identify significant predictors. Unadjusted Odds Ratios were calculated for the total sample and each ethnic category. Each covariate was assessed for interaction with ethnicity. Each significant interaction variable was included in the adjusted model separately to assess significance. Interaction variables that showed significance when included alone were included in the final adjusted model. Finally, statistically significant covariates and interactions were included in the final multiple logistic regression model to control for potential confounding of covariates.

In multivariable models, the reference groups were female, married, annual income ≥$50,000, employed, college graduates, and Honolulu County residents. For health care access variables, reference groups were having health insurance, access to a regular health care provider, not financially burdened when visiting the doctor, and received a routine check-up in the last two years. For health behavior variables, reference groups are rating health as "very good/excellent", not current smokers, not heavy drinkers, physically active, healthy weight, and no diabetes.

## Results

As shown in Table 1, about half of all 23,498 respondents were female, married, made ≥$50,000. More than half were employed and attended college. The mean age of respondents was 45.2 years, and about 66% resided in Honolulu County. In terms of health care access, nearly all respondents (90.9%) had health care coverage, access to a regular health care provider, and saw their provider within the last two years. About 9% were unable to visit their doctor because of cost. Over 85% reported their health as good, very good, or excellent. For behavioral risk factors, over 80% were physically active and non-smokers. Over 25% were heavy drinkers, and two-thirds were either overweight (33.9%) or obese (31.3%). In the sample, diabetes prevalence was at 7.9%. Overall CVD prevalence was 5.6%, with heart attacks, coronary heart disease, and stroke combined.

Ethnic differences were seen in socioeconomic status, health access, and behavioral risk factors. FAs and Native Hawaiians reported among the lowest income and lowest educational attainment compared to other ethnic groups. Compared to other groups, more Native Hawaiians and FAs reported being unable to see the doctor because of cost, 13.2% and 11.9% respectively. In terms of the behavioral risk factors associated with CVD, FAs reported the lowest prevalence of exercise in the last 30 days compared to other ethnic groups. Native Hawaiians had among the highest prevalence of current smokers, followed by Whites, and FAs. Whites reported the highest prevalence of heavy drinking followed by Native Hawaiians, and Japanese respondents. About 40%

of FAs were categorized as obese, second only to Native Hawaiians. Diabetes prevalence was highest among Japanese (10.6%) and Native Hawaiians (10.3%) followed by Filipinos (9.9%), Chinese (7.0%), and Whites (4.4%).

Finally, CVD prevalence varied across ethnic groups. Native Hawaiians and Japanese had the highest overall CVD prevalence, 7.3% and 6.6% respectively. Chinese reported the third highest CVD prevalence at 5.6%, followed by Whites at 5.0%. Filipinos reported the lowest prevalence of CVD at 4.2%. In terms of specific CVD events, Chinese reported the highest prevalence of heart attacks (3.9%) followed by Native Hawaiians (3.8%), Japanese (2.8%), Whites (2.5%), and Filipinos (2.1%). Compared to all other ethnic groups, Native Hawaiians reported the highest proportion of coronary heart disease (3.5%). Japanese reported the second highest coronary heart disease prevalence (2.6%), followed by Chinese (2.5%), Whites (2.2%), and Filipinos (2.0%). Stroke prevalence was highest among the Native Hawaiians (3.3%), and second highest among the Japanese (3.1%) compared to all other ethnic groups. Surprisingly, Filipinos consistently reported the lowest prevalence of any CVD-related events compared to other ethnic groups.

Interaction effects between each covariate and ethnicity were explored (Table 2). Only gender ($p=0.03$) was statistically significant. The interaction variable between gender and ethnicity was included into the adjusted model to assess statistical significance and inclusion in the final model. The gender and ethnicity interaction maintained significance and was included in the final model.

After adjusting for the covariates and interactions, ethnicity was a significant predictor of CVD prevalence only among Native Hawaiian females and White males. Native Hawaiian females (OR: 2.02, 95% CI [1.47, 2.78]) and White males (OR: 2.28, 95% CI [1.79, 2.91]) were twice as likely to report CVD status than Whites. Significant socioeconomic predictors included age, employment status, and educational attainment. Those unemployed were 72% more likely to report CVD than employed respondents (OR: 1.72, 95% CI [1.40, 2.11]). Those who did not complete college were 41% more likely to CVD than college graduates (OR: 1.41, 95% CI [1.17, 1.70]). Self-rated health also was a significant predictor of CVD prevalence, with those reporting fair or poor health were about three times more likely to report CVD than those who with good or excellent health (OR: 2.99, 95% CI [2.47, 3.63]). Further, those who were unable to afford a doctor were 64% more likely to report CVD (OR: 1.64, 95% CI [1.23, 2.20]). Respondents without a regular health care provider (OR: 0.55, 95% CI [0.36, 0.82]) and those who received a routine check-up two or more years ago (OR: 0.60, 95% CI [0.46, 0.79]) were nearly 40% less likely to report CVD than those with a regular

provider that they saw regularly. Significant CVD risk factor predictors included physical inactivity, diabetes, and obesity. Those with diabetes were 65% more likely to report CVD compared to those without diagnosed diabetes (OR: 1.65, 95% CI [1.32, 2.06]). Obese respondents were 46% more likely to report CVD than those of healthy weight (OR: 1.45, 95% CI [1.15, 1.86]). Lastly, physically inactive individuals are 24% more likely to have CVD than active respondents (OR: 1.24, 95% CI [1.02, 1.51]).

## Discussion

This study explored cardiovascular health of FAs across all other ethnic groups in Hawai'i and investigated the determinants of these disparities. CVD prevalence varied across ethnic groups. Native Hawaiians (7.3%) had the highest overall CVD prevalence followed by Japanese (6.6%), Chinese (5.6%), Whites (5.0%), and Filipinos (4.2%). When adjusting for covariates, ethnicity was only a significant predictor of CVD prevalence for Native Hawaiian females and White males. Further, those who were unemployed, not college graduates, and rated their health as fair or poor, and could not afford to see a doctor were more likely to report CVD. Those who did not receive a check-up nor had a regular health care provider were about 40% less likely to report CVD than those who see their health care provider regularly.

Although the purpose of this study was to explore CVD disparities particularly among Filipinos, they consistently reported the lowest prevalence of any CVD-related events compared to other ethnic groups. In fact, after accounting for covariates, FAs were 29% less likely to have been told by a doctor that they have CVD compared to other ethnic groups. This finding is contrary to much of the reported literature citing that CVD disparities exist among FAs. In review of 3 years of patient records in California, Holland et al. (2011) discovered that among FAs, CHD prevalence was 5.1% compared to 2.1% in this study. Similarly, stroke prevalence was 1.8% for FAs compared to 1.6% in this study (Holland et al., 2011).

Perhaps this discrepancy in Hawai'i is due to underreporting of or failure to diagnose CVD in FAs. Support for this hypothesis comes from Magno and colleagues (2008). When investigating CVD prevalence among FA women in southern California, they observed that only eight (14.5%) of FA participants reported a CVD diagnosis; however, an additional 47 (85.5%) were diagnosed through participation in the study. Researchers suggest that CVD may be underdiagnosed in populations with a high prevalence of type 2 diabetes, hypertension, and dyslipidemia (Magno et al., 2008). Alternatively, FAs in Hawai'i may have better health than FAs in other locations as it is a different context and social factors.

In the fully adjusted model, those who did not have a regular health care provider were 45% less likely to report CVD than those with access to a regular health care provider. However, those who indicated financial challenges in accessing care were 64% more likely to report CVD compared to those who did not report financial barriers. Specifically for FAs, fair to poor self-rated health, unemployment, diabetes prevalence, obesity, and annual income were significant predictors of CVD status. Further, results show that unemployed FAs were nearly four times more likely to report CVD than all other ethnic groups. FAs in the sample reported that they were unable to see a physician because of cost, and 63.2% of FAs reported making less than $50,000 annually, second lowest of all ethnic groups. Findings suggest that financial barriers and regular access to a physician may result in underreporting or underdiagnosing of CVD among FAs. In a needs assessment of FAs residing in central Los Angeles, authors noted that while many FAs, "especially recent immigrants, struggle economically as well as with acculturation and proficiency with the English language. They are often underemployed relative to their education and experience" (The Historic Filipinotown Health Network, 2007, p. 17). Focus group findings from FAs living in Daly City, CA noted that they and other Filipinos they know would only go to the doctor when symptoms are severe often seen as the "last resort" (NHLBI, 2003). Lower income and cost barriers may have led to FAs not being told that they had CVD, which may have contributed to underreporting by FAs in this sample.

Another plausible explanation may be that FAs are experiencing more fatal events due to CVD than other ethnic groups. Studies exploring mortality records consistently noted that FAs experience among the highest mortality due to heart disease (Jose et al., 2014; Hastings et al., 2015). Further, Ryan and colleagues' (2000) analysis of a California hospital cardiac database noted that FA ethnicity was a significant predictor of higher mortality following cardiac catheterization compared to Whites. Authors also reported that FA women experienced a higher mortality rate following treatment compared to White males, recommending closer post-treatment monitoring is essential for FAs (Ryan et al., 2000). Similarly, Klatsky et al. (2005) noted that compared to Whites, FAs experienced more intracerebral hemorrhage events, a type of stroke that results from uncontrolled hypertension (Palaniappan et al., 2010; Liebeskind, 2016). Hastings and colleagues (2015), reviewing national mortality records from the 2003 – 2011, found that the second leading cause of death was CVD among FA females. Among Filipino males, heart disease was the leading cause of death, followed by cancer and cerebrovascular disease. Jose et al. (2014) observed that Filipino males had the highest CVD mortality rate and were experiencing these events at a younger age compared to other ethnic groups. Further, Filipino males had the highest mortality due to cerebrovascular disease

among the Asian subgroups (Jose et al, 2014). Additionally, both Filipino females and males experienced the highest mortality due to diabetes than other Asian subgroups (Hastings et al., 2015). In a report produced by the Asian and Pacific Islander American Health Forum, researchers report that FAs in Hawai'i have the second highest mortality due to coronary heart disease, second to Native Hawaiians (135.4 per 100,000 compared to 128.3 per 100,000 persons). Further, FA males and females have the highest stroke mortality compared to all other ethnic groups (Cook, Chung, & Ve'e, 2010).

Ethnic differences were seen in socioeconomic status, health access, and behavioral risk factors. Similar to other studies, FAs in this sample reported the lowest physical activity prevalence across all ethnic groups. Among the Asian groups, FAs reported the highest smoking and obesity prevalence. Ye and colleagues (2009) explored cardiovascular risk factors among Asian Americans using the National Health Survey from 2003 - 2005. Researchers found that FAs were the most obese, least physically active, and had the highest binge drinking prevalence. Further, authors found that FAs were most likely to have hypertension. However, the FAs in Ye et al.'s (2009) study reported higher educational attainment and higher self-rated health status than FAs included in our analysis. Similarly, Ancheta et al. (2015) explored cardiovascular health disparities among FA women and found that they reported the highest obesity and hypertension prevalence and highest triglyceride results compared to other Asian groups. Authors also noted that 41% of all FA in the study had four or more CVD risk factors, highest of all the Asian American subgroups (Ancheta, Carlson, Battie, Borja-Hart, Cobb, and Ancheta, 2015). Similarly, Gasevic, Ross, and Lear (2015) conducted a systematic review of literature published in North America. Authors found that FAs had higher prevalence of hypertension, abnormal cholesterol levels, and diabetes prevalence than Whites (Gasevic et al., 2015). Interestingly, when exploring the CVD prevalence and adjusting for these factors, these ethnic differences were no longer significant in the model. Findings suggest that other socioeconomic factors like unemployment and affordability of health care appeared to be more salient predictors of CVD prevalence than ethnicity.

One of the strengths of this study was that the dataset disaggregated the Asian and Pacific Islander ethnic groups. The study analyzed a large, weighted sample that allowed for comparisons of FA health behaviors across the different ethnic groups. Since the literature on CVD disparities among Asian Americans, particularly among FAs, is limited, this study adds to the small body of literature on FA health. Recognizing this gap in the literature and the diversity among Asian Americans' CVD risk, morbidity, and mortality, the American Heart Association emphasizes this

unique research opportunity to explore the behaviors across these diverse and discrete ethnicities (Narayan et al., 2010).

There were several limitations inherent to the BRFSS dataset. First, BRFSS data are self-reported; no objective medical data related to disease incidence or health outcomes are collected (IOM, 2011). Relying solely on self-reported data could lead to over or underreported prevalence estimates. As the BRFSS is a telephone-based survey, groups with limited or no access to the phone are underrepresented in the sample. However, one California study of FAs suggests that about 66% own a landline and 89% own a mobile phone (Bender, 2014). BRFSS survey response rates were relatively low, ranging between 38% and 44.8% across the four years. Conversely, this response rate was comparable to other national surveys, like the California Health Interview Survey, and weighted data help to ensure accurate estimates (CDC, 2015d). Further, the dependent variable was constructed based on the participant's ability to recall whether a doctor informed them of their CVD. Much of the literature around CVD prevalence involved a review of patient records in medical facilities or insurance claims. Analysis of this type of data may have provided a more accurate estimate of CVD disparities in Hawai'i. Lastly, the BRFSS dataset did not consistently measure hypertension prevalence, which may have been a better indicator of CVD risk. Future studies should focus on obtaining data regarding hypertension prevalence and diet preferences to better understand the relationship between FA and CVD. Additional studies should explore health insurance claims data to understand the impact of CVD on the FA population in Hawai'i.

## Conclusion

Although the literature consistently has shown that FAs experience CVD disparities, this study found contradictory findings. On the other hand, this study confirmed findings of FAs reported health behaviors that contribute to their risk for CVD. FAs were less physically active and reported the highest smoking and obesity prevalence compared to Asian subgroups. Sociodemographic and health care access, regardless of ethnicity, pose unique challenges and solutions for FAs residing in Hawai'i. More research using claims data or patient records could help to provide a more accurate picture of CVD disparities among FAs in Hawai'i.

