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Coronary Heart Disease Knowledge and Risk Factors Among Filipino-Americans Connected to Primary Care Services

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CORONARY HEART DISEASE KNOWLEDGE AND RISK FACTORS AMONG FILIPINO-AMERICANS CONNECTED TO PRIMARY CARE SERVICES

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This project is dedicated to my family and to all Filipino-Americans.

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…with God, all things are possible. Matthew 19:26.

ABSTRACT

Coronary heart disease (CHD) is the leading cause of death of Filipino-Americans (FAs). Despite the growing numbers of FAs in the United States, little is known about their CHD knowledge and risk factors.

The purposes of this study were to examine the baseline knowledge and risk factors of CHD among FAs and to describe the relationships between knowledge, sociodemographic, and socioeconomic characteristic variables of FAs between the ages of 35-75 years.

The study sample consisted of 120 FAs ($N = 120$) who were connected to primary care services. Data were collected from three primary care clinics in Las Vegas, Nevada between the months of May and July, 2010. Participants completed the Demographics and the Heart Disease Fact Questionnaire (HDFQ) forms on CHD knowledge and CHD risk factors.

Descriptive statistics, item response frequencies, and *t*-tests revealed most FAs were knowledgeable about CHD. The mean CHD knowledge scores of the sample was 15.8 (SD = 4.26) out of the 21 CHD knowledge total score points. When knowledge scores were compared between men and women, women had higher CHD knowledge scores than men ($t = 2.438$, $p = .016$).

Descriptive statistics and item response frequencies also revealed FAs were at an increased risk of CHD. Many of them had CHD risk factors: Lack of exercise (65.8%), hypertension (50%), dyslipidemia (36.7%), abdominal adiposity (27.5%), Diabetes Mellitus Type 2 (25%), overweight (22.5%), and smoking (10%).

Gender, education, and income were significantly correlated with CHD knowledge, however, gender (b = .190, t = 2.21, p = .029) and education (b = .256, t = 2.85, p = .005) were the best predictors of CHD knowledge.

CHD risk factors are highly prevalent among FAs. Implications for practice should focus on primary and secondary preventions. Further research is warranted to explore the impact of health behavior, culture, sociodemographic/socioeconomic factors on CHD.

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CHAPTER I: INTRODUCTION

This study examined the knowledge and risk factors of coronary heart disease (CHD) among Filipino-Americans (FAs) who were connected to primary care services. This study also described the relationship between sociodemographic, and socioeconomic characteristic variables that influence FAs' knowledge of CHD. Chapter I introduces the present study.

Background and Significance of the Problem

CHD is the leading cause of death in the United States (U.S.). The American Heart Association (AHA) Heart & Stroke Statistics 2010 Update indicates that every 25 seconds, an American will have a coronary event related to CHD, and every minute someone will die from CHD (AHA, 2010). Among those most affected are the FAs, whose leading cause of death is CHD (National Vital Statistics Reports, 2009; Ryan et al., 2000).

FAs are Americans of Filipino ancestry, who now resides in the U.S. FAs are citizens of the U.S. by birth or naturalization or may apply to a Pilipino national (in Philippine national language, letter "F" is "P" hence "Pilipino") who have been granted a permanent U.S. resident status (Dela Cruz, McBride, Compas, Calizto, & Van Derveer, 2002). FAs are the second largest Asian subgroup in the U.S. following Chinese-Americans (U.S. Census, 2000) and also the second largest immigrant population in the U.S. following Mexican-Americans (Camarota, 2007). However, little information is known about their CHD knowledge and CHD risk factors despite estimations proclaiming that heart disease deaths will increase between the years of 2010 and 2030 (CDC Heart Disease and Stroke Prevention, 2007).

Many of the risk factors of CHD such as Diabetes Mellitus (DM), dyslipidemia, hypertension (HTN), physical inactivity, and smoking are prevalent in FAs (Adair, 2004; Araneta & Barrett-Connor, 2004; Araneta et al., 2006; Cohen, Panguluri, Na, Beeya, & Whooley, 2010; Cuasay, Lee, Orlander, Steffen-Batey, 2001; Dela Cruz & Galang, 2008; Gentilucci et al., 2008; Gerber, 1980; Kim, Park, Grandinetti, Holck, & Waslien, 2008; Langenberg, Araneta, Bergstrom, Marmot, & Barrett-Connor, 2007; Nora & McBride, 1996; Maxwell, Bernaards, & McCarthy, 2007; Oza-Fran et al., 2009; Ryan et al., 2000; Sloan, 1963; Soria et al., 2009; Stavig, Igra, & Leonard, 1988; Ye, Rust, Baltrus, & Daniels, 2009). This places the FAs at risk for developing CHD, which is the leading cause of their mortality.

The two main goals of *Healthy People 2020* are to increase the quality and years of healthy life and to eliminate health disparities. Initial strategies to improve quality of life and to reduce health inequities of FAs are to: a) assess and understand their health risks, b) increase awareness about heart disease, c) include them in research, and d) inspire minority advocates and researchers to focus on the cardiac health of FAs. Lack of data on FAs CHD knowledge may limit the assessment of their cardiovascular health status and may limit the ability to plan programs that reduce CHD. This may contribute to the increased morbidity and mortality of heart disease among Filipinos living in the U.S. and to the global burden of cardiovascular disease. To date, there are no published data on CHD knowledge of FAs. According to Smith, Hicks, and Heyward (1991) knowledge of CHD, its risk factors and its management has been shown to influence compliance with recommendations for health care. Additionally, individuals who know their CHD risk factors adhere to lifestyle modification including medication treatment

(Alm-Roijer, Fridlund, Stagmo, & Erhardt, 2006). Assessment of knowledge is an important first step in addressing the issue of heart disease in FAs. Therefore, additional studies are indicated to assess the baseline knowledge of FAs on CHD, to determine the variables that impact CHD knowledge, and to identify the CHD risk factors among FAs.

Because eliminating health disparities and reducing cardiovascular deaths are two of the major goals outlined in *Healthy People 2020 Objectives,* nurses and health care providers are encouraged to educate FAs about CHD and to promote a healthy lifestyle by counseling their FA patients to engage in healthy lifestyles to reduce CHD risk. Additionally, research efforts focusing on FAs' cardiac health status may inspire minority health advocates to raise awareness and understanding about the CHD risk of FAs.

Problem Statement

Despite the growing numbers of FAs in the U.S., they are considered a "hidden minority" because of the lack of research-based information on their health (Anderson, 1983; Dela Cruz et al., 2002; Dela Cruz, Padilla, & Butts, 1998). It is estimated that CHD kills more than half of FAs in the U.S. (National Vital Statistics Reports, 2009). Despite this, little is known about their baseline knowledge of CHD even though many of them have at least one CHD risk factor (Gerber, 1980; Nora & McBride, 1996; Ryan et al. 2000; Sloan, 1963; Stavig, Igra, & Leonard, 1988) which may be a contributing variable to their morbidity and mortality. Research shows individuals who are not aware of their risk for developing a disease are less likely to adopt preventive behaviors (Avis, Smith, & McKinlay, 1989; Glanz, 2002; King et al. 2002). Awareness of CHD and its risk factors are significant in preventing and reducing CHD deaths (Glanz, 2002). This

study sought to contribute to the literature concerning CHD knowledge and risk factors among FAs and to add to the existing literature on heart disease in general.

Purpose of the Study

The purposes of this study were: a) to examine the baseline knowledge and risk factors of CHD in FAs and b) to describe the relationships between knowledge, sociodemographic (age, gender, education level) and socioeconomic (employment status, income, number of jobs) characteristic variables.

The specific aims and research questions for this study were:

Study Aim 1: To examine the CHD knowledge of FAs between the ages of 35-75 years.

Research Question 1a: What are the sociodemographic (age, gender, education level) and socioeconomic (employment status, income, number of jobs) characteristics of FAs between 35-75 years old?

Research Question 1b: What is the baseline knowledge of FAs between the ages of 35-75 years on CHD?

Research Question 1c: What are the CHD risk factors prevalent in FAs?

***Study Aim 2*:** To determine the relationship between CHD knowledge, CHD risk factors, sociodemographic, and socioeconomic characteristics of FAs between 35-75 years old.

Research Question 2a: What is the relationship between CHD knowledge and CHD risk factors?

Research Question 2b: What is the relationship between CHD knowledge, sociodemographic (age, gender, education level) and socioeconomic (employment status, income, number of jobs) characteristics of FAs between 35-75 years old?

Research Question 2c: Which sociodemographic (age, gender, education level) and socioeconomic (employment status, income, number of jobs) characteristic variables best predict FAs' knowledge of CHD?

CHAPTER II: REVIEW OF THE LITERATURE

This chapter describes the review of the literature which addresses the variables under study. The purpose of this review is to provide an understanding of the previous research regarding CHD focusing on FAs. Additionally, this review provides an overview of the FAs in the U.S., CHD, knowledge, and its risk factors. This chapter also presents the conceptual framework used in guiding this study and describes gaps in the literature.

The literature on CHD among FAs is quite sparse. To date, there are no studies that address the CHD knowledge of FAs. Additionally, the impact of sociodemographic and socioeconomic variables on CHD knowledge and on CHD risk factors prevalent among FAs has not been investigated.

Immigration History of Filipino-Americans

According to Dela Cruz et. al (2002), the migration of Filipinos to the U.S. is linked to the U.S. colonization of the Philippines after the Spanish-American war in 1898. This migration occurred in three waves. The first wave immigrants (1898-1946) included the following: a) the *pensionados*, a group of young Filipino men who came to the U.S. to study as subsidized scholars of the Philippine colonial government to secure leadership position in the Philippines; b) the *sakadas*, Filipino men who were recruited by Hawaiian Sugar Planters Association as farm workers and laborers; and c) the U.S. Navy recruits, Filipino men who served for the U.S. Navy.

The second wave immigrants (1946-1965) included the following: a) Filipino men who participated in the U.S. military's Pacific operations during World War II; b) Filipino women who came to the U.S. as brides for U.S. military men; and c) Filipino

nurses who came to the U.S. for postgraduate study and for U.S. employment, to alleviate nursing shortage in the U.S.

The third wave immigrants (1965- present) included the highly educated professionals. These are the Filipino health care professionals (mostly nurses and physicians) who came to the U.S. for employment and family reunification. They constitute the largest group of FAs in the U.S. (Dela Cruz et al., 2002).

Based on the 2000 Census, FAs are the second largest Asian subgroup in the U.S. and the second largest immigrant population in the U.S. following Mexican-Americans (Camarota, 2007).

Etiology and Mechanisms of Coronary Heart Disease

CHD is the most common type of cardiovascular disease in adults (AHA, 2010). CHD impairs the pumping ability of the heart by depriving the heart muscle of blood-borne oxygen and nutrients (McCance, Huether, Brashers, & Rote, 2010). CHD is characterized by *ischemia*, a local state in which myocardial cells are temporarily deprived of blood supply secondary to atherosclerosis or plaque build-up in the coronary arteries (Copstead & Banasik, 2010; McCance, Huether, Brashers, & Rote, 2010). Atherosclerosis is caused by atherosclerotic lesions which are asymmetric focal thickenings of the intimal layer of the artery (Hansson, 2005). This causes progressive narrowing and/or occlusion of the coronary arteries (Copstead & Banasik, 2010; McCance et al., 2010). Persistent ischemia or the complete occlusion of the coronary artery from atherosclerotic lesions causes acute coronary syndromes, which can include a fatal myocardial infarction (MI) (McCance et al., 2010).

Atherosclerotic lesions or plaque consists of cells, connective-tissue elements, lipids, and debris (Stary et al., 1995) but mainly lipids (Copstead & Banasik, 2010; Hansson, 2005). Lipids are composed of lipoproteins also known as chylomicrons, required by most cells for the manufacture and repair of plasma membranes (McCance et al., 2010). The lipoproteins linked to CHD include the very-low density lipoproteins cholesterol (VLDL-C), low-density lipoproteins cholesterol (LDL-C), and high-density-lipoproteins cholesterol (HDL-C) (Copstead & Banasik, 2010).

Specifically, an increased amount of circulating LDL-C, as in the case of dyslipidemia (abnormally elevated serum lipids), causes infiltration and retention of LDL-C in the intimal layer of the artery initiating an inflammatory response in the arterial wall (Leitinger, 2003; Skalen et al., 2002). Platelets, white blood cells, macrophages, growth factors, other inflammatory mediators, and debris accumulate in the arterial wall causing atherosclerotic plaques (Chhatriwalla et al., 2009; Copstead & Banasik, 2010; Hansson, 2005), which are fragile and prone to rupture. Rupture of plaques causes further platelet aggregation and thrombus formation which eventually results in MI.

Risk Factors of Coronary Heart Disease

The literature indicates that factors contributing to the development of atherosclerosis are also risk factors for developing CHD (Cavusoglu et al., 2004; Czepluch, Bergler, & Waltenberger, 2006; Newton & Froelicher, 2005; Stampfer, Ridker, & Dzau, 2004; Tacoy et al., 2008; Yusuf et al., 2004). Age, gender, family history, DM, dyslipidemia, hypertension, obesity, and physical inactivity have been documented in the literature to be risk factors for CHD (McCance et al., 2010), factors that are classified as non-modifiable and modifiable.

Non Modifiable Risk Factors

Age and Gender

Age and gender are CHD risk factors that cannot be controlled. Aging is associated with increased vulnerability to endothelial injury and decreased endothelial repair (McCance et al., 2010). More than 83% of individuals who die from CHD are older (AHA, 2009). According to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) (2001), men who are ≥ 45 years of age and women who are ≥ 55 years of age, are considered major risk factors for CHD (AHA, 2009; Heart Truth Campaign, 2010). Studies also revealed that women's risk for developing CHD rises after menopause (Agrinier et al., 2010; Matthews et al., 2009; Tan, Gast, & Van der Schouw, 2009). However, not only postmenopausal women are at risk for developing CHD, also the perimenopausal ones. A study by Matthews et al. (2009) revealed that abnormal changes in lipid profile also occur in perimenopausal women.

Family History

CHD has a strong familial component. First-degree relatives of patients with CHD have a higher risk for developing CHD than the general population (Hurrell et al., 2006). An increased risk of heart disease has been found on individuals with a family history of premature CHD (CHD in male first degree relative < 55 years and CHD in female first degree relative < 65 years) (NCEP ATP III, 2001). Genetics and shared environmental exposures have been noted to play a major role in the development of CHD (McCance et al., 2010). Individuals with genetic disorders such as gene polymorphisms are susceptible to atherogenic abnormalities when exposed to certain environmental stimuli compare to those who do not have this genetic disorder (Damani & Topol, 2007).

Modifiable Risk Factors

Diabetes Mellitus

Diabetes Mellitus (DM) is considered one of the highest risk factors of CHD. According to the NCEP ATP III, DM is a CHD risk equivalent that is, > 20 of 100 individuals will develop CHD or have a recurrent CHD event within 10 years. Data from the 2007 National Diabetes Fact Sheet, 7.8% of the U.S. population have diabetes. DM causes endothelial damage, thickening of the vessel wall, increased inflammation and leukocyte adhesion, increased thrombosis, glycation of vascular proteins, and decreased production of endothelial-derived vasodilators such as nitric oxide (Basta, 2008; Farmer, 2008; Kashyap & Defronzo, 2007). The most prevalent type of DM in the U.S. is DM Type 2 (DMT2). According to the Centers for Disease Control and Prevention (2007), 90 to 95% of individuals with DM have DMT2.

Hypertension

According to the Seventh Report of the Joint National Committee (JNC 7) on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, HTN is defined as a person having a blood pressure ≥ 140/90 mmHg or those individuals who are on antihypertensive agents (NCEP ATP III, 2001). HTN is a major risk factor of CHD because it causes endothelial injury, an essential step in atherosclerosis formation (AHA, 2010; McCance et al., 2010; NCEP ATP III, 2001). HTN also causes myocardial hypertrophy, which increases myocardial demand for coronary blood flow (McCance et al., 2010). Control of HTN with diet, exercise, and antihypertensive agents has shown to decrease CHD risk (Lehne, 2010; Rader & Daugherty, 2008; Schmieder et al., 2007).

Dyslipidemia

Abnormal serum LDL-C, HDL-C, and triglyceride levels secondary to genetic and/or dietary factors are precursors for coronary atherosclerosis. Elevated serum LDL-C level is a strong indicator of CHD (Brunzel et al., 2008; Chhatriwalla et al., 2009; Garg & Simba, 2007; Hansson, 2005). Increased LDL-C causes plaque build-up within the arterial walls. Research indicates that reduction in serum LDL-C, with diet and cholesterol-lowering agents have been shown to decrease the progression of atherosclerosis (Brunzel et al., 2008; Chhatriwalla et al., 2009; Garg & Simha, 2007; Glassberg & Rader, 2008; Grundy, 2007; Grundy et. al., 2004; Tannock, 2008).