**Table 1. Characteristics of the Sample by Ethnicity (weighted sample).**

| | Total (23,498[a]) % | White (10,509[a]) % | Filipino (3,455[a]) % | Chinese (1,243[a]) % | Japanese (4,675[a]) % | Hawaiian (3,616[a]) % | P-value |
|---|---|---|---|---|---|---|---|
| **Gender** | 23,498 | | | | | | |
| Female | 49.4 | 46.0 | 53.1 | 46.8 | 51.4 | 51.2 | p<0.001 |
| **Age (year)** | 23,469 | | | | | | p<0.001 |
| Mean age (SD) | 45.2 (0.16) | 45.4 (0.25) | 42.9 (0.38) | 45.3 (0.73) | 50.1 (0.33) | 40.3 (0.36) | |
| **Marital Status** | 23,431 | | | | | | p=0.001 |
| Married | 51.7 | 53.5 | 55.3 | 51.6 | 53.6 | 38.4 | |
| Not married | 48.3 | 46.5 | 44.7 | 48.4 | 46.4 | 61.6 | |
| **Annual Income** | 21,525 | | | | | | p<0.001 |
| < $50,000 | 47.8 | 42.8 | 63.2 | 39.9 | 34.9 | 63.8 | |
| ≥$50,000 | 52.2 | 57.2 | 36.8 | 60.1 | 65.1 | 36.2 | |
| **Employment Status** | 23,432 | | | | | | p<0.001 |
| Employed | 65.9 | 66.3 | 70.5 | 63.7 | 64.8 | 60.9 | |
| Not working | 34.1 | 33.7 | 29.5 | 36.3 | 35.2 | 39.1 | |
| **Education** | 23,456 | | | | | | p<0.001 |
| Not college graduate | 71.2 | 66.7 | 83.5 | 57.8 | 61.2 | 87.7 | |
| College Graduate | 28.8 | 33.3 | 16.5 | 42.2 | 38.8 | 12.3 | |
| **County of Residence** | 23,292 | | | | | | p<0.001 |
| Honolulu | 68.7 | 58.8 | 71.1 | 91.3 | 79.8 | 63.3 | |
| Not Honolulu | 31.3 | 41.2 | 28.9 | 8.7 | 20.2 | 36.7 | |
| **Survey Year** | 23,498 | | | | | | P=0.02 |
| 2011 | 24.7 | 25.7 | 25.5 | 24.0 | 24.1 | 22.3 | |
| 2012 | 25.6 | 24.4 | 23.7 | 28.3 | 27.2 | 27.7 | |
| 2013 | 25.9 | 26.3 | 26.6 | 26.4 | 25.5 | 24.1 | |
| 2014 | 23.8 | 23.6 | 24.1 | 21.3 | 23.2 | 25.9 | |

NOTE: Percentages are weighted to reflect a representative sample of Hawai'i's population and to account for the complex survey design.
[a] unweighted sample

**Table 1. (Continued) Characteristics of the Sample by Ethnicity (weighted sample).**

| | Total (23,498[a]) % | White (10,509[a]) % | Filipino (3,455[a]) % | Chinese (1,243[a]) % | Japanese (4,675[a]) % | Hawaiian (3,616[a]) % | P-value |
|---|---|---|---|---|---|---|---|
| **Self-rated Health** | 23,471 | | | | | | p<0.001 |
| Good, very good, excellent | 86.8 | 89.5 | 86.8 | 88.3 | 86.8 | 78.7 | |
| Fair or poor | 13.2 | 10.5 | 13.2 | 11.7 | 13.2 | 21.3 | |
| **Health care coverage** | 23,460 | | | | | | p<0.001 |
| Yes | 90.9 | 91.0 | 89.8 | 92.0 | 94.3 | 86.8 | |
| **Has a regular health care provider** | 23,452 | | | | | | p<0.001 |
| Yes | 84.1 | 78.7 | 86.0 | 88.8 | 91.5 | 82.0 | |
| **Could not see doctor because of cost** | 23,477 | | | | | | p<0.001 |
| Yes | 8.9 | 9.4 | 11.9 | 6.2 | 3.2 | 13.2 | |
| **Length of time since last routine checkup** | 23,367 | | | | | | p<0.001 |
| Within 2 years | 79.0 | 76.0 | 83.1 | 79.7 | 80.5 | 78.5 | |
| 2 or more years | 21.0 | 24.0 | 16.9 | 20.3 | 19.5 | 21.5 | |

NOTE: Percentages are weighted to reflect a representative sample of Hawai'i's population and to account for the complex survey design.
[a] unweighted sample

**Table 1. (Continued) Characteristics of the Sample by Ethnicity (weighted sample).**

| CVD-related Risk Factors | Total (23,498[a]) % | White (10,509[a]) % | Filipino (3,455[a]) % | Chinese (1,243[a]) % | Japanese (4,675[a]) % | Hawaiian (3,616[a]) % | P-value |
|---|---|---|---|---|---|---|---|
| **Exercise in past 30 days** | 22,982 | | | | | | p<0.001 |
| Yes | 80.8 | 86.0 | 72.8 | 78.6 | 80.2 | 79.9 | |
| **Current Smoker** | 23,048 | | | | | | p<0.001 |
| Yes | 15.1 | 15.3 | 13.5 | 6.6 | 12.5 | 25.4 | |
| **Heavy Drinker** | 22,749 | | | | | | p<0.001 |
| Yes | 26.3 | 34.8 | 17.9 | 17.1 | 20.4 | 28.7 | |
| **BMI** | 22,629 | | | | | | p<0.001 |
| Healthy Weight | 32.5 | 42.6 | 24.3 | 38.0 | 27.0 | 23.0 | |
| Overweight | 33.9 | 33.9 | 34.0 | 34.6 | 33.8 | 33.5 | |
| Obese | 31.3 | 21.0 | 39.5 | 24.4 | 36.5 | 42.5 | |
| **Diabetes Prevalence** | 23,464 | | | | | | p<0.001 |
| Diabetes | 7.9 | 4.4 | 9.9 | 7.0 | 10.6 | 10.3 | |
| Prediabetes | 4.7 | 3.1 | 5.3 | 6.0 | 5.9 | 5.5 | |
| **Cardiovascular Disease** | 23,498 | | | | | | p<0.001 |
| Yes | 5.6 | 5.0 | 4.2 | 5.6 | 6.6 | 7.3 | |
| **Heart Attack** | 23,382 | | | | | | P=0.02 |
| Yes | 2.8 | 2.5 | 2.1 | 3.9 | 2.8 | 3.8 | |
| **Coronary Heart Disease** | 23,372 | | | | | | p=0.04 |
| Yes | 2.4 | 2.2 | 2.0 | 2.5 | 2.6 | 3.5 | |
| **Stroke** | 23,436 | | | | | | p<0.001 |
| Yes | 2.3 | 1.8 | 1.6 | 2.1 | 3.1 | 3.3 | |

NOTE: Percentages are weighted to reflect a representative sample of Hawai'i's population and to account for the complex survey design.

[a] unweighted sample

**Table 2. Association between CVD prevalence and Key Variables, Stratified by Ethnicity**

| **Unadjusted Odds Ratio** | White OR (95% CI) | Filipino OR (95% CI) | Chinese OR (95% CI) | Japanese OR (95% CI) | Native Hawaiian OR (95% CI) | P-value |
|---|---|---|---|---|---|---|
| **Age (year)** | 1.08* (1.06 – 1.09) | 1.07* (1.04 – 1.09) | 1.04 (1.00 – 1.09) | 1.07* (1.05 – 1.08) | 1.07* (1.05 – 1.08) | 0.51 |
| **Gender** | | | | | | |
| Male | 1.71* (1.36 – 2.15) | 1.88* (1.19 – 3.00) | 2.00 (0.92 – 4.18) | 1.69* (1.24 – 2.32) | 0.95 (0.69 – 1.32) | 0.03 |
| Female | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| **Annual Income** | | | | | | 0.11 |
| <$50,000 | 1.59* (1.23-2.01) | 1.83* (1.09-3.11) | 0.82 (0.33-2.02) | 1.53* (1.12-2.10) | 2.62* (1.74-3.95) | |
| ≥$50,000 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| **Marital Status** | | | | | | 0.15 |
| Married | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Not Married | 0.85 (0.67-1.06) | 0.89 (0.56-1.42) | 1.68 (0.79-3.58) | 0.65* (0.48-0.87) | 0.94 (0.67-1.32) | |
| **Employment** | | | | | | 0.40 |
| Employed | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Not working | 3.53* (2.80-4.46) | 3.54* (2.21-5.69) | 2.92* (1.32-6.44) | 2.45* (1.80-3.34) | 3.50* (2.51-4.91) | |
| **Education** | | | | | | 0.17 |
| <College Graduate | 1.37* (1.11-1.68) | 1.71 (0.83-3.52) | 1.91 (0.96-3.79) | 2.21* (1.61-3.03) | 1.67 (0.98-2.81) | |
| College Graduate | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| **County** | | | | | | 0.25 |
| Honolulu | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Not Honolulu | 1.22 (0.98-1.52) | 0.81 (0.53-1.24) | 0.75 (0.31-1.82) | 0.97 (0.72-1.29) | 1.31 (0.95-1.80) | |

NOTE: *indicates statistical significance

**Table 2. (Continued) Association between CVD prevalence and Key Variables, Stratified by Ethnicity**

| Unadjusted Odds Ratio | White OR (95% CI) | Filipino OR (95% CI) | Chinese OR (95% CI) | Japanese OR (95% CI) | Native Hawaiian OR (95% CI) | P-value |
|---|---|---|---|---|---|---|
| **Survey Year** | | | | | | 0.23 |
| 2011 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| 2012 | 1.02 (0.75 – 1.39) | 1.15 (0.57 – 2.31) | 1.07 (0.35 – 3.30) | 0.71 (0.47 – 1.07) | 1.81* (1.13 – 2.90) | |
| 2013 | 1.18 (0.86 – 1.63) | 1.16 (0.61 – 2.22) | 1.29 (0.36 – 4.56) | 0.59* (0.39 – 0.88) | 1.46 (0.91 – 2.35) | |
| 2014 | 1.16 (0.88 – 1.53) | 1.20 (0.63 – 2.28) | 1.50 (0.50 – 4.50) | 0.82 (0.54 – 1.24) | 1.68 (1.10 – 2.57) | |
| **Self-rated Health** | | | | | | 0.90 |
| Fair or poor | 6.69* (5.25 – 8.52) | 3.79* (2.38 – 6.01) | 7.10* (3.11 – 16.23) | 4.19* (3.03 – 5.81) | 5.24* (3.73 – 7.35) | |
| **No health care coverage** | 0.61 (0.37 – 1.00) | 0.62 (0.21 – 1.83) | 0.82 (0.14 – 4.92) | 0.44 (0.15 – 1.27) | 0.46* (0.25 – 0.84) | 0.93 |
| **No regular provider** | 0.29 (0.18 – 0.47) | 0.43 (0.15 – 1.24) | 0.51 (0.19 – 1.41) | 0.25* (0.09 - 0.68) | 0.28* (0.15 – 0.53) | 0.39 |
| **Could not afford to see doctor** | 1.62* (1.12 – 2.34) | 1.58 (0.83 – 3.00) | 2.64 (0.88 – 7.91) | 2.18* (1.08 – 4.40) | 1.32 (0.86 – 2.02) | 0.67 |
| **Time since last routine checkup** | | | | | | 0.36 |
| Within 2 years | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| 2 or more years | 0.48* (0.34 – 0.68) | 0.32* (0.16 – 0.62) | 0.24* (0.09 – 0.65) | 0.33* (0.20 – 0.55) | 0.54* (0.33 – 0.87) | |

NOTE: *indicates statistical significance

**Table 2. (Continued) Association between CVD prevalence and Key Variables, Stratified by Ethnicity**

| Unadjusted Odds Ratio | White OR (95% CI) | Filipino OR (95% CI) | Chinese OR (95% CI) | Japanese OR (95% CI) | Native Hawaiian OR (95% CI) | P-value |
|---|---|---|---|---|---|---|
| **Exercise in past 30 days** | 2.47* (1.90 – 3.92) | 1.53 (0.94 – 2.50) | 2.31 (0.98 – 5.43) | 1.59* (1.12 – 2.26) | 1.97* (1.39 – 2.78) | 0.25 |
| **Current Smoker** | 1.16 (0.86 – 1.57) | 1.38 (0.73 – 2.62) | 0.85 (0.31 – 2.36) | 1.13 (0.73 – 1.74) | 1.11 (0.78 – 1.59) | 0.95 |
| **Heavy Drinker** | 1.06 (0.57 – 1.97) | 3.07 (0.83 – 11.35) | 0.25 (0.03 – 2.14) | 1.28 (0.47 – 3.48) | 0.71 (0.26 – 1.93) | 0.29 |
| **BMI** | | | | | | 0.08 |
| Overweight | 1.42* (1.09 – 1.84) | 1.96 (0.96 – 3.99) | 1.77 (0.55 – 5.71) | 2.61* (1.65 – 4.12) | 1.91* (1.17 – 3.12) | |
| Obese | 2.45* (1.84 – 3.27) | 2.21* (1.09 – 4.45) | 2.22 (0.71 – 6.91) | 4.35* (2.84 – 6.67) | 1.91* (1.24 – 2.95) | |
| **Diabetes Prevalence** | 6.00* (4.84 – 8.03) | 3.70* (2.24 – 6.13) | 6.72* (2.72 – 16.58) | 4.29* (3.05 – 6.05) | 4.44* (3.03 – 6.49) | 0.36 |

NOTE: *indicates statistical significance

**Table 3. Summary of Unadjusted and Adjusted Analyses of the Association between CVD Prevalence and Ethnicity (unweighted N = 21,373)**

| | | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|---|---|---|---|
| **Age (year)** | | 1.07* (1.06 – 1.07) | 1.05* (1.04 – 1.06) |
| **Gender** | | | |
| | Male | 1.60* (1.33 – 1.81) | ---- |
| | Female | 1.0 | ---- |
| **Ethnicity** | | | |
| | White | 1.0 | ---- |
| | Filipino | 0.83 (0.65 – 1.07) | ---- |
| | Hawaiian | 1.49* (1.22 – 1.82) | ---- |
| | Chinese | 1.11 (0.74 – 1.69) | ---- |
| | Japanese | 1.32* (1.09 – 1.59) | ---- |
| **Gender (Male vs. Female)** | | | |
| | White | ---- | 2.28* (1.79 – 2.91) |
| | Filipino | ---- | 0.72 (0.49 – 1.04) |
| | Hawaiian | ---- | 0.95 (0.69 – 1.30) |
| | Chinese | ---- | 0.99 (0.55 – 1.77) |
| | Japanese | ---- | 0.84 (0.65 – 1.10) |

NOTE: *indicates statistical significance

**Table 3. (Continued) Summary of Unadjusted and Adjusted Analyses of the Association between CVD Prevalence and Ethnicity (unweighted N = 21,373)**

| | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|---|---|---|
| **Ethnicity (White as reference)** | | |
| **Female** | | |
| White | ---- | 1.0 |
| Filipino | ---- | 0.73 (0.46 – 1.16) |
| Hawaiian | ---- | 2.02* (1.47 – 2.78) |
| Chinese | ---- | 0.92 (0.52 – 1.61) |
| Japanese | ---- | 1.06 (0.76 – 1.49) |
| **Male** | | |
| White | ---- | 1.0 |
| Filipino | ---- | 0.72 (0.49 – 1.04) |
| Hawaiian | ---- | 0.95 (0.69 – 1.30) |
| Chinese | ---- | 0.99 (0.55 – 1.77) |
| Japanese | ---- | 0.84 (0.65 – 1.10) |
| **Marital Status** | | |
| Married | 1.0 | --- |
| Not Married | 0.88 (0.76 – 1.03) | --- |
| **Annual Income** | | |
| <$50,000 | 1.58* (1.34 – 1.85) | 0.88 (0.55 – 1.41) |
| ≥$50,000 | 1.0 | 1.0 |
| **Employment Status** | | |
| Employed | 1.0 | 1.0 |
| Not working | 3.22* (2.75-3.77) | 1.72* (1.40 – 2.11) |
| **Education** | | |
| <College Graduate | 1.65* (1.41-1.93) | 1.41* (1.17 – 1.70) |
| College Graduate | 1.0 | 1.0 |
| **County of Residence** | | |
| Honolulu | 1.0 | ----- |
| Not Honolulu | 1.07 (0.93-1.23) | ----- |