High triglycerides and low HDL-C levels have been strongly linked to CHD. Elevated triglycerides are associated with endothelial dysfunction (Le & Walter, 2007). The cardio protective role of HDL-C is related to its reverse cholesterol transport, antioxidative, anti-inflammatory, antithrombotic, and endothelium-dependent vasorelaxant effects (Link, Rohatgi, & De Lemos, 2007). Low levels of HDL-C reverse this process putting the individual at risk for CHD (Verges, 2009).

Obesity

Obesity and abdominal adiposity (also known as *visceral obesity*) are considered major risk factors for CHD (AHA, 2010; National Heart, Lung, and Blood Institute (NHLBI), 2008). Both obesity and abdominal adiposity are caused by genetics, diet, and inadequate physical exercise (McCance et al., 2010). Obesity is defined by the NHLBI (2008) as a body mass index (BMI), weight in kilograms divided by height in square meters, between 30.0-39.99. Abdominal adiposity is a waist measurement ≥ 35 inches for women and ≥ 40 inches for men (NHLBI, 2008). Research indicates that obesity is

strongly associated with CHD, DM, and dyslipidemia (Rader, 2007; Yologlu et al., 2005).

Physical Inactivity

Physical inactivity is highly associated with obesity, abdominal adiposity, dyslipidemia, HTN, and elevated serum glucose, increasing the risk of CHD (Lloyd-Jones et al., 2008). According to the Physical Activity Guidelines for Americans, regular physical activity reduces the risk of CHD and other chronic diseases (USDHHS, 2008).

Smoking

Cigarette smoking, either direct or passive, increases the risk of CHD. Cigarette smoking has been shown to cause endothelial damage, leading to endothelial dysfunction and impairment of endothelium-dependent vasodilation (Yuksel et al., 2004; Yusuf et al., 2004). Nicotine stimulates the release of catecholamines, which increases heart rate and causes peripheral vasoconstriction (McCance et al., 2010). Increased heart rate and peripheral vasoconstriction result in increased cardiac workload and oxygen demand. Cigarette smoking has also been found to have a synergistic effect on individuals with gene polymorphism, increasing their CHD risk (Niemiec, Zak, & Wita, 2008).

CHD Risk Factors Identified in Filipino-Americans

The literature revealed that FAs are at risk for CHD because of their high prevalence of HTN, DM, and other metabolic problems (Anderson, 1983; Gerber, 1980; Nora & McBride, 1996; Sloan, 1963; Stavig, Igra, & Leonard, 1988). The CHD risk factors common to FAs are DMT2, dyslipidemia, HTN, obesity, physical inactivity, and smoking. The two states in the U. S. with large FA populations, California and Hawaii, the prevalence rate of DMT2, dyslipidemia, HTN, and obesity among FAs is higher than

other ethnic groups (Araneta & Barrett-Connor, 2005; Araneta, Wingard, & Barrett-Connor, 2002; Kim et al., 2008; Magno et al., 2008; Ryan et al., 2000; Wong et al. 2007).

Diabetes Mellitus

The type of DM prevalent among FAs is DMT2. In the Philippines, DMT2 is a common health problem. A 9-year cohort study conducted by Soria et al. (2009) revealed an increased growth of DMT2 among Filipinos living in the Philippines between the years of 1997 and 2007. They found a significant increase of their participants' mean fasting blood glucose levels (91.5 mg/dL to 103.3 mg/dL). However, DMT2 is not only prevalent in the Philippines, but also in the western part of the world. A study by Gentilucci et al. (2008) revealed that Filipinos ($N = 335$) living in Rome were diabetics. In Hawaii, the incidence of DMT2 is also high among FAs. The 1997-2000 data from the Kohala Health Research Project revealed that FAs had a higher incidence of DMT2 compared to Caucasians (Kim et al., 2008). Another cross-sectional study conducted in Houston, Texas between 1998 and 2000 revealed that 16% of FAs reported having DMT2. This finding is consistent with Yeh et al.'s (2009) research. The 2003-2005 National Health Interview Survey (NHIS) study of Ye et al. (2009) showed that FAs had a higher rate of DMT2 compared to other Asian groups (FAs 6.1%, Chinese 5.5%, other Asians 3.8%; $p = 0.008$).

Additionally, DMT2 among Filipino women is prevalent in the Philippines and in the western U.S., particularly California and Hawaii (Araneta et al., 2006; Langernberg et al., 2007). Data from the Philippine National Nutrition Survey (1998), Native Hawaiian Health Research Project (1997-2001), and the University of California San Diego Filipino Women's Health Study (1995-1999) revealed a high incidence of DMT2 among

FA women compared to general populations of California and Hawaii (Araneta et al., 2006), a finding consistent with Araneta, Wingard, and Barrett-Connor's (2002) study. They compared the incidence of DMT2 and metabolic syndrome between Caucasian women (n = 379) and FA women (n = 294). Their findings revealed that FA women had a higher prevalence of DMT2 (36.4%) than Caucasian women (8.7%).

Hypertension

The literature indicates that HTN is prevalent among FAs. For example, in 1991, Klatsky and Armstrong reported an alarming incidence of HTN among FAs. In their study, they utilized the data from the 1978-1985 northern California prepaid health care program health examinations on FAs, Chinese, Japanese, and other Asians (N = 13,031). Their study revealed that FAs had a higher incidence of HTN compared to their Asian counterparts. Additionally, CHD data from 1992-1996 at Seton Medical Center in Daly City, CA showed that FAs had a higher incidence of HTN (79%) compared to Caucasians (69%; p = < 0.0001) (Ryan et al., 2000). A similar study based on the 2003-2005 NHIS data revealed an alarming rate of HTN among FAs compared to other Asian groups (FAs 23.9%, Chinese 16.9%, Asian Indians 10.4%, other Asians 16.3%; p = < 0.001) (Ye et al., 2009). These findings are consistent with the 2000 NHLBI study in Daly City, California that revealed 35% of FA community residents (N = 39) had HTN and almost 40% reported having a family member with HTN. Lastly, a more recent study by Dela Cruz and Galang (2008) indicates that HTN persists to be a major public health problem among FAs. In their study, 41% of FAs (N = 27) in their sample were diagnosed with HTN.

Dyslipidemia

Data from the 1978-1985 northern California prepaid health care program health examinations revealed that FAs had a higher incidence of dyslipidemia (FA men 29.8%, FA women 21%) than Chinese (men 26.6%, women 20.2%). This finding is consistent with the 1992-1996 CHD data from Seton Medical Center in Daly City (Ryan et al., 2000) which showed that FAs had a higher incidence of dyslipidemia (34.7%) compared to Caucasians (24.1%; $p = < 0.0001$) (NHLBI, 2000; Ryan et al., 2000).

When FA women ($n = 181$) were compared to Caucasian women ($n = 196$), FA women had higher LDL levels, lower HDL levels, and higher triglyceride levels (Aranetta & Barrett-Connor, 2004). More FA women (31%) were on a cholesterol lowering agent compared to Caucasian women (19%).

Obesity and Abdominal Adiposity

Obesity is another health problem common to Filipinos (Adair, 2004; Cuasay et al., 2001; Gentilucci et al., 2008; Klatsky & Armstrong, 1991; Oza-Frank et al., 2009; Tanchoco et al., 2003). Obesity was associated with DMT2, dyslipidemia, and HTN.

Another problem observed in FAs is abdominal adiposity. A study by Gentilucci et al. (2008) revealed that FAs living in Rome, Italy ($N = 335$) who had abdominal adiposity also had DMT2 and/or HTN. This finding is consistent with Araneta and Barrett-Connor's (2005) research which showed a high prevalence of abdominal adiposity in this population. Their study was implemented in Rancho Bernardo, California. They compared Caucasian women ($n = 196$) and FA women ($n = 181$). Findings revealed that FA women had higher visceral fat (69.1 cm) than Caucasian women (62 cm), and a higher waist girth (82 cm) than Caucasian women (80.7 cm)

(Araneta & Barrett-Connor, 2005). This is also consistent with Langernberg et al.'s (2007) research. Their study revealed FAs (N = 389) who were obese and had abdominal adiposity also had DMT2, dyslipidemia, and/or HTN.

Physical Inactivity or Sedentary Lifestyle

It is well documented that physical inactivity (i.e. lack of exercise) is an independent risk factor for CHD (AHA, 2009). However, sedentary lifestyle and lack of exercise have also been documented as a common problem for FAs. Several studies found that FAs who did not exercise had a greater chance of having DMT2, HTN, and dyslipidemia (Araneta et al., 2002; NHLBI, 2000; Dela Cruz & Galang, 2008). A study by Belza et al. (2005) showed that FAs (N = 71) had low physical activity level. In their study, FAs did not participate in vigorous physical activity because they perceived work related exercise such as walking or volunteering as a form of physical activity. Another study by Risonar et al. (2009) showed that physical activity level of FAs (N = 98) decreases with increasing age.

Smoking

Tobacco use among FAs is very common. Findings from a community sample of FA men (n = 318) in Los Angeles, California indicated that more than half (69%) of FA men have been exposed to cigarette use, 35% were current smokers, and 34% were former smokers (Maxwell, Garcia, & Berman, 2007). These findings are consistent with the 2003-2005 National Health Interview Survey (NHIS) and the 2001 California Health Interview Survey (CHIS) data. The NHIS also revealed that among Asian groups, FAs had a higher percentage of current smokers (17.7%) compared to Chinese (9.2%) and Asian Indians (7.6%; p = < 0.001; Ye et al., 2009). In addition, the 2001 CHIS revealed

that the proportion of current smokers was higher in FAs (24%) than African Americans (22%), Hispanics (20%), Hispanic Whites (19%), and Chinese Americans (14%) (Maxwell, Bernaards, & McCarthy, 2005). Furthermore, in 2000, the NHLBI worked with the Asian Pacific Islander American Health Forum (APIAHF) and the West Bay Pilipino Multi-Service Center (WBPMSC) to study the cardiovascular risks in the FA community. Their report revealed that FAs are at risk of CHD. One factor that places FAs at risk for CHD is their exposure to tobacco smoke. More than 60% of the Filipino community residents (n = 21) have been exposed to cigarette smoke from their family.

Knowledge of Coronary Heart Disease and its Risk Factors

Awareness of risk in relation to CHD is essential in preventing CHD among FAs. Understanding of CHD and its risk factors influences judgments and decisions in CHD prevention and control. According to Glanz (2002), awareness of risk in relation to CHD may result in heart disease prevention and it may be an important factor in developing preventive behaviors. Studies show that individuals who are not aware of their risk for developing a disease are less likely to adopt preventive behaviors (Avis et al., 1989; King et al., 2002).

Several factors may increase FAs' risk for developing CHD. One major reason could be the lack of knowledge about CHD and its risk factors. As outlined previously, individuals who are not aware of their risk for developing a disease are less likely to adopt preventive behaviors (Avis, Smith, & Mckinlay, 1989; King, Quinn, Delehanty, 2002). Given the serious impact of this disease, it is important that FAs know CHD and its risk factors before they can engage in effective health promotion activities (Robertson, 2001). According to Pender, Murdaugh, and Parson (2006) individuals usually engage

more in health promoting activities when they know and understand that the activities would benefit them. This statement is supported by Alm-Roijer et al. (2006) research. In their research, a total of 347 patients who had CHD were interviewed between the years of 1999-2000 about their self-reported knowledge on their own CHD risk factors and self-reported lifestyle changes and medication treatment. The lifestyle changes included in the study were dietary changes, smoking cessation, exercise, weight loss, and stress management. The medications included in the study were lipid lowering agents, antihypertensive and oral glycemic agents. Their study revealed significant correlation between participants' self-reported knowledge and the degree of self-reported lifestyle changes and medication treatment. Knowledge on CHD risk factors improved patients' adherence to lifestyle modifications and medication treatment.

Studies also show that knowledge of CHD risk factors and strategies to modify them is low among individuals with DM and those who speak English as a second language (Pham, Rosenthal, & Diamond, 1999; Wagner, Abbott, & Lacey, 2005; Wagner et al., 2005a). This may be true among FAs especially those who speak *Tagalog* or another form of Filipino dialect at home. According to the literature, the baseline knowledge of CHD and its risk factors specific to the FA population connected to primary care services is unknown. The current literature also indicates CHD risk factors prevalent among FAs are mostly modifiable. In order to modify these risk factors, FAs must be aware of these risk factors and must know how to prevent them. According to Wagner et al. (2006), knowledge of these risk factors enables individuals to better understand their risk and advocate for closer management of their cardiovascular health.

Sociodemographic and Socioeconomic Factors

Research indicates that sociodemographic and socioeconomic factors influence health particularly, CHD. Sociodemographic (age, education, gender) and socioeconomic (employment, income) status impact cardiovascular and mortality outcomes. It has been documented that individuals with low or poor socioeconomic status have worse cardiac risk factor profiles and high mortality rates (Armstrong, Strogatz, & Wang, 2004; Cohen, Panguluri, Na, & Whooley, 2010; Feinstein, 1993; Kaplan & Keil, 1995; Langenberg, Araneta, Bergstrom, Marmot, & Barrett-Connor, 2007; Marmot, Shipley, & Rose, 1984; Steenland, Henley, Calle, & Thun, 2004). Income and education have been documented to be associated with mortality. In 2003, Franks et al. used the data from the 1987 National Medical Expenditure Survey to examine the relationships between sociodemographic, self-reported health, and mortality in the U.S. Their study revealed that individuals with more education and a higher income were associated with higher levels of self-reported health (greater health perception, better health) and lower mortality. In Shaw et al.'s (2008) study, income was the strongest predictor of cardiovascular morbidity and mortality. Those with an annual household income of < $20,000, or who were on Medicaid, Medicare, or other public health insurance had a higher risk of cardiovascular death or MI (p = <.05). This finding is consistent with Cohen, Panguluri, Na, & Hooley's (2010) research. Their study also revealed that individuals who had an income of < $20,000 had more cardiac risk factors (metabolic syndrome) (56%) than those who had an income between $20,000 to $49,000 (31%). Langenberg et al. (2007) found this to be true among FAs. They examined the impact of socioeconomic factors on CHD risk among FAs (N = 389). Their study revealed that FAs

with low income had more CHD risk factors such as DMT2 and HTN compared to those with higher income.

Gaps in the Literature

A review of the literature indicates that FAs are at risk of developing CHD because many of the risk factors of CHD are prevalent in this population. However, studies addressing CHD among FAs were quite sparse. As outlined previously, there were no studies that address the knowledge of CHD among FAs. Furthermore, the impact of sociodemographic and socioeconomic variables on CHD knowledge, and the CHD risk factors prevalent in FA population connected to primary care services have not been investigated. This is the first research that addressed the above issues specific to the FA population.

Conceptual Framework

The Neumann's Systems Model (NSM) was utilized as the conceptual framework for the present study. Because of its wholistic focus, the NSM was ideal for guiding this research. The philosophic base of the NSM encompasses wholism: *"a wellness orientation, client perception and motivation, and a dynamic systems perspective of energy and variable interaction with the environment to mitigate possible harm from internal and external stressors…*(Neuman & Fawcett, 2002, p. 12).

This conceptual model, developed by Dr. Betty Neuman in 1972, is presently recognized and frequently used within the discipline of nursing. The NSM has been used previously as a guiding framework for ethnic minority (Pothiban, 1993). In the NSM, the client is viewed as multidimensional and wholistic (see Figure 1). The client is composed of five simultaneously interacting variables: physiological, psychological, sociocultural,

developmental, and spiritual variables. The two major concepts of the NSM are stressors and the reactions to such stressors. According to Neuman (1995), the person has a certain "degree of reaction" to any given stressor at any given time. Stressors are environmental forces that impact the person's basic structure. The environmental stressors are divided into three factors: intrapersonal, interpersonal, and extrapersonal. Intrapersonal stressors occur within a person such as emotions, feelings, behavior, and knowledge (Neuman, 1995). Interpersonal stressors occur between individuals such as role expectations. Extrapersonal stressors occur outside a person such as job, finances.

Neuman and Fawcett (2002) define environment as "all internal and external factors or influences surrounding the identified client or client system." The client may be influenced either positively or negatively by environmental factors. As outlined previously, these environmental factors are called stressors, and they can penetrate through the three circles: FLD, NLD, and LR causing system instability.

The basic structure (client) is represented by a series of concentric circles. These circles are called the flexible line of defense (FLD), the normal line of defense (NLD), and the lines of resistance (LR) whose role is to protect the client (see Figure 1). The FLD is the outer most circle of the NSM which protects the NLD from environmental stressors. Neuman (1995) identifies the FLD as dynamic and serves as a protective buffer for preventing stressors from penetrating the NLD. The NLD, the second circle depicted by a solid line, is the client's usual wellness level. The NLD serves to protect the client's usual state. The LR is a series of concentric broken circles surrounding the basic structure (client). These circles serve as a protective mechanism for the client system's integrity. The LR is activated when the NLD is disrupted by environmental stressors. When the

NLD is disrupted and the LR is activated, reactions from stressors within the basic structure (client's symptoms of instability or illness) occur.