NOTE: *indicates statistical significance

**Table 3. (Continued) Summary of Unadjusted and Adjusted Analyses of the Association between CVD Prevalence and Ethnicity (unweighted N = 21,373)**

| | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|---|---|---|
| **Survey Year** | | |
| 2011 | 1.0 | ----- |
| 2012 | 1.06 (0.85 – 1.31) | ----- |
| 2013 | 1.02 (0.82 – 1.27) | ----- |
| 2014 | 1.14 (0.93 – 1.40) | ----- |
| **Self-rated Health** | | |
| Fair or poor | 5.26* (4.49 – 6.17) | 2.99* (2.47 – 3.63) |
| Good, very good, excellent | 1.0 | 1.0 |
| **No health care coverage** | 0.56* (0.39 – 0.81) | --- |
| **No regular health care provider** | 0.31* (0.22 – 0.43) | 0.55* (0.36 – 0.82) |
| **Could not afford to see doctor** | 1.57* (1.24 – 2.00) | 1.64* (1.23 – 2.20) |
| **Time since last routine checkup** | | |
| Within 2 years | 1.0 | 1.0 |
| 2 or more years | 0.42* (0.33 – 0.53) | 0.60* (0.46 – 0.79) |
| **CVD Risk Factors** | | |
| No exercise in last 30 days | 1.89* (1.59 – 2.25) | 1.26* (1.05 – 1.53) |
| Current smoker | 1.20 (0.99 – 1.46) | ----- |
| Heavy drinker | 1.20 (0.74 – 1.96) | ----- |
| Diabetes | 4.73* (3.94 – 5.67) | 1.65* (1.32 – 2.06) |
| Overweight | 1.79* (1.45 – 2.20) | 1.25 (0.99 – 1.58) |
| Obese | 2.53* (2.07 – 3.10) | 1.46* (1.15 – 1.86) |

NOTE: * indicates statistical significance

# CHAPTER 3

## STRATEGIES TO INCREASE FILIPINO AMERICAN PARTICIPATION IN CARDIOVASCULAR HEALTH PROMOTION: A SYSTEMATIC REVIEW


### Abstract

Research has shown that cultural tailoring of interventions can be effective in reducing health disparities by attracting underserved populations to health promotion programs and improving their outcomes. The purpose of this systematic review is to assess what is known about increasing FA access to and participation in cardiovascular disease prevention and control programs. PubMed MEDLINE, CINAHL, and Sociologic Abstracts were searched for peer-reviewed studies and dissertations conducted in the U.S. between 2004 and 2016. A total of 347 articles were identified through a combined search of three databases, but nine articles that were focused on cardiovascular disease prevention that included an FA sample. All but one study utilized evidence-based curricula, and implementation varied across all sites. All but two articles employed the use of word of mouth advertising from friends, family, and community leaders to increase participation. In terms of Filipino cultural values, food, caring and social relationships, and family were prevalent aspects across interventions tailored for FAs. Surprisingly, aspects of spirituality and the arts were integrated in only a few studies. Given the burden of cardiovascular disease in Filipino American populations, tailored interventions rooted in Filipino cultural values are vital to address this known health disparity.

## Background

In the United States (U.S.), there are 3.6 million FAs (Asian Americans Advancing Justice [AAJC], 2011). In Hawai'i, FAs are the largest Asian American subgroup totaling over 340,000 (AAJC, 2015). Despite the large number of FAs, national health data on FAs are limited and often aggregated with other Asian subgroups.

Those few researchers who have disaggregated FAs from national datasets have found that FAs experience greater chronic disease burden than whites, blacks, and other ethnic Asian groups. Nationally, FAs have a high mortality due to chronic conditions. In a recent study by Hastings and colleagues (2015), researchers reviewed national mortality records from the 2003 – 2011 to identify the leading causes of death among Asian Americans. Researchers found that the leading cause of death among Filipino females was cancer, followed by cardiovascular disease and cerebrovascular disease. Among Filipino males, heart disease was the leading cause of death, followed by cancer and cerebrovascular disease. Compared to other ethnic groups, Filipino males had the highest cardiovascular disease mortality rate. Jose et al. (2014) observed that Filipino males had the highest proportion of cardiovascular disease mortality at a younger age. Further, Filipino males had the highest mortality due to cerebrovascular disease among the Asian subgroups. Additionally, both Filipino females and males experienced the highest mortality due to diabetes than other Asian subgroups (Hastings et al., 2015).

Studies also show that FAs have high chronic disease prevalence. In an analysis of the National Health Interview Survey from 2003 to 2005 by Ye and colleagues (2009), authors noted that Filipinos were 18% more likely to have hypertension than all other Asians and non-Hispanic whites in the study. Carlisle (2014) examined data from the Collaborative Psychiatric Epidemiology Surveys and found that 27.8% of Filipinos reported having cardiovascular conditions, 37.6% had respiratory conditions, and a 45.3% reported chronic pain. A literature review by Abesamis and colleagues (2015) found that Filipino females were at higher risk for heart disease than other ethnic groups, and were 2.02 times more likely than white men and women to have a stroke. Further, Araneta and Barrett-Connor (2005) observed that Filipino women had a significantly higher Type 2 diabetes prevalence (32.1%) than white (5.8%) or African American (12.1%) women. Staimez and colleagues (2013) review of the literature showed diabetes prevalence ranging between 3.7% and 30.9%. Shih et al. (2014) analyzed Los Angele County Health Survey and found that FAs were nearly 2 times more likely to have diabetes compared to non-Hispanic whites. Similarly, Becerra & Becerra

(2015) analyzed the California Health Interview Survey data from 2003 – 2011 and found that FAs were diagnosed with diabetes 8.4 years earlier than non-Hispanic white participants.

In terms of health promotion activities, a review of research on cardiovascular disease by Abesamis et al. (2015) found that FAs were less likely to engage in physical activity. Authors suspect that cultural norms place a heavy focus on education in childhood rather than sports may contribute to this disparity. Although no national data on FA dietary patterns were available, researchers noted that traditional Filipino foods were high in sodium, and immigrants tend to consume more meat because of its availability and affordability in the U.S. As mentioned earlier, smoking prevalence was high among FAs. However, smoking cessation was highly influenced by family and friends. Researchers presume the cultural value of *pakikisama* (avoiding conflict to preserve relationships) plays a role in smoking cessation (Abesamis et al., 2015; Garcia, Romero, & Maxwell, 2010).

In 2007, researchers from the Center for the Study of Asian American Health at New York University conducted a community health needs assessment of FAs residing in New York (Center for the Study of Asian American Health, 2007). Authors confirmed that data on FA health are limited; only 109 of the 2,300 Asian American articles published between 1975 and 2004 included an FA sample. New York FAs reported that cardiovascular disease and stroke were primary health concerns that needed to be addressed. Focus group findings revealed that many FAs do not regularly eat healthy, exercise, or have access to health care. Among youth and young adult FAs, substance abuse was a primary concern. FAs also expressed frustration over the lack of research on FAs and the lack of culturally and linguistically appropriate health resources for FAs. FAs in this study suggested that the best approach to health promotion was comprehensive and targeted to preventing disease and organizing the FA community (Center for the Study of Asian American Health, 2007).

Research has shown that cultural tailoring of interventions can be effective in reducing health disparities by attracting underserved populations to health promotion programs and improving their outcomes. In a systematic review of the impact of culturally tailored health interventions on health disparities by Fisher and colleagues (2007), researchers observed that tailored interventions led to significant improvements in mammography utilization, improvements in diet, improvements in cervical cancer screening, and increased readiness to quit smoking. Further, authors noted that equal access to health care was not enough to reduce health disparities, but that leveraging cultural components to target disparate communities is necessary to assure equitable access to health care. Kreuter and colleagues (2003) offer five strategies to translate cultural tailoring

into practice: a) peripheral strategies, b) evidential strategies, c) linguistic strategies, d) constituent-involving, and e) sociocultural strategies. Peripheral strategies refer to the appearance of culturally appropriate programs by packaging them in a way that would be attractive to the target population. Evidential strategies are aimed at presenting evidence of the problem in a way that is relevant to the target population. Linguistic strategies refer to the ability to provide programs in the language of the target population by using a culture's words or phrases. Constituent-involving strategies include staffing the program with people of similar backgrounds as the target population. Lastly, sociocultural strategies refer to approaches to weave the cultural values into the program's components. For Filipinos, values of spirituality, family orientation, upward social mobility, caring orientation, connection to the mother country, arts, food, and life celebrations as integral components of the culture (Guerrero, Bayola, and Ona, 2011).

Among minority groups, Mier and colleagues (2010) conducted interviews with a small cohort of minority health researcher affiliates of the Health Maintenance Consortium that included 21 National Institute of Health-funded projects. Authors noted that conducting formative research is a vital step in tailoring interventions. Formative research should include literature searches, focus groups, and pilot-testing of intervention components. This type of research may be time-consuming, but identifies cultural norms and social contexts that need to be woven into health programming (Mier et al., 2010). For cardiovascular disease, Wallace, Fulwood, and Alvarado (2008) offer a five-step process to support adaptation of a CVD prevention curriculum for different ethnic minorities: 1) assembling a multidisciplinary and multicultural team to support adaptations, 2) partnering with target communities to offer feedback to curriculum, 3) employing an iterative process for curricula adaptations, 4) piloting curricula with target populations, and 5) convening team to integrate feedback (Wallace et al., 2008).

The purpose of this systematic review is to assess what is known about increasing FA access to and participation in cardiovascular disease prevention and control programs. This literature review also examined how health promotion programs have been tailored to increase FA participation, with the objective of identifying key components of effective interventions tailored for FAs. Additionally, this review investigated which cultural components, evaluation methods, and sustainability efforts were incorporated in successful programs. This review aimed to answer the following research question: What is known about increasing FA access to and participation in CVD prevention and health promotion programs?

## Methods

### Search strategy

PubMed MEDLINE, CINAHL, and Sociologic Abstracts were searched for peer-reviewed studies and dissertations conducted in the U.S. between 2004 and 2016 using combinations of the following key search terms found in Table 4. A manual review of reference listings of relevant articles also was conducted to capture additional studies that did not appear in previous database searches. This review followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, Altman, the PRISMA Group, 2009).

**Table 4. Key Search Terms**

| Population | Intervention | Conditions |
|---|---|---|
| Philippines/ethnology | Health promotion | Cardiovascular Disease |
| Asian Americans | Preventive Health Services | Diabetes Mellitus/prevention and control |
| Culture | Prevention and Control | Cerebrovascular Disease |

### Inclusion and Exclusion Criteria

Search terms and inclusion criteria were generated using the Participants, Intervention, Comparators, Outcomes, and Study Design (PICOS) methodology (Centres for Reviews and Dissemination [CRD], 2009). The population of interest was Filipino American adults residing in the U.S. Studies reporting on interventions aiming to prevent or manage CVD and CVD risk factors were included as long as studies recruited at least one FA group and if information was presented on how the intervention was or could be tailored to FA. For comparative studies, the comparators were defined as the control or group in which the intervention was not delivered or the non-FA ethnic groups to which the intervention was targeted. Outcomes assessed included any chronic disease indicators, as well as changes in perceptions around chronic disease. To gain insight on the cultural tailoring or adaptation of included interventions, this review incorporated qualitative studies that provided strategies to tailor programs to FA communities.

### Data Abstraction

This review examined the presence of cultural components, evaluation methods, and sustainability efforts of each included intervention. Data were abstracted based on Participants, Intervention, Comparators, Outcomes, and Study Design (PICOS) criteria, which included the proportion of FA included in the study, study type, intervention focus, cultural components recommended, evaluation methods and findings, and implementation and sustainability issues (Centres for Reviews and Dissemination [CRD], 2009). Articles were reviewed to determine the

presence of core Filipino values of spirituality, family orientation, upward social mobility, caring orientation, connection to the mother country, arts, food, and life celebrations (Guerrero, Bayola, and Ona, 2011).

**Study Quality Assessment**

The quality of each quantitative study was assessed using a modified version of The Community Preventive Task Force's assessment tool. Each study was scored based on 9 domains, including intervention description, sampling frame, eligibility criteria, population sampling, intervention exposure, valid and reliable outcome measures, appropriate statistical analysis, participant completion, and controlling for confounders. Scores ranged from 0-9 based on the number of criteria met and were rated as good (8-9 criteria met), fair (5-7 met), or limited (<5 met) (Zaza, Wright-De Aguero, Briss, Truman, Hopkins, Hennessy, et al., 2000).

Qualitative studies were appraised using a modified form of Shou and colleagues (2012) assessment tool for qualitative research. Each study was rated based on the following five criteria: formal requirements of conducting research, credibility of study design, transferability of findings, dependability of data analysis, and confirmability of research findings. Each domain was rated on a scale of 1 to 4, with a score of 1 indicating complete disagreement to 4 indicating complete agreement. Scores ranged from 0-20 based on the extent to which the criteria were met. Total scores were calculated, and each study was rated as "recommended" (scores $\geq$15), "recommended with reservations" (scores between 10 and 15), or "not recommended" (scores <10).

Intervention efficacy was assessed using a modified form of Spencer et al.'s (2013) conceptual framework for planning and improving evidence-based practices. This framework combined two components: public health impact and strength of the evidence. The public health impact component was comprised of five areas: 1) effectiveness of the program, 2) potential reach of intervention, 3) feasibility of implementation, 4) sustainability, and 5) application of intervention in various contexts (transferability). Effectiveness of the program was determined by achievement of outcomes, public health significance, and magnitude of effect. Reach was assessed by proportion of eligible participants actually affected, potential to reach participants, and representativeness of groups. Feasibility was evaluated by the degree of implementation barriers, facilitators, and resources needed to implement the intervention. Sustainability was determined by the degree of integration into existing systems, sustained outcomes, and number of resources required to sustain the practice. Transferability was assessed by whether it was replicated in other settings, degree of adaptation needed for other populations, and comparative effectiveness to other studies. Each area was rated

from a scale of 1 to 4, with a score of 1 indicating complete disagreement to 4 indicating complete agreement. Scores then were averaged across the five areas to create a total impact score, and each article was rated as low (scores<2), moderate (scores 2-3), or high (scores>3). Plotting the public health impact score against the strength of the evidence scores generated from the quality assessments, this framework was used to assess the quality of the evidence and applicability of research findings from each article.

## Results

### Article selection

A total of 347 articles were identified through a combined search of three databases (Figure 1). Duplicates (n=8) and non-relevant articles based on title and abstract (n=309) were removed. The remaining 34 were read in full by one reviewer, and four additional articles were found through manual review of reference lists. Upon application of inclusion and exclusion criteria, 26 more were excluded: nine were descriptive studies, nine were not targeted at the FA community; and eight were not peer reviewed articles. As a result, nine articles were selected for data abstraction and assessed for quality.