Health is a state of optimal wellness or system stability (Neuman, 1995). Optimal wellness or stability indicates that all a person's needs are being met. According to Neuman, optimal wellness is the condition in which all five variables are in harmony with the whole system, which determines the resistance of a person to any environmental stressor. Health is viewed as a continuum; wellness and illness are on opposite ends of the continuum (Neuman & Fawcett, 2002).

The nursing component of the NSM depicts that the major concern for nursing is in keeping the client stable by way of accurate assessment from the effects and possible effects of environmental stressors and assisting client to attain optimal wellness. Nursing is concerned with all factors affecting the patient's response to stress. Nursing interventions focus on primary, secondary, and tertiary preventions. As illustrated in Figure 1, the goal of primary prevention is to promote client wellness by stress prevention and reduction of risk factors, such as intervention strategies for health promotion. Primary prevention strengthens the client's FLD. The goal of secondary prevention is to provide appropriate treatment of symptoms or existing illness to attain optimal client system stability. Secondary prevention strengthens the client's LR. The goal of tertiary prevention is to maintain an optimal wellness level by supporting existing strengths and conserving client's energy. According to Neuman and Fawcett (2002), one or all three prevention modalities may be used. Nursing actions are initiated to "best retain, attain, and maintain optimal client health or wellness" using the three preventions as interventions to keep the client system stable (pp. 25, 29).

Application of the Neuman Systems Model

Knowledge deficit regarding CHD and its risk factors are stressors that impact FAs' health stability or wellness. CHD and its risk factors can weaken and break both the FLD and NLD causing illness or system instability (see Figure 2). For example, CHD risk factors can lead to the development of atherosclerosis and CHD can lead to a life threatening MI.

The primary prevention is focused on health promotion and risk prevention. By assessing the baseline knowledge of FAs regarding CHD, assessing their knowledge on CHD risk factors, and educating them on prevention of CHD risk factors (e.g., encouraging and promoting exercise, following a healthy diet) their FLD will be strengthened, protecting their NLD. The secondary prevention is focused on early case finding, identification of asymptomatic individuals through screening tests, and treatment of a disease. For FAs with a family history of CHD or those who have already developed a disease such as HTN, DM, or dyslipidemia, treating their disease with both non-pharmacological and pharmacological interventions (e.g., weight loss, smoking cessation, exercise, prescribing a low cholesterol diet, medications) will help strengthen their LR (see Figure 2). This may lead to the optimal wellness and system stability of FAs and may help improve their overall cardiovascular health.

CHAPTER III: METHODOLOGY

Chapter III describes the research methodology and procedures used in the present study. This chapter discusses the following sections: design, population sample, instruments, methods and measurements, data collection procedure, protection of human subjects, and statistical analyses.

Design

This study is a non-experimental research. To examine CHD knowledge, CHD risk factors, sociodemographic, and socioeconomic characteristics of FAs, descriptive statistics and frequencies were utilized for data analysis. To determine the relationships between CHD knowledge and CHD risk factors, Pearson correlations and *t*-tests were conducted. To describe the relationships between CHD knowledge, sociodemographic and socioeconomic characteristics, descriptive statistics, Pearson correlation, *t*- tests, and analysis of variance (ANOVA) were used to analyze the data. To examine if sociodemographic and socioeconomic characteristic variables predict CHD knowledge, multiple linear regression was utilized for data analysis. Multiple linear regression was also used to analyze, which of the aforementioned variables best predict CHD knowledge.

Population Sample and Setting

Prior to conducting this study, an approval from the University of Hawaii's Institutional Review Board (IRB) was obtained (see Appendix D). The study was conducted in Las Vegas, NV. A convenience sample of 120 FAs ($N = 120$) was recruited from three private primary care clinics: Calderon Medical Group (CMG), Primary Care Medical Services, Inc. (PCMS) and Maria Faylona, MD Family Practice (MFMDFP).

Dr. Calderon is the medical director and owner of CMG. Dr. Calderon is an internal medicine physician who has been practicing medicine for over 20 years. The type of clients Dr. Calderon sees in his clinic consists of approximately 90% FAs, 5% Hispanics, 3% African-Americans, and about 2% Caucasians (B. Calderon, personal communication, April 23, 2010). Dr. Calderon sees approximately 40-60 FA clients every day, Monday-Friday. Dr. Romualdo Aragon is the medical director and owner of PCMS clinic. Dr. Aragon is an internal medicine FA physician who has been practicing medicine for over 20 years. The type of clients Dr. Aragon sees in his clinic consists of approximately 50% FAs, 25% Hispanics, 15% African-Americans, and 10% Caucasians (R. Aragon, personal communication, September 30, 2009). Dr. Maria Faylona is the medical director and owner of MFMDFP clinic. Dr. Faylona is a FA family practice physician with over 20 years of medical experience. The type of clients Dr. Faylona sees in her clinic consists of approximately 60% FAs, 25% Caucasians, 10% Hispanics, and 5% African-Americans (M. Faylona, personal communication, December 3, 2009).

Approval to conduct the study from the above clinics was obtained from each physician. A memorandum of understanding (MOU) between the University of Hawai'i at Mānoa (UHMSON) and the primary care clinics was also obtained. Full approval from the University of Hawai'i Institutional Review Board (UHIRB) was granted prior to conducting data collection. This study was strictly confidential and voluntary. Personal information such as names, date of birth, and/or other personal data was not used. To ensure patient confidentiality and anonymity, number codes were used instead.

The sample size for the study ($N = 120$) was determined by calculating a *priori* power analysis using the G* Power analysis program Version 3.0. G* Power was

designed as a general stand-alone power analysis program for statistical tests commonly used in social and behavioral research (Faul et al., 2007). Power analysis is a procedure that determines how many participants are needed in a study to achieve a power of 80%. This decreases Type II error in a study (Burns & Grove, 2003; Polit & Tatano-Beck, 2008). G* Power Version 3.0 analysis revealed that 98 subjects was needed for the study. This sample size provided a medium effect size of .20; alpha equals .05, and a power of 80. The primary investigator (PI) obtained 120 subjects in case some participants withdraw from the study.

The inclusion criteria for the study were: (1) FAs aged 35-75 years, (2) able to speak, understand, and communicate in English, and (3) able to write. The exclusion criteria for the study include: (1) those with a history of MI and (2) those with memory and neurological impairments such as dementia, Alzheimer disease, tremors, paralysis, or any other health condition that prohibits them from talking or writing.

Methods and Measurement

CHD knowledge was measured using the modified version of the Heart Disease Fact Questionnaire (HDFQ) tool (see Appendix C). The modified version of the HDFQ consists of 21 true or false questions. This tool is based on Dr. Wagner's HDFQ tool (Wagner et al., 2005b) and it was designed to test clients' knowledge of CHD.

The HDFQ tool was appropriate for this study because of its readability and reliability. According to the Flesch-Kincaid reading test, the HDFQ tool is equivalent to a U. S. 8^{th} grade reading level (Wagner et al. 2005b), which is the average grade reading level in the U.S. (National Center for Education Statistics, 2007). Additionally, this tool fit the concepts and the constructs of the present study.

The HDFQ has been tested for reliability and validity (Wagner et al., 2005a; Wagner et al., 2006). This tool also demonstrated a good internal consistency with Kuder-Richardson 20 formula of 0.77. Coefficients above 0.70 indicate reliability (De Vellis, 2003). Discriminant function analyses (DFA) were also used to assess the criterion validity of this tool. The HDFQ tool demonstrated a good validity as evidenced by successfully discriminating between groups of respondents based on the study variables.

Because the HDFQ tool has not been used in FAs and in clients without diabetes, a minor modification was made by the PI. A full consent was obtained from Dr. Wagner to use the HDFQ tool and to revise it accordingly to better reflect the study constructs and to consort to the population under study (J. Wagner, personal communication, February 11, 1010). Out of the 25 original questions, 18 questions were retained and 3 new questions were added. The modified version of the HDFQ tool consisted of 21 true or false questions, and it was used for the present study to test the CHD knowledge of FAs. Some of the items included in the HDFQ tool were questions such as "A person always knows when they have CHD," "The older a person is, the greater their risk of having CHD," Smoking is a risk factors for CHD," "High blood pressure is a risk factor for developing CHD," "Being overweight increases a person's risk for CHD..." (see Appendix C). Participants were asked to answer the statements from the HDFQ tool with "true," "false," or "I don't know." Scores were calculated by summing the total number of correct answers, higher scores indicate more knowledge.