### Description of Studies

Of the nine articles selected, six were conducted in Hawai'i (Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Tomioka et al., 2011; Tomioka et al., 2014;, Finucane & McMullen, 2008), two in California (Bender et al., 2016; Dirige et al., 2013), and one in New Jersey and New York (Ursua et al., 2014) (Table 5). Eight were quantitative (Bender et al., 2016; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Ursua et al., 2014; Tomioka et al., 2011; Dirige et al., 2013; Tomioka et al., 2014), and one was qualitative (Finucane & McMullen, 2008). Of the eight quantitative studies, four were randomized controlled trials (Bender et al., 2016; Inouye et al., 2014; Leake et al., 2011; Dirige et al., 2013), and four were one group pre-posttest study designs (Fernandes et al., 2011; Ursua et al., 2014; Tomioka et al., 2011; Tomioka et al., 2014).

Three articles reported on diabetes and CVD prevention interventions (Bender et al, 2016; Inouye et al., 2014; Leake et al., 2011), two on CVD risk reduction (Fernandes et al., 2011 & Ursua et al., 2014), and one on general chronic disease prevention (Dirige et al., 2013). The remaining articles focused on management and control of diabetes (Tomioka et al., 2014; Finucane & McMullen, 2008) and chronic diseases (Tomioka et al., 2011). Of the studies focused on diabetes prevention, all three combined aspects of the Centers for Disease Control and Prevention's (CDC) Diabetes Prevention Program and the National Heart, Lung, and Blood Institute's (NHLBI) Healthy

Heart, Healthy Family curricula (Bender et al, 2016; Inouye et al., 2014; Leake et al., 2011). For articles focused solely on CVD risk reduction, researchers tested the NHLBI's Healthy Heart, Healthy Family curriculum tailored for FAs (Fernandes et al., 2011; Ursua et al., 2014). Articles published by Tomioka and colleagues (2011, 2014) utilized evidence-based curricula developed by Stanford University for management of chronic conditions (Tomioka et al., 2011) and diabetes (Tomioka et al., 2014). Dirige et al. (2013) were the only researchers who did not to utilize an evidence-based curriculum for their intervention.

Delivery of curricula varied across all interventions. For articles describing the combined CDC and NHLBI curricula, Inouye et al. (2014) and Leake et al. (2011) reported on the same intervention in which participants were offered a choice to complete all eight sessions within the six-month intervention period, with some finishing the intervention as quickly as six weeks. In contrast, Bender et al. (2016) delivered their curriculum virtually in conjunction with seven in-person visits for intervention education, coaching, and support. In studies testing at NHLBI curriculum, intervention intensity ranged from as few as four monthly sessions with six hours of education total (Ursua et al., 2014) to 11 weekly sessions, totaling 22 hours of education (Fernandes et al., 2011). Sample size of FAs in the study were fairly small with six of the eight studies reporting samples less than 100 FA participants (Bender et al., 2016; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Ursua et al., 2014; Tomioka et al., 2014). Interestingly, Dirige and colleagues' (2013) study yielded the highest participation among FAs with a total of 255. Researchers utilized community-based leaders that served of health ambassadors organizing activities and educational sessions to support healthy eating and being physically active to prevent chronic disease among FA cultural groups in San Diego county (Dirige et al., 2013).

**Recruitment Strategies**

All but two articles noted that word of mouth from friends, family, and community leaders was the primary recruitment method for interventions (Bender et al., 2016; Inouye et al., 2014; Leake et al., 2011; Tomioka et al., 2014; Tomioka et al., 2011; Dirige et al., 2013). Of those that did not use word of mouth advertising, Fernandes et al. (2011) relied on direct physician referrals to the program, and Dirige et al. (2013) sent mailers to zip codes with a large proportion of FAs. Community events also were popular methods of recruitment across the articles. Events involved a variety of activities such as health screenings (Inouye et al, 2014; Leake et al., 2011; Ursua et al., 2014; Tomioka et al., 2011), social groups and cultural events (Bender et al., 2016; Ursua et al., 2014; Dirige et al., 2013), and churches (Leake et al., 2011; Inouye et al., 2011; Tomioka et al., 2011; Ursua

et al., 2014). Further, Tomioka and colleagues (2011, 2014) posted advertisements in newspapers and offered an informational session that described the intervention to interested participants.

**Cultural Tailoring and Incorporating Filipino Values**

Of all the Filipino cultural values described by Guerrero and colleagues (2011), the most prevalent was incorporation of cultural Filipino foods (Bender et al., 2016; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Ursua et al., 2014; Tomioka et al., 2011; Dirige et al., 2013; Tomioka et al., 2014). Each intervention integrated Filipino foods differently. Some offered specific replacements to modify traditional foods suggesting grilled fish instead of fried fish (Bender et al, 2016; Dirige et al., 2013). However, the majority aimed to increase awareness of the nutritional value of common Filipino foods through pictures (Fernandes et al., 2011) or verbally by using Filipino word for food, like *chicharon* instead of pork rinds (Inouye et al., 2014; Leake et al., 2014; Ursua et al., 2014; Tomioka et al., 2011; Tomioka et al., 2014). In Finucane and McMullen's (2008) interviews with FAs in Hawai'i, researchers underscored the importance of tailoring education around diet modification while respecting the significance that food plays in the Filipino culture.

All eight articles incorporated the cultural value of caring and maintaining social relationships throughout the interventions (Ursua et al., 2014; Fernandes et al., 2011; Bender et al., 2016; Dirige et al., 2013; Inouye et al., 2014; Leake et al., 2011; Tomioka et al., 2011; Tomioka et al., 2014). Finucane and McMullen (2008) noted the importance of working together for the benefit of all (*bayanihan*) through social support and storytelling. This was exhibited across all eight articles from the incorporation of Filipino staff to the social support fostered through group discussions and activities. Ursua and colleagues (2014) partnered with local community-based organizations and churches to help sponsor health screenings. Bender et al. (2016) established a private social media page to foster social support through a virtual platform. Dirige and colleagues (2013) trained volunteer Filipino club leaders to organize health promotion activities like walking clubs and instituting healthy food potluck policies for their groups. Similarly, Tomioka et al. (2011, 2014) reported that there was "ethnic concordance" between participants and leaders, which facilitated the recruitment, retention, and learning of FA participants. The incorporation of Filipino staff with shared language, culture, and life experiences helped to build rapport and trust among participants. Further, the inclusion of Filipino staff who were readily easily accessible to participants were vital to maintaining these relationships. Flexible scheduling and follow-up were important aspects to maintain trust and participation in the various programming. Ursua and colleagues (2014) noted that their Filipino staff was available on nights and weekends to accommodate the participants' work and

family schedules. Inouye et al. (2014) and Leake et al. (2011) echoed that value of flexible scheduling to retain participants in their program.

Five of the eight articles mentioned the importance of involving family members in the intervention (Bender et al., 2016; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Ursua et al., 2014). The majority of the articles encourage FA participants to invite their family members to join the educational sessions (Bender et al., 2016; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011; Ursua et al., 2014). One study encouraged participants to roleplay with family members utilizing the scenarios presented as part of the curriculum (Inouye et al., 2014; Leake et al., 2011). Finucane and McMullen (2008) emphasized the struggle FAs often face when managing their chronic conditions without burdening their family members. Further, educators should acknowledge the context of recommendations given their family obligations.

Upward social mobility, which referred to career advancement through the pursuit of higher education, was seen in five articles (Ursua et al., 2014; Fernandes et al., 2011; Bender et al., 2016; Tomioka et al., 2014; Tomioka et al., 2011). This value was exemplified through the inclusion of graduation ceremonies that conferred a certificate of completion following the intervention. Tomioka and colleagues (2014) noted that participants were proud "to have a certificate from referencing the Stanford program." Further, Ursua and colleagues (2014) noted that these graduation events allowed participants to share their successes and celebrate the progress that was made. Similarly, other life celebrations were incorporated in five articles (Ursua et al., 2014; Fernandes et al., 2011; Dirige et al., 2013; Tomioka et al., 2011; Tomioka et al., 2014). These celebrations, like reunions or monthly celebrations, often served as a mechanism to capture follow-up data (Tomioka et al., 2011; Tomioka et al., 2014; Fernandes et al, 2011).

Five articles addressed the value related to a connection to the mother country through the expression of traditional values that were embodied within the interventions (Ursua et al., 2014; Fernandes et al., 2011; Bender et al., 2016; Inouye et al., 2014; Leake et al., 2011). Ursua and colleagues (2014) and Bender and colleagues (2016) framed CVD education in the context of Filipino history and culture; however, there were no details on how this was accomplished. Some participants reported that the classes were reminiscent of a visit to the Philippines (Inouye et al., 2014; Leake et al., 2011). Similarly, Fernandes and colleagues (2011) reported that the Filipino staff instilled the values of togetherness (*pakkikisama*), community spirit (*bayanihan*), and obligation and reciprocity (*utang-na-loob*) within the program.

Spirituality and the arts were the least incorporated values in the articles, with only four (Ursua et al., 2014; Inouye et al., 2014; Leake et al., 2011; Tomioka et al., 2011) and three articles (Ursua et al., 2014; Bender et al., 2016; Dirige et al., 2013), respectively. Spirituality was integrated through opening prayers at each session (Tomioka et al., 2011) or engagement of local pastors to assist in recruitment of participants or reinforcement of health messages (Ursua et al., 2014; Inouye et al., 2014; Leake et al., 2011). Finucane and McMullen (2008) noted that spirituality plays a significant role in coping with and understanding of illness. Authors expressed that the concept of *bahala na*, a traditionally fatalistic view of illness, may contradict the concepts of self-management often recommended in chronic disease management. The Filipino arts were incorporated through encouragement of physical activity by dancing. Other interventions used social events that incorporated singing and dancing to recruit for interventions or implement health education activities and screenings. Interestingly, the three articles that incorporated Filipino arts all were located outside of Hawai'i.

**Intervention Outcomes**

Intervention outcomes fell into four broad categories: clinical, knowledge, behavioral, and participant satisfaction (Table 6). Only four articles measured and reported clinical outcomes, while others reported behavioral outcomes and/or participant satisfaction. Of those reporting clinical outcomes, Ursua and colleagues' (2014) Healthy Heart, Healthy Family intervention, which incorporated all the cultural values, reported the most positive outcomes across all categories. Fernandes and colleagues (2011) implemented the same curriculum and reported similar satisfaction findings, but did not realize the same clinical outcomes. Utilizing the combination of the Diabetes Prevention Program and the Healthy Heart, Healthy Family curricula, Inouye et al. (2014) and Leake et al. (2011) observed decreased weight, waist circumference and BMI in addition to high participant satisfaction and attendance. Tomioka et al. (2014) found significant decreases in BMI, improved HbA1c, and lower cholesterol and blood pressure levels. Bender et al. (2016) appeared to show promising findings; however, results are still pending intervention completion. In general, improvements in health behaviors of physical activity and diet were seen across the board. Satisfaction and retention remained high among those articles that captured that information. Overall, all articles showed positive findings across various outcome measures.

**Quality Assessment and Intervention Efficacy**

Of the eight quantitative studies, four were rated as good quality (Bender et al., 2016; Inouye et al., 2014; Ursua et al., 2014; Dirige et al., 2013), and the remaining four were of fair quality

(Fernandes et al., 2011; Tomioka et al., 2011; Tomioka et al., 2014; Leake et al., 2011) (Table 7). The only qualitative study was rated as a recommended study with a total score of 18 out of 20 (Finucane & McMullen, 2008). In terms of intervention effectiveness, only two articles scored within the high range (Dirige et al., 2013; Ursua et al., 2014). Six of the eight studies were determined to have moderate reach (Ursua et al., 2014; Fernandes et al., 2011; Tomioka et al., 2011; Tomioka et al., 2014; Inouye et al., 2014; Leake et al., 2011). All but one article (Bender et al., 2016) described moderately feasible interventions. Only three of the articles were scored as moderately sustainable interventions (Dirige et al., 2013; Tomioka et al., 2011; Tomioka et al., 2014). Half of the articles reported high transferability (Ursua et al., 2014; Fernandes et al., 2011; Tomioka et al., 2011; Tomioka et al., 2014). Overall, five articles were rated of moderate impact (Dirige et al., 2013; Ursua et al., 2014; Fernandes et al., 2011; Inouye et al., 2014; Leake et al., 2011), and two studies were scored as high impact interventions (Tomioka et al., 2011; Tomioka et al., 2014). Bender and colleagues (2016) was scored to be the lowest impact intervention because findings were not available at the time of this review. Intervention efficacy of each article was plotted on a graph as depicted in Figure 2. Findings suggest that articles by Tomioka and colleagues (2011, 2014) reported the most impact but Dirige et al., (2013) and Ursua et al. (2014) were higher quality studies. All of the studies were either leading or promising practices. Further, the articles that included the arts and spirituality were noted as leading practices, so findings suggest that the incorporation of these cultural values may help to improve intervention outcomes.

## Discussion

This systematic review identified nine articles that were focused on cardiovascular disease prevention that included an FA sample. The majority of the articles published were conducted in Hawai'i, with only three studies from the continental United States. All but two articles involved a 100% FA sample. All but one study utilized evidence-based curricula, and implementation varied across all sites. All but two articles employed the use of word of mouth advertising from friends, family, and community leaders to increase participation.

In terms of Filipino cultural values, food, caring and social relationships, and family were prevalent aspects across interventions tailored for FAs. The cultural significance of food among FAs was evidenced by its presence in all nine articles. Researchers have noted that sharing a meal is a way to foster relationships and pay homage to their past. Rejection of food when offered, even for health reasons, may put a strain on social relationships (Finucane and McMullen, 2008; Becker, 2003; Abesamis et al., 2016). This poses a challenge to many FAs who must change their diet to prevent or

delay onset of CVD or other chronic conditions. Some researchers have offered suggestions to involve family members to support the person that needs the lifestyle change. FA tailored interventions should involve families to support changes to their lifestyle and diet.

Dalusung-Angosta (2013) echoed the importance of considering social and cultural values when delivering CVD prevention education. In her study of 120 FAs recruited from three primary care clinics in Las Vegas, Nevada, she observed that FAs already were knowledgeable of CVD but knowledge was not enough to prevent CVD among FAs (Dalusung-Angosta, 2013). Further, Feldman and Sills (2012) suggested that a person's hope was a significant predictor of their behaviors related to CVD prevention. Asians with high hope and CVD knowledge were more likely to lower their salt and fat intake, proactively seek CVD information, and visit their physician more often (Feldman & Sills, 2012).

Surprisingly, aspects of spirituality and the arts were integrated in only a few studies. Religion plays a large role in FA culture, with nearly all FAs identifying either as Catholic or Protestant (Becker, 2003). Spirituality provides meaning to many FAs, often shaping their interpretation of illness, self-management of health conditions, and their relationships with others (NHLBI, 2003; Finucane and McMullen, 2008; Pobutsky et al., 2015). Similarly, the arts help to shape the health behaviors among FAs. In interviews with community leaders and FAs in Hawai'i, Pobutsky and colleagues (2015) noted the opportunity to leverage Filipino programs and advertisements to reinforce the importance of taking care of their health to live a long life with their family. Further, an assessment of FAs in California noted that Filipino radio, newspapers, and magazines are a source of health information for FAs, following medical providers (NHLBI, 2003).

This review only found four articles reporting on the NHLBI Healthy Heart, Healthy Family, a curriculum tailored specifically for FAs. Of which, only two articles reported using the curriculum in its entirety. A review of the NHLBI website indicated that this curriculum was tested in another community in Hawai'i. While this site reported high participant satisfaction and increased referrals to health care professionals, it did not report outcome data, which makes it challenging to determine the efficacy of the intervention efficacy (NHLBI, 2014). Research consistently reports high prevalence of hypertension among FAs; however, culturally tailored programs, like Healthy Heart, Healthy Family, have not been implemented widely throughout these communities.

While intervention efficacy across the studies looked promising, the articles varied in outcome measures and intervention delivery. Therefore, drawing conclusions from the intervention

results was challenging. Even across the same curriculum, the variability in intervention delivery and intensity were not comparable enough to infer essential cultural values to include in curriculum.

### Limitations

As with all systematic reviews, this study has several limitations to consider when interpreting findings. Publication bias is a possible limitation, as studies with negative findings may not move forward to publication. While three databases were searched, there may be relevant literature elsewhere. The variability across interventions with respect to duration and total sessions made it difficult to compare findings across all of the studies. Employing the Spencer et al. (2013) framework helped to mitigate some of the challenges in assessing the efficacy across the different articles.

### Implications for Practice and Research

Based on these findings, future interventions engaging FAs should employ word of mouth recruitment strategies. Health education curricula should acknowledge the cultural significance of food, encourage family participation in sessions, and foster a supportive environment to build relationships among participants. Future research should aim to include larger samples of FAs across the United States with long-term follow-up. The majority of the articles reported relatively small sample sizes, with six studies reporting FA samples less than 100 along with limited follow-up periods. Research also should identify and collect standardized metrics to demonstrate the efficacy of the interventions, as well as data on participant satisfaction.

## Conclusion

Given the burden of cardiovascular disease in Filipino American populations, tailored interventions rooted in Filipino cultural values are vital to address this known health disparity. Findings of this review suggest that promising and leading practices are emerging from the literature. However, more work needs to be done to tailor interventions to FA, to test them, and to disseminate findings and best practices to the broader scientific community.

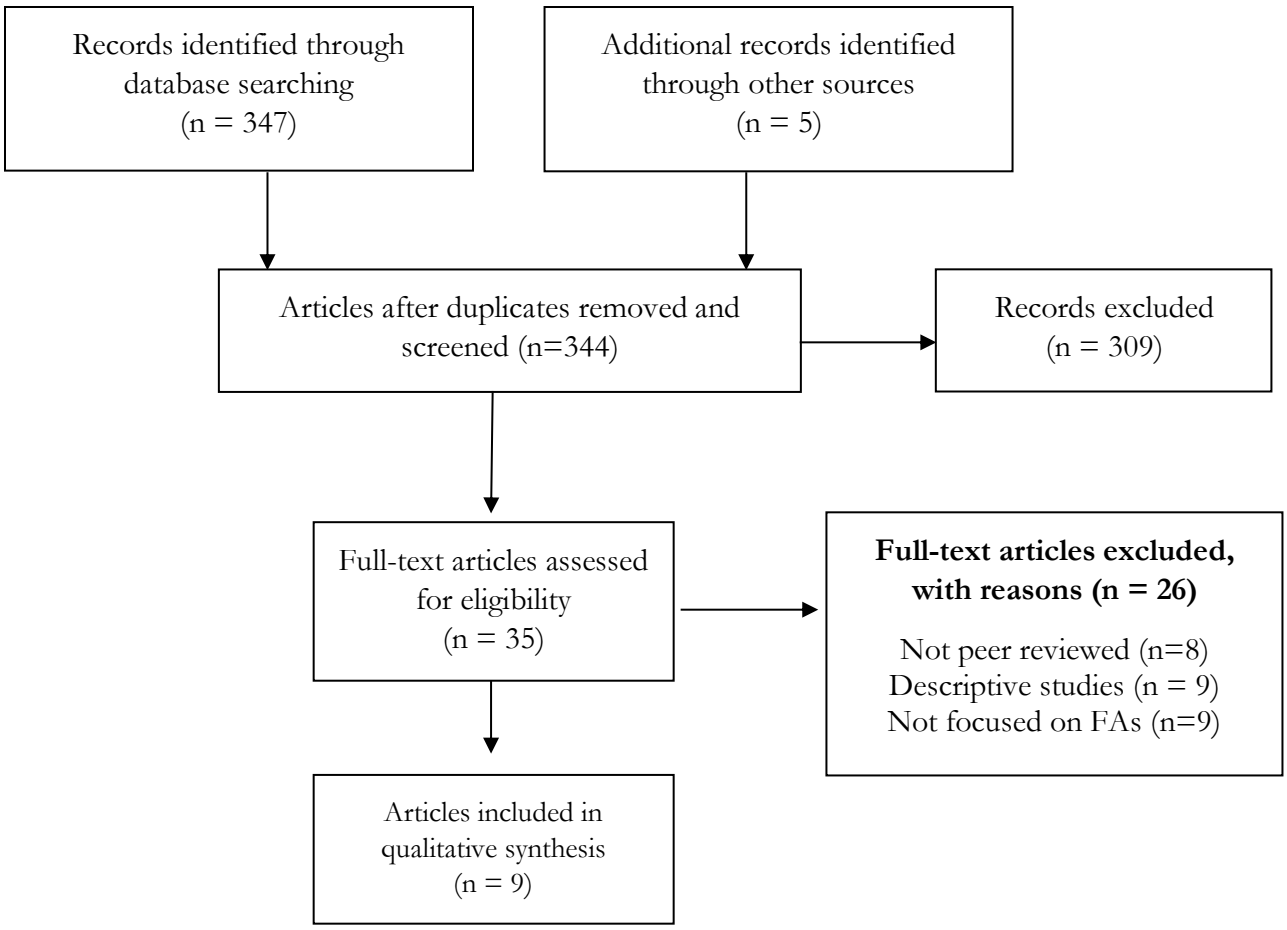


**Figure 2. PRISMA Flow Chart**

**Table 5. Description of Articles Included in Analysis**

| Reference | Location | Study Design | Intervention focus | Health Education Curricula | Intervention Duration | Class Length | Sample size of FAs |
|---|---|---|---|---|---|---|---|
| Bender et al., 2016 | San Francisco, CA | RCT w/waitlist control | Diabetes Prevention | DPP + NHLBI Healthy Heart Healthy Family for FAs (PilAm Go4Health) | 6 months (3-month intervention + 3-month maintenance) | 7 in-person visits total | N=45 |
| Fernandes et al., 2011 | Honolulu, HI | one group pre-post-test | CVD Risk Reduction | NHLBI Healthy Heart Healthy Family for FAs | 11-weeks + 1-year follow-up | 2 hour sessions (11 sessions total) | N=92 |
| Inouye et al., 2014 | Honolulu, HI | RCT w/waitlist control | Diabetes Prevention | DPP + Healthy Heart Healthy Family (Health is Wealth) | 6 weeks to 6 months | 90 min sessions (8 sessions total) | N=40 |
| Leake et al., 2011 | Honolulu, HI | RCT w/waitlist control | Diabetes Prevention | DPP + Healthy Heart Healthy Family (Health is Wealth) | 6 months | 90 min sessions (8 sessions total) | N=40 |
| Ursua et al., 2014 | New Jersey & New York | one group pre-post-test | CVD risk reduction | NHLBI Healthy Heart Healthy Family for FAs | 4-month | 90 min sessions (4 sessions total) | N=39 |
| Tomioka et al., 2011 | Honolulu, HI | one group pre-post-test | Chronic Condition Management | Stanford CDSMP | 6-weeks | 2.5 hour sessions (6 sessions total) | N=160 (FA) |
| Dirige et al., 2013 | San Diego County, CA | RCT | Chronic Disease Prevention | Nutrition Physical Activity program (*Siglang Buhay*) | 18-months | not reported | N=255 |
| Tomioka et al., 2014 | Honolulu, HI | one group pre-post-test | Diabetes Self-Management | Stanford DSMP | 6-weeks | 2.5 hour sessions (6 sessions total) | N=82 (FA) |
| Finucane & McMullen, 2008 | Honolulu, HI | qualitative | Diabetes Self-Management | Diabetes Self-Management Education | ----- | ----- | ---- |

**Table 6. Incorporation of Filipino values in interventions and associated outcomes**

| Reference | Tailoring for FAs | Clinical | Knowledge | Behavioral | Satisfaction |
|---|---|---|---|---|---|
| **Healthy Heart Healthy Family** | | | | | |
| Ursua et al., 2014 | Spirituality<br>Family Orientation<br>Upward Social Mobility<br>Culture of Caring<br>Connection to Mother Country<br>Arts<br>Food<br>Life Celebrations<br>**Total: 8** | Decrease in systolic and diastolic blood pressure<br><br>Improved blood pressure control<br><br>Decreases in weight and BMI | Increased CVD knowledge | Improved health behaviors that reduce CVD risk (e.g., diet, physical activity) | High participant satisfaction |
| Fernandes et al., 2011 | Family Orientation<br>Upward Social Mobility<br>Culture of Caring<br>Connection to Mother Country<br>Food<br>Life Celebrations<br>**Total: 6** | No clinically significant changes | Increased CVD knowledge | Improved diet<br><br>Increased confidence to manage condition | High retention |
| **Diabetes Prevention Program + Healthy Heart Healthy Family** | | | | | |
| Bender et al., 2016 | Family Orientation<br>Upward Social Mobility<br>Culture of Caring<br>Connection to Mother Country<br>Arts<br>Food<br>**Total: 6** | Pending final results | | | |

**Table 6. (Continued) Incorporation of Filipino values in interventions and associated outcomes**

| Reference | Tailoring for FAs | Clinical | Knowledge | Behavioral | Satisfaction |
|---|---|---|---|---|---|
| Inouye et al., 2014<br><br>Leake et al., 2011 | Spirituality<br>Family Orientation<br>Culture of Caring<br>Connection to Mother Country<br>Food<br>**Total: 4** | Decreased weight<br><br>Decreased waist circumference<br><br>Decreased BMI | | | High participant satisfaction and attendance |
| Stanford University's Chronic Disease Self-Management Program | | | | | |
| Tomioka et al., 2011 | Spirituality<br>Upward Social Mobility<br>Food<br>Culture of Caring<br>Life Celebrations<br>**Total: 5** | | | Improvement in physical functioning<br>Improved health behaviors<br>Improved communication<br>Improved confidence to manage condition | High satisfaction |
| Stanford University's Diabetes Self-Management Program | | | | | |
| Tomioka et al., 2014 | Upward Social Mobility<br>Food<br>Culture of Caring<br>Life Celebrations<br>**Total: 4** | Decrease in BMI<br>Improved HbA1c<br>Lower cholesterol levels<br>Lower blood pressure | | Improvement in health behaviors<br>Increased self-monitoring<br>Improved self-rated health and ability to cope with symptoms | |
| Siglang Buhay (Nutrition and Physical Activity Promotion) | | | | | |
| Dirige et al., 2013 | Culture of Caring<br>Arts<br>Food<br>Life Celebrations<br>**Total: 4** | | | Improved health behaviors (diet and exercise) | |

**Table 7. Quality Assessment and Intervention Efficacy**

| | QA Score | Effectiveness | Reach | Feasibility | Sustainability | Transferability | Total Impact Score |
|---|---|---|---|---|---|---|---|
| Dirige et al., 2013 | 8 | 3.7 | 3.3 | 3.0 | 2.7 | 1.7 | 2.9 |
| Ursua et al., 2014 | 8 | 3.0 | 3.0 | 2.7 | 2.0 | 3.3 | 2.8 |
| Bender et al., 2016 | 8 | 1.3 | 3.7 | 1.7 | 1.3 | 1.3 | 1.9 |
| Fernandes et al., 2011 | 7 | 2.7 | 2.3 | 2.7 | 1.7 | 3.3 | 2.5 |
| Tomioka et al., 2011 | 7 | 3.3 | 3.0 | 2.7 | 2.7 | 3.7 | 3.2 |
| Tomioka et al., 2014 | 7 | 3.7 | 3.0 | 2.7 | 2.7 | 3.7 | 3.1 |
| Inouye et al., 2014 | 6 | 2.7 | 2.3 | 3.0 | 1.7 | 2.3 | 2.4 |
| Leake et al., 2011 | 6 | 2.7 | 2.3 | 3.0 | 1.7 | 2.3 | 2.4 |

Quality Assessment (QA) Score: <5 = limited; 5-7 = fair; 8-9 = good
Impact Score: 0-2 = low; 2-3 = moderate; >3 = high