The sociodemographic (age, gender, education level) and socioeconomic (employment status, income, number of jobs) characteristics of FAs were measured using

the Demographics instrument developed by the PI (see Appendix C).

Data Collection and Protection of Human Subjects

As outlined previously, full consents to collect research data at CMG, PCMS, MFMDFP clinics were obtained from the owners and medical directors. Once UHIRB granted the PI the permission to proceed with data collection, the PI notified the three physicians and their staff and discussed the data collection plan/schedule. Data collection began in May 2010 and ended in July 2010.

Flyers containing specifics about the research were posted in the clinic lobbies and in the exam rooms (see Appendix B). The PI was in Dr. Calderon's clinic on Mondays and/or Tuesdays of every week from 9:00 am to 12:00 noon. The PI was in Dr. Aragon's clinic every other Tuesdays for about 1-2 hours. The PI was in Dr. Faylona's clinic every other Thursdays for about 1-2 hours. However, majority of the FA clients were at Dr. Calderon's clinic. The PI obtained most of the research participants (approximately 77%) from Dr. Calderon's clinic.

FAs who were interested in participating in the study notified either the PI directly or the front desk clinic staff. If participants notified the front desk clinic staff about their research interest, the staff would then directly inform the PI. The PI would then approach the participants, discuss the research plan, and would provide the forms. As previously outlined, the PI stayed mostly in the clinic lobby during data collection. The PI would directly approach potential participants in the lobby while waiting for their doctor's appointment and would respectfully ask them if they were interested in participating in a research study. Three participants declined to participate in the study.

Most participants were directly approached by the PI. As outline previously, a total of 120 participants were recruited in the study.

The PI verbally informed the participants that the study was confidential and voluntary. Once they agreed to participate, an informed consent was provided to each participant. If there were questions or concerns about the informed consent, the PI was there to clarify the questions. Once the consent form was read and signed, the participant would then complete the Demographics and the HDFQ forms. There were a few times that the PI read and translated in *Tagalog* (Philippine national language) the informed consent and the questions from the Demographics and HDFQ forms to ensure participants understood the questions and the consent form. The PI was also responsible for ensuring that the questionnaires were completed.

Both the Demographics and HDFQ forms were completed in the clinic. As an incentive, a $5.00 telephone card was provided to each participant who completed both forms.

Methods of Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS) Version 17.0. Responses from the participants were coded and were entered into the SPSS program by the PI. The PI consulted with a statistician during the data analysis process to ensure accuracy of the analysis. As outlined previously, descriptive statistics, frequencies, *t*-tests, Pearson correlations, ANOVA, and multiple regression were used to answer the research questions.

CHAPTER IV: RESULTS

The purposes of this study were to examine the baseline knowledge and risk factors of CHD among FAs who were connected to primary care services and to describe the relationships between CHD knowledge, sociodemographic and socioeconomic characteristic variables of FAs between the ages of 35-75 years.

Research Question 1a:

"What are the sociodemographic and socioeconomic characteristics of FAs between 35-75 years old?"

Table 1 shows the participants' sociodemographic and socioeconomic characteristics. The mean age of the participants was 54 years (SD = 10.04). All participants (100%) were born in the Philippines (data not shown in Table). The average length of stay in the U.S. was 18.8 years (SD = 10.83). There were more women (n = 71) than men (n = 49) in the sample. The education level of the participants was high. More than half (50.8%) of the participants completed college, 20.8% attended some college but did not finish and 6.7% had post graduate work. A small percentage (15.8%) reported high school as their final degree. Only 3.3% did not complete grade school and 2.5% did not complete high school.

Most participants (78.2%) were employed and the rest were either unemployed (13.3%) or retired (8.3%). Among those who were employed, 86.2% reported having one job and 15% having two jobs. For those who were employed, 24.2% had a household annual income < $20,000 a year; about 20% had a household annual income between $30,000 and $39,999; and 14.2% had an annual income of > $70,000.

Table 1

Frequencies and Descriptives of Sociodemographic/Socioeconomic Characteristics of FAs (N = 120)

Variable		M (*SD*)	Frequency	Percent
Age		54.0 (10.04)		
Gender:	Male		49	40.8
	Female		71	59.2
Education:	College Graduate		61	50.8
	Some College		25	20.8
	Post Graduate		8	6.7
	Grade School		4	3.3
	High School Graduate		19	15.8
	Some High School		3	2.5
Employment:	Employed		94	78.2
	Unemployed		16	13.3
	Retired		10	8.3
Number of Jobs:	1		81	86.2
	2		14	14.9
	3		1	1.1
	4		1	1.1
Annual Income:	< $20,000		29	24.2
	$20,000-$29,999		15	12.5
	$30,000-$39,999		24	20
	$40,000-$49,999		12	10.0
	$50,000-$59,999		13	10.8
	$60,000-$69,999		10	8.3
	>$70,000		17	14.2
Length of Stay		18.8 (10.83)		
Marital Status:	Divorced		8	6.7
	Married		90	74.2
	Never Married		5	4.2
	Separated		11	9.2
	Widowed		6	5.0
Residence:	Own Home		65	54.2
	Rented Home or Apt		55	45.7
Living With:	Children, Spouse		52	43.3
	Other (relatives)		58	48.3
	Other (friends)		4	3.2
	Alone		6	5.0
Insurance:	Medicare, Medicaid		18	15
	Other (Private)		89	74.1
	None		13	10.8
Language Used at Home:	Filipino		117	97.5
	English		3	2.5

Table 1 also shows the marital status, residence, living arrangements, health insurance, and language used at home by the participants. Most participants were married (74.2%) and the rest were separated (9.2%), divorced (6.7%), widowed (5%), or have never been married (4.2%). More than half (54.2%) had their own home and 45.7% were either living in a rented home or in an apartment and 40% were living with their children and spouse. Almost half (48.3%) were living with their relatives and the rest were either living with their friends (3.2%) or living alone (5%).

Among the 120 participants, 74.1% had private health insurance, 15% were on government assistance programs such as Medicare and Medicaid, and 10.8% had no insurance.

The language that was used at home by participants was Filipino (98%). The Filipino dialect they spoke was *Tagalog* and/or *Ilocano*, *Pampango*, or *Visayan*; 2.5% of the sample reported English was the language they spoke at home (data not shown in Table).

Research Question 1b:

"What is the baseline CHD knowledge of FAs between the ages of 35-75 years?"

As shown in Table 2, the mean CHD knowledge score of the sample was 15.8 (SD = 4.26) out of the 21 CHD knowledge total score points. This reflects a high CHD knowledge scores among FAs.

Table 2

CHD Knowledge Scores (N = 120)

Variable	N	Mean	SD	Min	Max
Total correct score	120	15.8	4.26	3	21
Total correct percent	120	75.0	20.27	14.3	100.0

Table 3 shows many participants were knowledgeable on the risk factors of CHD: smoking (n = 111, 92.5%), followed by HTN (n = 102, 85%), dyslipidemia (n = 105, 87.5%), overweight (n = 101, 84.2%), and diabetes (n = 88, 73.3%). However, only 57.5% knew about older age and CHD risk and only 49.2% knew about HDL and CHD risk.

Table 3

Knowledge of CHD and Risk Factors (N = 120)

CHD Questions	No. of persons giving the correct answer	Percent
1. A person always knows when they have CHD	79	65.8
2. If you have a family history of CHD, you are at risk for developing heart disease	87	72.5
3. The older a person is, the greater their risk of having CHD	69	57.5
4. Smoking is a risk factor for CHD	111	92.5
5. A person who stops smoking will lower their risk of developing CHD	90	75.0
6. High blood pressure is a risk factor for developing CHD	102	85.0
7. Keeping blood pressure under control will reduce a person's risk for developing CHD	106	88.3
8. High cholesterol is a risk factor for developing CHD	105	87.5
9. your "good" cholesterol (HDL) is high, you are at risk for CHD	59	49.2
10. your "bad" cholesterol (LDL) is high, you are at risk for CHD	80	66.7
11. Eating fatty foods does not affect blood cholesterol levels	102	85
12. Being overweight increases a person's risk for CHD	101	84.2
13. Regular physical activity will lower a person's chance of getting CHD	106	88.3
14. Only exercising at a gym or in an exercise class will lower a person's chance of developing CHD	88	73.3
15. Walking and gardening are considered exercise that will help lower a person's chance of developing CHD	100	83.3
16. Diabetes is a risk factor for developing CHD	88	73.3
17. High blood sugar makes the heart work harder	87	72.5
18. A person who has diabetes can reduce their risk of developing CHD if they keep their blood sugar levels under control	72	60
19. Abdominal obesity (fat belly) is a risk factor for developing CHD	71	59.2
20. Stress may cause an increase in blood sugar, blood	104	86.7

pressure, and cholesterol levels		
21. Slow deep breaths, counting to 10 before speaking, going for a walk, are examples of stress stoppers	83	69.2

Research Question 1c:

"What are the CHD risk factors prevalent in FAs?"