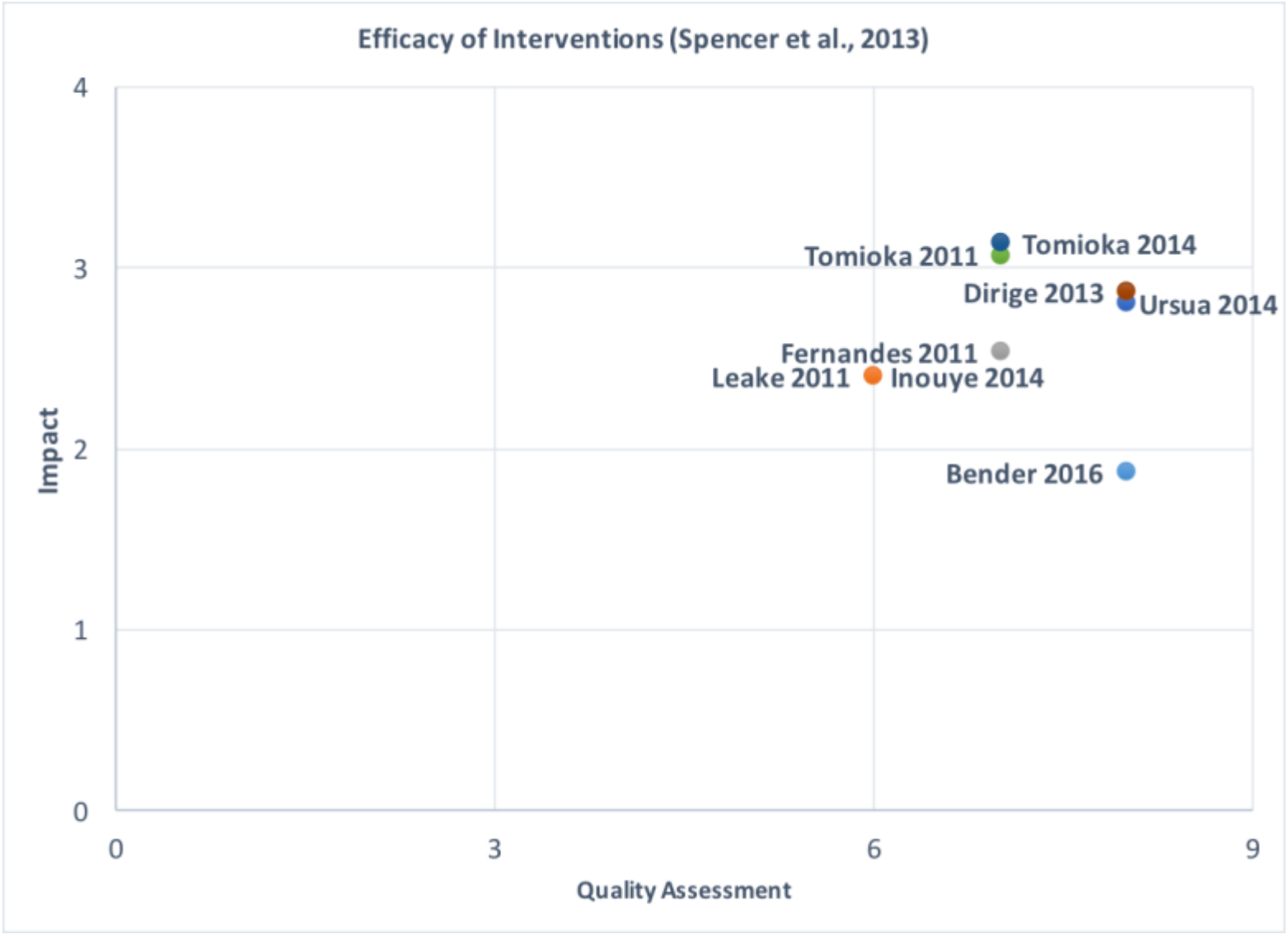


**Figure 3. Efficacy of Interventions Graph**

# CHAPTER 4

## IMPROVING THE CARDIOVASCULAR HEALTH OF FILIPINO AMERICANS AT FEDERALLY QUALIFIED HEALTH CENTERS IN HAWAIʻI


### Abstract

Federally Qualified Health Centers (FQHCs) are ideal settings for improving cardiovascular disease (CVD) prevention efforts. Engaging more FA in health promotion is critical because research shows that FAs continue to experience greater chronic disease burden than whites, blacks, and other ethnic Asian groups. Data were analyzed using the framework approach (Pope, Ziebland, & Mays, 2000). The framework approach consists of five steps in data analysis: familiarization, identifying thematic framework, indexing, charting, and mapping and Interpretation. Of the 20 interviewees, 12 (60%) were FA. The average time working at their respective FQHC was 10.5 years, with a range of 5 months to 28 years. Three major themes emerged from the interviews: 1) FQHCs should understand FA issues, context, and culture; 2) Multiple levels of buy in are necessary when creating health programs and interventions; and 3) Specific tips for successful health interventions with FA (e.g., flexible scheduling, hiring FA staff). To attract FAs, programs should be fun offer a variety of options and are designed to be perceived as worth the time invested. To engage FAs in health promotion, FAs need to perceive programs of high value with messages tailored to address the challenges faced by FA community and offer practical tips to make healthy behaviors meaningful to them.

## Background

Federally Qualified Health Centers (FQHCs) are an ideal setting for improving cardiovascular disease (CVD) prevention efforts. FQHCs are community-based, non-profit health care organizations that provide primary and preventive care to low-income and medically underserved populations. FQHCs provide services to all community residents regardless of their insurance status or ability to pay. The need for FQHC services is growing; since 2006, the number of uninsured patients receiving care has grown by 62%. Nationally, FQHCs provide services to over 21 million people, and 71% of them have incomes at or below federal poverty level. In terms of insurance coverage, 28% of all patients are uninsured, and another 47% rely on Medicaid for coverage (National Association of Community Health Centers [NACHC], 2016).

Hypertension prevalence is higher in many of groups accessing FQHC services, including older adults and individuals with low family income, low educational attainment, on public insurance, and/or with diabetes or obesity (Centers for Disease Control [CDC], 2011). Among FQHC office visits, treatment and management of hypertension is the most common reason for a primary care visit (Shin, Rosenbaum, & Paradise, 2012).

FQHCs also are where many FAs and other immigrants seek care (Association of Asian Pacific Community Health Organizations [AAPCHO], 2013). Compared to national FQHCs, clinics serving predominantly Asian American and Pacific Islander populations report significantly higher proportion of patients with controlled hypertension and diabetes (AAPCHO, 2015). Therefore, FQHCs are an ideal health care setting to engage and retain more FAs in CVD prevention efforts.

Engaging more FA in health promotion is critical because research shows that FAs continue to experience greater chronic disease burden than whites, blacks, and other ethnic Asian groups (Holland & Palaniappan, 2012; McCracken et al., 2007; Ye, Rust, Baltrus, & Daniels, 2009; Carlisle, 2014; Abesamis, Fruh, Hall, Lemley, & Zlomke, 2015). For example, FAs have a high prevalence of cancer, cardiovascular disease, cerebrovascular disease, and diabetes and experience high mortality due to these conditions (McCracken et al., 2007; Carlisle, 2014; Abesamis et al., 2015; Jose et al., 2014; Araneta & Barrett-Connor, 2005; Hastings et al., 2015). Further, FAs have a high prevalence of behavioral risk factors associated with these chronic conditions, such as obesity, alcohol consumption, and physical inactivity (Holland & Palaniappan, 2012; Carlisle, 2014).

Research has shown that cultural tailoring of interventions can be effective in reducing health disparities by attracting underserved populations to health promotion programs and improving their outcomes. In a study reporting on successful tailoring of Stanford's Chronic Disease

Self-Management Program to Asian and Pacific Islander ethnic groups in Hawai'i, Tomioka and colleagues (2012) reported several simple adaptations made to the program to make it more acceptable to these ethnic groups without jeopardizing intervention fidelity. Authors found that the tailored intervention yielded reductions in activity limitations, health distress and number of physician visits, and improvements in provider-patient communication, self-rated health, time spent exercising, and ability to cope with symptoms, as did the non-tailored intervention when originally tested by Stanford (Lorig, Ritter, Stewart, Sobel, Brown, Bandura et al., 2001).

In a systematic review by Fisher and colleagues (2007), researchers reviewed culturally tailored health interventions and their impact on health disparities. Authors noted that these tailored interventions led to significant improvements in mammography utilization, improvements in diet, improvements in cervical cancer screening, and increased readiness to quit smoking. Authors noted that equal access to health care is not enough to reduce health disparities, but that leveraging cultural components to target disparate communities is necessary to assure equitable access to health care.

Further, Wallace, Fulwood, and Alvarado (2008) underscored the importance of engaging community stakeholders in the community of interest to inform tailoring of the intervention. Authors used a four-step process to adapt the National Heart Lung and Blood Institute's (NHLBI) heart health curriculum to diverse audiences, which involved: 1) using a multicultural team to identify need for adaptation, 2) partnering with communities of interest to gather input, 3) using an iterative process to adapt intervention, and 4) pilot-testing the intervention within the community.

Kreuter and colleagues (2003) offer a framework for cultural tailoring that consists of five components: a) peripheral strategies, b) evidential strategies, c) linguistic strategies, d) constituent-involving, and e) sociocultural strategies. Peripheral strategies refer to the appearance of culturally appropriate programs by packaging them in a way that would be attractive to the target population. Evidential strategies are aimed at presenting evidence of the problem in a way that is relevant to the target population. Linguistic strategies refer to the ability to provide programs in the language of the target population by using a culture's words or phrases. Constituent-involving strategies include staffing the program with people of similar backgrounds as the target population. Lastly, sociocultural strategies refer to approaches to weave the cultural values into the program's components.

Aday and Anderson's (1974) propose a framework to increase health care service utilization and is comprised of four domains: health system characteristics, population characteristics, utilization of services, and client satisfaction. Health system characteristics are the components that

facilitate health care delivery. This domain is comprised of two categories: resources and organization. The resources component describes the organizational capacity to reach the population (e.g., sufficient staffing). The organization domain refers to how staffing and facilities facilitate or hinder access to the health care system.

The population characteristics refer to individual determinants of service utilization. This domain is broken into three categories: predisposing, enabling, and need. Predisposing refers to the factors that may increase the likelihood of utilization of services. Enabling factors describe a person's ability to access services (e.g., income or distance from service). Lastly, need encompasses the perceived need of the service by the population.

The utilization of services is defined by four categories: type of services provided, site or location of the service, purpose of the program, and timing of delivery. These logistic factors are influenced both by the health system and target population. Furthermore, client satisfaction of services impacts the utilization of services. Client satisfaction is influenced by factors like convenience, cost, program coordination, relevance of information and perceived quality of services received.

A model that incorporates essential precepts from both frameworks is presented in Figure 4.

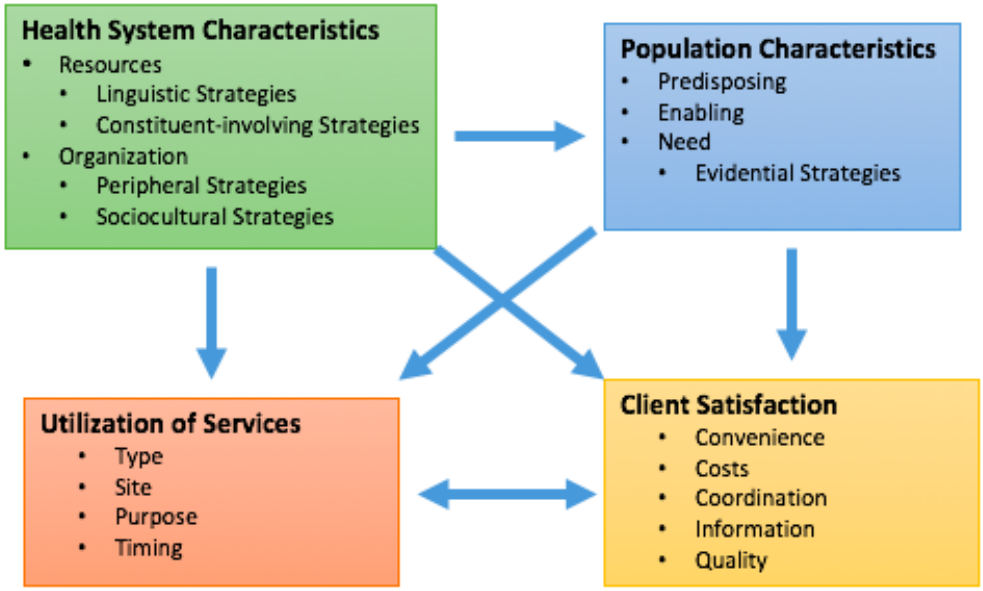


**Figure 4. Conceptual Framework for Study 3**

Few researchers have described how to successfully engage FAs in health promotion activities. In Hawai'i, Fernandes et al. (2012) tested the NHLBI heart health curriculum adapted for FAs at an FQHC. They found that this tailored curriculum was attractive and well-received by FAs served by this FQHC. Although findings showed only modest improvements in cholesterol and fasting blood glucose, the study had low attrition and high participation among FAs in the community. In California, Maxwell and colleagues (2005) detailed strategies to recruit and retain FA women in a breast and cervical cancer intervention in California. Authors found that personal invitations from friends and project staff rather than flyers and mailed communications resulted in greater enrollment and retention in their study. Additionally, participants were more receptive to having the female, FA project director lead health education sessions than their peers.

However, very little work on how to attract FA to health promotion and other health services has been done in Hawai'i. Thus, the purpose of this study was to interview FQHC staff to identify existing and recommended strategies used by FQHCs in Hawai'i to increase FA participation. This study addressed the following research question: How can Hawai'i's FQHCs better attract and retain FA clients and engage them in CVD prevention and control programs? A sub-aim of the study was to identify cultural factors and organizational barriers and facilitators that may influence FA participation. Identifying cultural and organizational factors within the context of their current FQHCs' CVD prevention and control programs is essential to successful tailoring of health promotion programs that hope to attract and retain FAs in CVD prevention and control.

## Methods

### Study Design

A qualitative research design of intensive key informant interviews was selected for two reasons. First, key informant interviews of FQHC staff provide them with the opportunity to candidly share perceptions on current and existing health promotion programs and strategies to attract FA participants. Second, the interviews helped to establish a relationship to partner on future pilot-testing of tailored interventions. To further build rapport with FQHC staff, face-to-face, semi-structured intensive interviews were conducted with participants whenever possible. This study was approved by University of Hawai'i's Human Studies Program Institutional Review Board (IRB) and by executive directors from each participating FQHC.

### Sample

Five FQHCs located in areas with a high proportion of FAs in the community were identified and recruited to participate: two in Maui County (29.0% Filipino), two in Honolulu

County (24.6% Filipino), and one in Hawai'i County (22.1% Filipino) (State of Hawai'i Department of Business, Economic Development & Tourism [DBEDT], 2012). Using purposive convenience sampling, participants were identified and recruited based on their direct involvement in the health promotion and existing relationship with the participants. To the extent possible, interviewees of Filipino ancestry were recruited to participate. Aligned with Edwards and colleagues (2005) recommendation for four to five key informants for adequate description of a phenomenon, four key informants were recruited from each of the five FQHCs: two health care providers (e.g., doctors, physician's assistants, or nurse practitioners), one ancillary staff member (e.g., medical assistants, health educator, program coordinator), and one member from upper management (e.g., Executive Director or Medical Director). Responses from these informants offered a broad perspective of health promotion at each FQHC. Thus, a total of 20 interviews were conducted with four representatives from each of the five FQHCs.

**Measures**

Interview questions were informed by the Aday and Anderson (1974) model of health care utilization and the Kreuter et al. (2003) model of tailoring care to underserved groups. First, key informant interviewees were asked to identify past and existing health promotion programs at their FQHC. They were asked to identify any factors that may have influenced the success of the program and any aspects of the program that may have influenced FA participation in them. Interview questions also asked about organizational barriers and facilitators that would influence FA participation in FQHC health promotion programs. After reviewing the consent form (Appendix A) with participants, interviewees were asked to respond to the following sequence of interview questions (Appendix B):

1. What type of health education programs do you currently have at your community health center?
    - Do you have any programs related to heart disease prevention or control?
2. Could you tell me about your most successful health promotion program at your health center?
3. In your opinion, could you tell me about your least successful health promotion program?
4. What are some of the most pressing health concerns that you see among the Filipino clients that you serve?
    - IF CVD DOES NOT COME UP: What do you think about heart disease within the Filipino community?
    - How do you think your health center can address heart disease among Filipinos?
5. When you think about your Filipino clients, how would you describe their level of participation in your health promotion programs?

- IF NO CURRENT HEALTH PROMOTION PROGRAMS AVAILABLE: What types of programs would you like to see to help address heart disease among Filipinos?
- IF HIGH, what are you doing to attract them? (e.g., peripheral strategies, evidential strategies, linguistic strategies, constituent-involving strategies, and sociocultural strategies)
- IF LOW, what might be some reasons?
- How are you incorporating Filipino staff in delivering these programs?
- How are you promoting these programs to Filipino clients (e.g., flyers, referrals from providers, word-of-mouth)?
- How do these programs incorporate Filipino cultural values (e.g., spirituality, family oriented, collectivist)?