As presented in Table 4, the CHD risk factors prevalent in FAs were: lack of exercise, HTN, dyslipidemia, abdominal obesity, DMT2, overweight, and smoking. Over 65% reported they did not engage in physical activity or regular exercise program, 50% reported they had HTN, 36.7% reported they had dyslipidemia, 27.5% reported they had abdominal obesity, 25% indicated they had DMT2 (25%), 22.5% indicated they were overweight, and 10% reported they smoke.

Table 4

Frequencies of CHD Risk Factors Prevalent among FAs ($N = 120$)

Variable	Frequency	Percent
No exercise	79	65.8
HTN	60	50.0
Dyslipidemia	44	36.7
Abdominal Obesity	33	27.5
DMT2	30	25.0
Overweight	27	22.5
Smoking	12	10.0

Research Question 2a:

"What is the relationship between CHD knowledge and CHD risk factors?"

Table 5 shows no significant relationship between CHD knowledge and each of the CHD risk factors among FAs. Furthermore, no significant relationship between the total number of CHD risk factors and CHD knowledge total scores (r = -.135, p = .140).

Table 5

Relationships between CHD Knowledge and CHD Risk Factors among FAs (N = 120)

Variable	Correlation with CHD total score	Mean (SD)	Test Statistic	P-value
CHD Risk Factors			r = -.135	.140
HTN	-.028	15.63 (4.02)	t =.299	.765
DM[a]	-.158	14.61 (4.41)	t =1.742	.084
Dyslipidemia	-.037	15.55 (3.89)	t =.399	.691
Overweight	.022	15.93 (3.66)	t =-.243	.808
Obesity[b]	-.020	15.62 (4.40)	t =.213	.831
Smoking	-.072	14.83 (4.41)	t =.785	.434
No exercise	-.059	15.57 (4.56)	t =.643	.522

DMT1 and DMT2 were combined due to small sample size for DMT1 (n=1) [a]
Obesity and Abdominal obesity were combined due to small sample size for Obesity (n=2) [b]

Research Question 2b:

"What is the relationship between CHD knowledge, sociodemographic and socioeconomic characteristics of FAs between 35-75 years old?"

Table 6 indicates no significant relationship between the participants' age and CHD knowledge scores (r = -.099, p = .284). However, education level was noted to be a significant predictor for CHD knowledge. The mean CHD knowledge scores differed by education level (F = 7.952, p = .001). Group 1 had a mean of 12.0 (SD = 4.24), group 2 had a mean of 14.52 (SD = 4.98), and group 3 had a mean of 16.91 (SD = 3.26).

Bonferroni post hoc test revealed group 1 did not differ from group 2 (p = .379), group 1 differed from group 3 (p = .008), group 2 differed from group 3 (p = .008).

Table 6

Relationships between CHD Knowledge[a], Sociodemographic/Socioeconomic Variables[b] (N = 120)

Variable[b]	Group	Mean	SD	Test Statistic	P-value	Post hoc
Age		54.0	10.04	r = -.099	.284	
Education	1: Grade school graduate and/or some high school	12.0	4.24			
	2: High school graduate and/or some college	14.52	4.98	F = 7.95	.001	(1 = 2) ≠ 3
	3: College graduate and/or Post-graduate	16.91	3.26			
Gender	Females	16.5	3.87	r = .219	.016	
	Males	14.6	4.58			
Employment Status[c]	Employed	16.1	4.42	t = 1.54	.125	
	Unemployed	14.6	3.45			
No. of Jobs				r = .147	.109	
Income/Yr	1: $ < 20,000	13.9	4.13			
	2: $ 20,000-29,999	16.27	3.15			
	3: $ 30,000-39,999	15.0	4.22			
	4: $ 40,000-49,999	17.9	2.50	F = 2.67	.018	(1 ≠ 7)*
	5: $ 50,000-59,999	14.9	4.46			
	6: $ 60,000-69,999	16.7	5.44			
	7: $ 70,000+	17.9	4.25			

Dependent Variable [a]
Independent Variable [b]
r = .141; p = .125[c]
No other groups differed, all p>.05*

Females had significantly higher CHD knowledge scores than males (t = 2.438, p = .016). Interestingly, employment status did not significantly correlate with CHD knowledge (r = -.141, p = .125). Additionally, there was no difference in the mean CHD

knowledge scores between the employed and unemployed participants (t = 1.54, p = .125). For those who were employed, the number of jobs was not significantly correlated with CHD knowledge (r = .147, p = .109).

Table 6 also presents income level and CHD knowledge scores. The mean CHD knowledge scores differed by income level (F = 2.67, p = .018). Group 1 had a mean of 13.9 (SD = 4.13), group 2 had a mean of 16.27 (SD = 3.15), group 3 had a mean of 15.0 (SD = 4.22), group 4 had a mean of 17.9 (SD = 2.50), group 5 had a mean of 14.9 (SD = 4.46), group 6 had a mean of 16.7 (SD = 5.44), and group 7 had a mean of 17.9 (SD = 4.25). Bonferroni post hoc test revealed group 1 differed from group 7 (p = .036), but no other groups differed, all had p >.05.

***Research Question 2c*:**

"Which sociodemographic and socioeconomic characteristic variables best predict FAs' knowledge of CHD?"

The significant predictors of the sociodemographic and socioeconomic variables entered in a regression were gender, education, and income. Table 7 shows that the model as a whole explained 15.9% of the total variance in CHD knowledge (R^2 = .159, F = 5.44, p = .000). However, only gender (B = .190, t = 2.21, p = .029) and education (B = .256, t = 2.85, p = .005) best predict CHD knowledge.

Table 7

Multiple Regression Analysis: Predictors of CHD Knowledge Score (N = 120)

Independent Variables	R^2	F	p value*	beta	t	p value*
Gender	.159	5.44	.000	.190	2.21	.029
Education				.256	2.85	.005

Dependent Variable
Indicates significance at $p<0.05$*

Instrument Analysis

Each of the 21 questions from the HDFQ tool revealed a coefficient above .30 (r = >.3, p = < .001). According to Nunnally (1978) for item response theory correlations that exceed .30 suggest validity. Cronbach's alpha for bivariate data (*correct* versus *incorrect*) and for the actual item choice ('true," "false," "I don't know") was .837. According to Polit & Tatano-Beck (2006), Cronbach's alpha provides an estimate of computing internal consistency reliability. The higher the reliability coefficient is, the more internally consistent the measure is. This indicates the modified version of the HDFQ tool was reliable.

Table 8

Item Analysis of the HDFQ Tool**

Question	Item-Total Correlation*
1. A person always knows when they have CHD	.335
2. If you have a family history of CHD, you are at risk for developing heart disease	.589
3. The older a person is, the greater their risk of having CHD	.411
4. Smoking is risk factor for CHD	.506
5. A person who stops smoking will lower their risk of developing CHD	.338
6. HTN is a risk factor for developing CHD	.625
7. Keeping BP under control will reduce a person's risk for developing CHD	.389
8. High cholesterol is a risk factor for developing CHD	.483
9. If your "good" cholesterol (HDL) is high, you are at risk for CHD	.424
10. If your "bad" cholesterol (LDL) is high, you are at risk for CHD	.605
11. Eating fatty foods does <u>not</u> affect blood cholesterol levels	.493
12. Being overweight increases a person's risk for CHD	.497
13. Regular physical activity will lower a person's chance of getting CHD	.475
14. Only exercising at a gym or in an exercise class will lower a person's chance of developing CHD	.565
15. Walking and gardening are considered exercise that will help lower a person's chance of developing CHD	.396

16. Diabetes is a risk factor for developing CHD	.658
17. High blood sugar makes the heart work harder	.527
18. A person who has diabetes can reduce their risk of developing CHD if they keep their blood sugar levels under control	.490
19. Abdominal obesity (fat belly) is a risk factor for developing CHD	.539
20. Stress may cause an increase in blood sugar, blood pressure, and cholesterol levels	.457
21. Slow deep breaths, counting to 10 before speaking, going for a walk, are examples of stress stoppers	.514