6. What factors in the organization would need to be in place to make this happen (convenience, cost, coordination)?
    - How would you promote it among the Filipino community so that it is perceived to be a high quality program?

Table 8 below depicts the relationship between the framework concepts of Aday and Anderson (1974) and Kreuter et al. (2003) and the interview questions listed above.

**Table 8. Summary of Interview Questions**

| Domain | Component | Tailoring Strategies | Question |
|---|---|---|---|
| Health System Characteristics | Resources | Linguistic<br>Constituent-involving | How are you incorporating Filipino staff in delivering these programs? |
| | Organization | Peripheral | How are you promoting these programs to Filipino clients (e.g., flyers, referrals from providers, word-of-mouth)? |
| | | Sociocultural | How do these programs incorporate Filipino cultural values (e.g., family orientation, spirituality)? |
| Population Characteristics | Predisposing<br>Enabling | | What were some factors that made your health promotion program challenging and/or successful? |
| | Need | Evidential | What are some of the most pressing health concerns that you see among the Filipino clients that you serve?<br>• What do you think about heart disease within the Filipino community? |
| Utilization | Type<br>Size | | When you think about your Filipino clients, how would you describe their level of participation in your health promotion programs? |
| | Purpose<br>Timing | | If high, what are you doing to attract them?<br>If low, what might be some reasons? |
| Client Satisfaction | Convenience<br>Costs<br>Coordination | | What factors would need to be in place to make your programs successful among Filipino clients (costs, convenience, scheduling)? |
| | Information | | How do you think your health center can address heart disease among Filipinos? |
| | Quality | | How would you promote it among the Filipino community so that it is perceived to be a high quality program? |

## Data Analysis

Data were analyzed using the framework approach (Pope, Ziebland, & Mays, 2000). The framework approach consists of five steps in data analysis: familiarization, identifying thematic framework, indexing, charting, and mapping and Interpretation. The integrated Aday and Anderson (1974) and Kreuter et al. (2003) framework (Figure 4) was used to inform the coding of the transcripts that was performed on electronic versions of the redacted transcripts. Throughout the coding process, research memos were kept to expand and reflect on the categories and their relationship to larger thematic codes.

## Procedures

Participants from each FQHC were identified and invited to participate via email. The interviews were conducted in-person or by phone if the participant was unavailable to meet in person. Participants were provided with the consent form for review in advance, and the form was reviewed again prior to the start of the interview. Interviews were scheduled for 45 to 60 minutes. For participants that also agree to be audio taped, interviews were recorded and transcribed verbatim. For those who were not recorded, detailed notes were taken and transcribed.

# Results

Of the 20 interviewees, 12 (60%) were FA. The average time working at their respective FQHC was 10.5 years, with a range of 5 months to 28 years. The results of the analysis are organized under three major themes that emerged from the interviews: 1) FQHCs should understand FA issues, context, and culture; 2) Multiple levels of buy in are necessary when creating health programs and interventions; and 3) Specific tips for successful health interventions with FA.

## FQHC should understand FA issues, context, and culture

### Health and social issues among FAs

Hypertension and diabetes are among the most pressing health concerns of FAs served by FQHCs. Gout, high cholesterol, and kidney diseases also were mentioned by a few interviewees as important health concerns of FAs. In addition to medical ailments, one provider described hopelessness and loss of cultural values as a pressing health concern:

> "Other than trust –when we ask people— is the fear of loss of language, loss of culture, loss of connection to their neighbors, loss to their ways of eating and caring for one another, and they often mention their children not finding meaningful occupations…that provide a sense of meaning in their lives."

Many FA patients also experience challenges in communicating effectively with health center staff. This language barrier leads to frustration and not engaging in FQHC. Aside from hiring more FA staff that can speak the language, some FQHCs have modified clinic practices to accommodate their needs. One FQHC created longer appointment times for FAs to allow for enough time to communicate information and check for patient understanding. A health educator goes on to describe their process "I would meet with her afterwards, and just have our own conversation. 'Nana, you went understand?'…I would kind of draw it out, 'What we went learn today?' she would say a little then I know she went comprehend." This teach-back method to confirm patient understanding is considered a health communications best practice (Kripilani & Weiss, 2006).

FAs are burdened by the financial responsibilities associated with caring for their family in Hawai'i and in the Philippines. To meet those responsibilities, FAs work multiple jobs to provide for family members in Hawai'i and in the Philippines. This often limits the patient's time to participate in activities to support their health. An FA nurse educator noted that "The reason that they don't comply sometimes … They don't have time to come… they have 2 or 3 jobs. They don't have time for their health because they send money to the Philippines."

**Understanding FA context**

Programs need to address the challenges to participating in health interventions (e.g., transportation, conflicting work schedules, language barriers) and tailor messages that fit the context of the FA community. As a provider describes, FAs, "have so many stresses in their life that healthy behaviors and behavior change is not really at the forefront of their agenda often, we have to keep working on that." One way to bring health to the forefront is make health education accessible to the FA population by offering it in-language or translated into the predominant Filipino dialect. Because some FQHCs may not have access to staff to translate materials, creating low literacy materials (e.g., use of visuals and pictures) help to overcome language barriers.

Some participants mentioned a need to change FA perception of chronic disease management. FAs rely heavily on medications, but pay little attention to impact of lifestyle modifications. One provider states that, "Many of my Filipino patients were eager to medicalize problems…and wanted more medical therapies than I was interested in giving. Sometimes people got disappointed with me that they got only one prescription for a problem [rather] than three or four." Another FA health educator echoed this concern, "The problem is we still have a long way to go in changing the mindset that you don't have to feel sick to be sick. So, we have a lot of patients whose diabetes is out of control, but since they don't feel sick, they don't go to the doctor, or they

won't watch what they are eating– [They say,] "Ah, that's why we have medicine, so we can eat whatever we want."

**Importance of family**

Health information should be geared to educating the whole family to support those with chronic conditions. Further, one FA nurse emphasized the importance of incorporating the family stating, "Many Filipinos, they live with their extended family, and you teach them about healthy eating. But, then, they're the only one who has cardiovascular disease. They're the only one that need to control what they eat." Family also can be a motivation to stay healthy. A health educator described working "with another man who was 82 years old, and he forced himself to stay as healthy as he could, just to take care of his family in the Philippines." An FA educator describes her method of encouraging patients to take care of their health:

> "When you ask them … '*Manang* (older sister), what's important to you?' 'Oh my *annakko* – my grandchildren… I want to spend more time with them. I want to see them graduate from college – for them to become a nurse or doctor!' 'Oh okay *manang*. So it's important that if you want to spend more time with them and live longer, so then you have to take this medicine to take your medicines every day. Even though your blood pressure is normal, you don't know if tomorrow you'll get angry then your blood pressure raises and then you get a heart attack.'"

Expert educators with strong communication skills are necessary to help draw out these motivations from FA clients.

**Multiple levels of buy-in are necessary when creating health programs and interventions**

Getting buy-in from community, staff, and leadership are essential to a program's success and sustainability. Community buy-in and trust are important when working with FA communities. FQHC staff members who have gained the trust and have good rapport with FAs often are more successful in getting patients to adhere to recommendations. As one FA nurse administrator described it: "The rapport that they have with a patient – I believe that's one thing that would make a difference for the program and in the lives of the patient. Because if you establish rapport or a relationship, the patient will tend to follow or believe what you tell them to do." A veteran FA health educator summed up this in a Filipino cultural value of *pakaragsakkan* (happiness). "Even if you spend time with them – even if it's only a small amount of time. For you it's small, but for them it's huge. *Pakaragsakkan* – Happiness…they're very happy because it's too much for them…they know there is somebody there who cares."

Another way to garner community buy-in is by engaging members in the creation of programs or interventions. The community can inform the best date, time, location, and ideal partners to assist with implementation. Further, partnering with Filipino community associations and clubs, such as county specific Filipino Community Councils or the United Filipino Council of Hawai'i, can help to endorse and facilitate referrals to the program. As a result, the intervention meets the needs of the community and is likely to facilitate acceptance and participation within the community.

Additionally, the buy-in from FQHC staff is important to the success of an intervention. Staff feedback, particularly from FA staff, helps to increase referrals, excitement, and staffing to support for delivering interventions. Systematizing referrals to programs through established clinic workflows with clearly outlined roles and responsibilities of health care team members is vital to the sustainability of programs beyond grant funding. A provider echoed this sentiment by stating, "Certainly, if it wasn't successful, it was either because we didn't lay the groundwork properly or we didn't communicate the program very well."

Lastly, buy-in from the leadership team is important to sustaining any programmatic effort in the FQHC. Leadership buy-in often is garnered through evidence of positive outcomes. The more a program or intervention aligns with the goals of FQHCs, the likely it is to be sustained beyond grant funding. As stated by a FA nurse administrator, "If there's evidence that this program has an impact or influence on the patient's lives. And if this program aligns with the goals—quality goals or whatever goals with the organization – it's easy to sell and sustain."

**FQHC should follow these specific tips for successful health interventions**

**Having FA staff and or training in FA culture**

Employing FA staff that understands the community, language, and culture of the FAs is important to a program's success. One interviewee noted that FAs "actually go to private doctors because they know the Filipinos are over there…because they understand each other…they know the culture…So, that would help the Filipinos know, who are going to access the health center – to know that there are Filipinos over there that can help, that can speak the language, and know the culture." If staff are not of Filipino ancestry, training in FA culture and being endorsed by FAs can help them feel more comfortable in going to the FQHC. A non-Filipino health educator echoed this sentiment by stating, "Filipino style, if they don't know you, they not going come. They not comfortable with you, they not going show up…if they don't know me, they know of me through their families, and then they go back and ask their families, 'Oh good her, she help you.'"

**Different communication strategies by segment**

FA engagement varies by the age group, and different strategies are necessary to reach all segments of the FA community. When asked about FA participation, interviewees noted that the majority of FAs participating in formal health education group classes were elderly FAs many of whom already are actively engaged. Older FAs appreciated the opportunity to "get out and socialize." A health educator noted that "…they don't want to stay home… [they want to] meet other people, socialize. They ask each other, "oh, you know I heard [about some event], let's go, let's go!" In contrast, the younger FAs were not engaged because they are busy working multiple jobs and have family responsibilities. As a longtime health educator described it:

> "With the old population, they babysit their grandchildren. They don't have time to come…the ones that are in the workforce, they have two or three jobs. They don't have time for their health because they busy [working]…to send money to the Philippines."

A multipronged approach is necessary to attract all segments of the FA community. Participants described traditional advertisement methods to attract FAs to attend programs. Radio, television, and newspapers are all opportunities to reach the older FA groups. A few interviewees noted their success in recruiting participants through their FQHC's social media page to advertise and increase community awareness of programs. Several participants discussed the value of word-of-mouth advertising for the recruitment of FA patients.

**Flexible scheduling**

Programs tailored for FAs should include a variety of options with flexible scheduling, offered at different times throughout the week to accommodate FA work schedules. A wellness coordinator underscored the importance of options, "Some of them are really reluctant because of their schedule, their lifestyle. We are aware of that and help them by showing or giving them options, and I guess that's what makes it really helpful for patients."

**Go to where the people are**

Participation in Filipino cultural events in the community is another opportunity to increase awareness of programs to support FAs. Interviewees also expressed the importance of going to where FAs are naturally congregating to deliver the interventions. Holding the interventions in the community as opposed to the FQHC is another way to attract participants, as this helps to overcome some of the transportation challenges of older FAs. Further, being visible in the community is important to garner trust the FA community. As a FA health educator described,

"Being visible [in] the community. It's not easy but that's what I did…they get to know you…that's how you network with them, and you gain respect from them."

Since FAs have multiple jobs, one participant suggested creating worksite wellness programs. "So one way would be through outreach into some of the organizations that employ a large number of Filipinos. So, you're going to see them there, even though a lot of those workers don't come to the community health center…It's self-serving…less sick days and less time off, lost production. Productivity would improve, I think." Others reiterated this sentiment and suggested partnering with other community organizations to offer classes after work or holding health education sessions at worksites.

**Make it fun**

To attract FAs, programs should be fun, consistent, and offer a variety of options and are designed to be perceived as valuable and worth time invested. Programs should include activities that FAs enjoy, like music, dancing, cultural foods, and offered in their dialect. As noted by some interviewees, Filipinos love to talk story, so interventions should foster open communication to share their stories and experiences and build a sense of community. Interventions should offer opportunities for socializing with friends. As described by one FA nurse, "Getting them all together [is important] because…the Filipino community… like stick together…if one comes, then the other one will come… 'You know, I'll drive, let's go.' That's how they are. Same with appointments. It seems like they schedule their appointments like back-to-back. So one will drive."

A creative idea to attract FAs to health promotion activities included hosting health education parties with FA families. As noted by all FA interviewees, most FAs enjoy parties, so creating a party environment makes health education fun and familiar. An interviewee noted, "I always have my father-in-law in my head, for example, just because he's not one to really go out or go exercise…To make something fun for him and attract his attention, it would have to be familiar – like the karaoke machine, or like, singing the music, you know? Make it fun – something they would find fun to do."

Offering incentives also helps to attract FA participants to events. An FA administrator noted, "If you don't got free stuff, they won't come…you kind of have to lure them in… give them something. Otherwise, there's no motivation…you give them something in return for their time." Recognizing the limited time FAs have, incentives should be offered, so FAs perceive the program as a good investment of their time.

## Discussion

This study sought to understand how Hawai'i's FQHCs can better attract and retain FA clients and engage them in health promotion. Federally Qualified Health Centers should understand the FA issues, context, key cultural values, and cultural activities. Buy-in from the community, FQHC staff, and leadership is necessary for creating programs and successful delivery of interventions. To attract FAs, programs should be fun, with flexible scheduling, offer a variety of options and are designed to be perceived as worth the time invested. To engage FAs in health promotion, FAs need to perceive programs of high value with messages tailored to address the challenges face by FA community and offer practical tips to make healthy behaviors meaningful to them. Further, skilled staff is necessary components to champion health promotion efforts within the FA community.

One of the most salient themes emerging from the interviews was the importance of building trust, cultivating rapport, and maintaining mutual respect when working with FA communities. This desire for trust and respect within the FA community may stem from anxiety from having limited English proficiency and engaging with the health care system. Sentell and colleagues (2011) note that FAs have the highest rates of low health literacy in Hawai'i, compared to all other ethnic groups. Maneze and colleagues (2015) examined communication challenges of Filipinos with chronic conditions in Australia. Researchers noted that older Filipinos lacked confidence in engaging with health care providers for fear of being embarrassed or perceived as "stupid." Guerrero, Bayola, and Ona (2011) describe this value of *hiya* (shame) as a barrier to accessing health care services. Maneze and colleagues (2015) also found that Filipinos were reluctant to question health care provider recommendations because of respect for doctors. As noted by participants in this study, FAs are more adherent to provider recommendations if they trust the staff. This further underscores the importance of having skilled staff that can assess patient understanding and communicate health messages in a way that is meaningful for FA patients.

Another interesting finding of this study is the need to shift FA perception of chronic disease management. Interviewees emphasized the tendency for FAs to rely on medications rather than lifestyle change to manage their chronic conditions. In a study exploring beliefs and practices among FAs with hypertension, dela Cruz and Galang (2007) observed that FAs are knowledgeable of hypertension management but expressed difficulty in adhering to medications and lifestyle recommendations. Authors also noted that food plays a substantial role in Filipino culture. Similarly, Finucane and colleagues (2008) in their study of FAs in Hawai'i, noted that the efficacy of diabetes

self-management programs is partially dependent on an educator's ability to support lifestyle change while recognizing cultural significance of food. Focusing dietary education on a return to traditional diets, which incorporate more fish and vegetables, may help to mitigate some of these challenges to dietary changes (dela Cruz & Galang, 2007).

Lastly, several organizational factors were identified as key supports for successful implementation and sustainability of programs: funding, space, staffing, and buy-in. Interviewees described the importance of buy-in within the community, FQHC staff, and leadership. Additionally, community and programmatic champions were noted as key factors for success and sustainability within FQHCs. In a study exploring sustainability factors within Hawai'i organizations that implemented Stanford's Chronic Disease Self-Management Program, Tomioka and Braun (2015) noted three types of champions necessary for program sustainability: program champions, participant champions, and supervisor champions. Further, authors mention the importance of fit between the organization and program. As noted by FQHC staff in this study, leadership buy-in is achieved when there is alignment between clinic goals and programmatic goals and showing positive outcomes.

**Limitations**

Several limitations should be considered when interpreting the findings of this study. Findings are not generalizable to all FAs in Hawai'i as FAs are not a homogenous cultural group. There are differences in language and culture across the various regions of the Philippines. As noted by several participants, these regional differences can be overcome by offering groups tailored to specific dialects. This study did ask participants specifically on recommendations to tailor FA programs and values described were aligned with cultural values of family, food, and life celebrations (Guerrero, Bayola, Ona, 2011). Further, FAs that frequent FQHCs are not representative of all of Hawai'i's FAs. However, findings may be relevant to other underserved minority communities in the U.S. While FQHCs are an ideal organization to deliver health promotion programs, competing priorities and limited staffing may make implementation at the FQHC challenging. Lastly, this study did not reach the islands of Kaua'i and Maui, where a large number of FAs reside, but the interviews did reach a majority of Hawai'i. Future research with FAs should focus on engaging those islands.

## Conclusion

As a result of findings, public health practitioners interested in engaging FAs from FQHCs should consider developing programming with buy-in and support from FQHC leadership and FA community. Tailored programs should aim to leverage the fun-loving spirit of the Filipino

community through creative programming that involves music and celebrations. Programs also should seek to engage family members as much as possible to assure adherence to recommendations and sustainable lifestyle changes. Lastly, programs should utilize staff members who understand the culture and have gained trust of the FA community. This study adds to the small body of literature on FA access to health promotion activities, specifically within Hawai'i's FQHCs.

# CHAPTER 5

## CONCLUSION

This dissertation focused on understanding the landscape of cardiovascular health among Filipino Americans (FAs). Taken together, dissertation findings confirm that FAs experience a high prevalence of disease-related (e.g., hypertension, diabetes) and behavioral risk factors associated with CVD, such as obesity, tobacco use, and physical inactivity compared to all other ethnic groups. Culturally relevant interventions to improve FA health are important and necessary. Hawai'i's Federally Qualified Community Health Centers (FQHCs), are well positioned to implement CVD prevention interventions tailored to the FA community. Further, FA staff are vital and offer creative solutions to address barriers facing FA access to health care. This chapter summarizes findings from the three dissertation studies and offers recommendations for policy and practice, and provides directions for future research.

### Summary of Findings

In the first study, secondary data analysis of Hawai'i's Behavioral Risk Factor Surveillance System (BRFSS) from 2011 to 2014 compared Filipino American (FA) health indicators to those of Whites, Chinese, Japanese, and Native Hawaiians and investigated the determinants of FA disparities reported in the literature. This study confirmed findings that FAs were less physically active and reported the highest smoking and obesity prevalence compared to Asian subgroups in Hawai'i. Although the literature consistently has shown that FAs experience CVD disparities, this study found that FAs reported the lowest CVD prevalence of all other ethnic groups in Hawai'i. Interestingly, when exploring the CVD prevalence and adjusting for a multitude of factors, these ethnic differences were no longer significant in the model. Findings suggest that other socioeconomic factors like unemployment and affordability of health care appeared to be more salient predictors of CVD prevalence than ethnicity. Findings also suggest that sociodemographic and health care access, regardless of ethnicity, pose unique challenges and solutions for FAs residing in Hawai'i. Further, findings point to the importance of studying FAs across diverse contexts as these may impact outcomes and research and clinic priorities.

In the second study, the systematic literature review confirmed the need for more published research focused on improving the CVD health of FAs. Of those articles found, cultural values, food, caring and social relationships, and family were prevalent aspects across interventions tailored for FAs. Interventions should employ word of mouth recruitment strategies to successfully reach FA communities. Health education curricula should acknowledge the cultural significance of food,

encourage family participation in sessions, and foster a supportive environment to build relationships among participants. Integrating arts and spirituality can lead to positive health outcomes. With the proportion of published studies focused in Hawai'i and California, a gap remains to be filled to fully understand key strategies that may be relevant to other FAs residing in the U.S.

The third study highlighted three key themes essential to attracting FAs to CVD health promotion programs. First, FQHCs should understand the FA issues, context, key cultural values, and cultural activities. Next, multiple levels of buy-in are necessary when creating health programs and interventions. Last, FQHCs should follow these specific tips for successful health interventions. To attract FAs, programs should be fun, with flexible scheduling, offer a variety of options and are designed to be perceived as worth the time invested. To engage FAs in health promotion, FAs need to perceive programs of high value with messages tailored to address the challenges face by FA community and offer practical tips to make healthy behaviors meaningful to them. Further, skilled staff is necessary components to champion health promotion efforts within the FA community.

**Implications for Policy and Practice**

Based on dissertation findings, several recommendations for public health policy and practice are offered. Public health policy should advocate for disaggregation of Asian American subgroups into six major Asian American ethnic groups (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese). This recommendation is supported by the American Heart Association (AHA) as a key strategy to address the burden of CVD in the diverse Asian American subgroups. AHA also recommends changing existing data collection methods, developing standardized measurement tools, and increasing research focused on the six major Asian American subgroups (Palaniappan, Araneta, Assimes, Barrett-Conner, Carnethon, et al., 2010). Current CVD research initiatives should oversample Asian American groups, paying specific attention to underserved (e.g., Koreans and Vietnamese) and high-risk groups (e.g., Filipinos and Asian Indians). Culturally appropriate measurement tools are necessary. Reliable measures for acculturation, dietary assessments, and physical activity assessments with FA are needed (Palaniappan et al., 2010; dela Cruz et al., 2002).

Public health interventions should focus specifically on reducing the burden of CVD risk by decreasing tobacco use and weight in addition to encouraging physical activity. Public health practitioners interested in engaging FAs from FQHCs should consider developing programming with buy-in and support from FQHC leadership and staff as well as the FA community. Tailored

programs should aim to leverage the fun-loving spirit of the Filipino community through creative programming that involves music and celebrations. Programs also should seek to engage family members as much as possible to assure adherence to recommendations and sustainable lifestyle changes. Lastly, programs should utilize staff members who understand the culture and have gained trust of the FA community.

## Future Research Directions

As noted in Study 1, the BRFSS data may not be a reliable dataset to estimate CVD prevalence. Future research will explore analysis of another dataset (e.g., health insurance claims or patient medical records) to estimate the true prevalence of CVD in Hawai'i and within FA communities. Further research is needed to develop and test culturally tailored targeting FAs served by Hawai'i's FQHCs. As shown in Study 2, there remains a limited number of studies focused on CVD prevention tailored and tested within FA communities. Palanippan and colleagues (2010) call for additional research focused on understanding culturally relevant lifestyle and medical interventions and biological and social factors that can modify CVD risk. As seen in Study 3, garnering buy-in from the FA community is necessary for successful health promotion programs tailored for FAs. Future research will explore FA community perspectives on increasing participation in CVD prevention interventions. Future research should focus on applying intervention recommendations from this dissertation and previous studies to modify and test existing CVD curricula tailored specifically for FAs. Ultimately, more tailored programs to address CVD prevention and treatment in FA communities will lead to better health outcomes of this economically important Asian American subgroup.

## APPENDIX A

INFORMED CONSENT FORM FOR FEDERALLY QUALIFIED HEALTH CENTER INTERVIEWS

University of Hawai'i
Consent to Participate in Research Project:

Improving the Health of Filipino Americans at Federally Qualified Community Health Centers

My name is Jermy Domingo, MPH. I am a second year doctoral student at the University of Hawai'i at Manoa (UH), in the Department of Public Health Studies. As part of the requirements for earning my graduate degree, I am doing a research project on engaging Filipino Americans in health promotion programs. The purpose of this research project is to find out what type of health promotion programs are at your health center and to understand how to increase Filipino American participation in your health center's programs. I am asking you to participate in this project because you are employed at a health center that serves a large number of Filipino Americans.

Activities and Time Commitment: If you participate in this project, I will meet with you for an interview at a location and time convenient for you. The interview will consist of 10-15 open ended questions. It will take 45 minutes to an hour. Interview questions will include questions like, "What type of health education programs do you have at your health center?" When you think about your Filipino clients, how would you describe their level of participation in your health promotion programs?" Only you and I will be present during the interview. I will audio-record the interview so that I can later transcribe the interview and analyze the responses. You will be one of about 20 people whom I will interview for this study.

Benefits and Risks: There will be no direct benefit to you for participating in this interview. The results of this project may help improve the Career Development and Counseling program to benefit future students. I believe there is little risk to you in participating in this research project. You may become stressed or uncomfortable answering any of the interview questions or discussing topics with me during the interview. If you do become stressed or uncomfortable, you can skip the question or take a break. You can also stop the interview or you can withdraw from the project altogether.

Privacy and Confidentiality: I will keep all information in a safe place. Only my University of Hawaii advisor and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawaii Human Studies Program has the right to review research records for this study. After I write a copy of the interviews, I will erase or destroy the audio-recordings. When I report the results of my research project, I will not use your name. I will not use any other personal identifying information that can identify you. I will use pseudonyms (fake names) and report my findings in a way that protects your privacy and confidentiality to the extent allowed by law.

Voluntary Participation: Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you.

You will receive a $10 gift certificate to either Starbucks or Longs for your time and effort in participating in this research project.

Questions: If you have any questions about this study, please call or email me at 808-375-8803 & jermy@hawaii.edu. You may also contact my adviser, Dr. Kathryn Braun, at 808-330-1759 & kbraun@hawaii.edu. If you have questions about your rights as a research participant, you may contact the UH Human Studies Program at 808.956.5007 or uhirb@hawaii.edu.

Please keep the section above for your records. If you agree to participate in this project, please sign the following signature portion of this consent form and return it to me.

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Tear or cut here

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Signature(s) for Consent:

I give permission to join the research project entitled, Improving the Health of Filipino Americans at Federally Qualified Community Health Center.

Please initial next to either "Yes" or "No" to the following:

_____ Yes _____ No I consent to be audio-recorded for the interview portion of this research.

Name of Participant (Print): _____

Participant's Signature: _____

Signature of the Person Obtaining Consent: _____

Date: _____

# APPENDIX B

INTERVIEW GUIDE

## Improving the Health of Filipino Americans at Federally Qualified Community Health Centers Interview Guide

### Introduction to the Interview:

Hello, my name is Jermy Domingo, and I am a doctoral student at the University of Hawai'i's Office of Public Health Studies. The purpose of this interview is to find out what type of health promotion programs are at your health center and to understand how to increase Filipino American participation in your health center's programs.

I want to remind you that everything you share with me will be completely confidential – which means I will not link your name or anything about you to our interview. I hope this will help you feel free to share openly and honestly with me. If there is anything that you are not comfortable answering, please let me know.

We will talk for 45 to 60 minutes. To help make sure that I remember everything you say as you say it, I will record our conversation. Is that okay with you?

IF YES, I would like to ask that you review and sign the following consent form.

[Go through consent form with them]

To start off, can I ask you a few general questions to help me to better understand your role in the community health center?

a. How long have you been working at this community health center?
b. What is your role at this community health center?

### Interview Questions:

7. What type of health education programs do you currently have at your community health center?
    - Do you have any programs related to heart disease prevention or control?
8. Could you tell me about your most successful health promotion program at your health center?
    - What were some factors that made this program successful?
        i. Was there anyone in the health center or community that helped to promote this program?
            1. Were there any champions (within the health center or within the community)?
    - What has made it challenging for to keep this program running?
        i. What about any challenges within your health center?
            1. Do you think this a priority in your health center?
        ii. What about any challenges within the community you serve?
        iii. ADMINISTRATORS ONLY: From your perspective, what has made it challenging to sustain these health promotion programs at your health center?

9. In your opinion, could you tell me about your least successful health promotion program?
    - What were some factors that made this program unsuccessful?
10. What are some of the most pressing health concerns that you see among the Filipino clients that you serve?
    - IF CVD WAS NOT MENTIONED: What about heart disease in the Filipino community that you serve?
    - How do you think your health center can address these health concerns?
11. When you think about your Filipino clients, how would you describe their level of participation in your health promotion programs?
    - If high, what are you doing to attract them? (Also, if FA are coming to the programs, how well do you think they are doing?)
    - If low, what might be some reasons? How do you think you can get more Filipino clients to participate in your health education programs?
    - How are you incorporating Filipino staff in delivering these programs?
    - How are you promoting these programs to Filipino clients (e.g., flyers, referrals from providers, word-of-mouth)?
    - How do these programs incorporate Filipino cultural values (e.g., spirituality, family oriented, collectivist)?
    - IF NO CURRENT HEALTH PROMOTION PROGRAMS AVAILABLE:
        i. What types of programs would you like to see to help address some of these health concerns?
            1. How would you attract Filipinos to attend your ideal program?
            2. How would you involve any Filipino staff in delivering this program?
            3. How would you promote these programs to Filipino clients (e.g., flyers, referrals from providers, word-of-mouth)?
            4. How would you incorporate Filipino cultural values into this program (e.g., spirituality, family oriented, collectivist)?
12. What things in the organization would need to be in place to make this happen?
        i. Convenience
        ii. Cost
        iii. Coordination
        iv. How would you promote it among the Filipino community so that it is perceived to be a high quality program?
13. Is there anything else you would like to share about our increasing Filipino participation in health centers?

### Closing Interview:

Thank you for your time and feedback. If you think of anything else, please feel free to contact me by email, and we can schedule a time to discuss anything further. Again, if you prefer to email me your thoughts, I will be sure to keep the contents of our email confidential. Within the next few days, I will be sharing a summary of our conversation to make sure that I captured everything correctly. Lastly, to thank you for your time and feedback, here is a gift certificate as a token of my appreciation.

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