*Point-biserial correlation of each item (scored as correct vs. incorrect) with the total score
**Chronbach's Alpha .837 (N=21)

Table 9

HDFQ Tool: Item Response Frequencies

Question	True		False		I don't know	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
1. A person always knows when they have CHD	1.0	(14.2)	79	(65.8)	24	(20.0)
2. If you have a family history of CHD, you are at risk for developing heart disease	87	(72.5)	13	(10.8)	20	(16.7)
3. The older a person is, the greater their risk of having CHD	69	(57.5)	30	(25.0)	21	(17.5)
4. Smoking is risk factor for CHD	111	(92.5)	3.0	(2.5)	6.0	(5.0)
5. A person who stops smoking will lower their risk of developing CHD	90	(75.0)	16	(13.3)	14	(11.7)
6. HTN is a risk factor for developing CHD	102	(85.0)	3.0	(2.5)	15	(12.5)
7. Keeping BP under control will reduce a person's risk for developing CHD	106	(88.3)	6.0	(5.0)	8.0	(6.7)
8. High cholesterol is a risk factor for developing CHD	105	(87.5)	4.0	(3.3)	11	(9.2)
9. If your "good" cholesterol (HDL) is high, you are at risk for CHD	25	(20.8)	59	(49.2)	36	(30.0)
10. If your "bad" cholesterol (LDL) is high, you are at risk for CHD	80	(66.7)	6.0	(5.0)	34	(28.3)
11. Eating fatty foods does <u>not</u> affect blood cholesterol levels	8.0	(6.7)	102	(85.0)	10	(8.3)
12. Being overweight increases a person's risk for CHD	101	(84.2)	4.0	(3.3)	15	(12.5)
13. Regular physical activity will lower a person's chance of getting CHD	106	(88.3)	6.0	(5.0)	8.0	(6.7)
14. Only exercising at a gym or in an exercise class will lower a person's chance of developing CHD	18	(15.0)	88	(73.3)	14	(11.7)
15. Walking, gardening exercise that lowers CHD	100	(83.3)	7.0	(5.8)	13	(10.8)

16. Diabetes is a risk factor for developing CHD	88	(73.3)	2.0	(1.7)	30	(25.0)
17. High blood sugar makes the heart work harder	87	(72.5)	6.0	(5.0)	27	(22.5)
18. A person who has diabetes can reduce their risk of developing CHD if they keep their blood sugar levels under control	72	(60.0)	22	(18.3)	26	(21.7)
19. Abdominal obesity (fat belly) is a risk factor for developing CHD	71	(59.2)	15	(12.5)	34	(28.3)
20. Stress may cause an increase in blood sugar, blood pressure, and cholesterol levels	104	(86.7)	5.0	(4.2)	11	(9.2)
21. Slow deep breaths, counting to 10 before speaking, going for a walk, are examples of stress stoppers	83	(69.2)	8.0	(6.7)	29	(24.2)

CHAPTER V: DISCUSSION

CHD is the leading cause of death and is the major cause of morbidity among FAs (National Vital Statistics Reports, 2009; Ryan et al., 2000). According to the literature, FAs are at risk of CHD because many have at least one or more CHD risk factors (Ryan et al. 2000). Knowing and understanding CHD and its risk factors impact judgments and decisions in adopting healthy lifestyle to prevent CHD (Avis et al., 1989; Glanz, 2002; King et al., 2002). This study was the first to examine the baseline knowledge of CHD and its risk factors among FAs who were connected to primary care services. This study was also the first to describe the relationships between CHD knowledge, sociodemographic and socioeconomic characteristic variables among FAs between the ages of 35-75 years old. This chapter provides the findings of the present study and discusses the significance of these findings related to the research questions. This chapter also discusses the limitations, conclusions, nursing implications, and recommendations for further research.

Sociodemographic/Socioeconomic Characteristics of Filipino-Americans

Participants in this study were recruited by means of convenience sampling from three primary care clinics in Las Vegas, NV. In this study, participants' mean age was 54 years and many were in the middle adulthood stage for which career, work, and family are the most important things in life (Leifer & Hartston, 2004). It is interesting to know amidst the middle adulthood stage, many have sought health care. Perhaps because many participants had CHD risk factors or they were simply seeking health care knowing that health impacts career and family relationships. It may be in this stage for which education

on lifestyle changes may be initiated. Individuals may be willing to change their lifestyle if education were emphasized on the impact of health on work and family relationships.

In this study, the education level of participants was high. Many of them reported they either had a college degree or had some college education, and a few even had a post graduate degree. According to Dolan (1991), Filipinos have deep regard for education which they view as a primary avenue for upward social and economic mobility. They believe that individuals could get ahead through attainment of good education. This may explain why many FAs in this sample had higher educational level. This may also explain the high CHD knowledge among participants (M = 15.8, SD = 4.26).

Majority of the participants in the present study were also employed by private companies. Perhaps this is why most participants had health insurance. More than half of the sample (54.2%) owned their home, but many were still renting. Either they lived in their own home or renting an apartment or a home, over 90% lived with their family members and extended relatives. This is not surprising because Filipinos are known to have a close-knit relationship with their families. Filipinos value family relationships highly (McBride, 2009).

In this study, all participants were first generation Filipinos. All were born in the Philippines (N = 120). Interestingly, their primary care physicians were also first generation Filipinos. This might explain why all participants chose to see a health care provider with the same culture and ethnic background. Additionally, their primary care physicians spoke *Tagalog*. In the present study, FA patients preferred FA health care providers because they felt they receive good interpersonal care from them. This is in concordance with the literature. Michalopoulou, Falzarano, Arfken, and Rosenberg

(2009) reported that patients prefer a health care provider who comes from the same race and ethnic background.

CHD Knowledge of Filipino-Americans

This study revealed a higher mean score of CHD knowledge (M = 15.8, SD = 4.26) which reflects a high level of CHD knowledge among FA participants. One possible reason for this is because all participants (N = 120) were connected to primary health care and have sought health care services from physicians. It is unknown how long they have been seeing their physicians. Participants may have been counseled or educated by their physicians about heart disease and/CHD risk factors that may have influenced their responses.

Interestingly, when gender difference in the CHD knowledge scores was compared, women had higher CHD knowledge scores than men (t = 2.438, p = .016). One explanation for such a difference could be that women have now been included in cardiovascular awareness programs and research such as the Women's Health Initiative (WHI), Women and Ischemic Syndrome (WISE), and heart health initiative programs such as the Heart Truth Campaign developed by the American Heart Association. The Heart Truth Campaign, Go Red for Women, is an aggressive national organization in raising awareness of heart disease for women around the globe. This organization raises awareness through mass media. Promoting awareness of women's heart disease through mass media is a great strategy for increasing awareness. In 2004, Mosca, Ferris, Fabunmi, and Robertson compared data from the years of 1997, 2000, and 2003 telephone surveys regarding women's awareness of CHD. Findings from their study revealed that women's awareness of CHD as the leading cause of death and awareness of CHD risk factors have

increased significantly from 1997 to 2003. According to Mosca et al. (2004) women obtain information about heart disease from their health care providers and from the mass media such as magazines, television, and newspapers.

The result of this study on gender differences in CHD knowledge and risk factors is promising because in the past, many women were dying of heart disease more than men and many were not even aware of heart disease including symptoms of MI (deadly complication of CHD), which often delay their treatment (Lefler & Bondy, 2004; Mosca et al., 2004).

CHD Risk Factors Prevalent in Filipino-Americans

In this study, several CHD risk factors were found to be prevalent among FAs. More than sixty-five percent of the sample ($N = 120$) did not engage in regular exercise. This finding agrees with the 2000 NHLBI study result on cardiovascular risk among FAs in California. In their research, many FAs and their families did not participate in regular exercise due to several factors: lack of time, lack of motivation, and difficulty managing dietary habits. These could also be the same factors that may have hindered the participants in this study from exercising. Other possible reasons are: a) definition of physical exercise, b) lack of transportation, c) lack of access to a health club or fitness center, d) weather, and e) age. According to Caspersen, Powell, and Christenson (1985) "physical activity" and "exercise" are terms that have different definition. "Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure such as occupational, sports, household chores, or other activities." Exercise is a subcategory of physical activity and is defined as a "physical activity that is planned, structured, and repetitive and has a final or intermediate objective in the

improvement or maintenance of physical fitness" such as walking or gardening (Caspersen et al., 1985). FAs may have a different definition of exercise. They may not regard walking or gardening as a form of exercise. Transportation issues and/or no access to a fitness center due to financial or personal reasons (such as inability to drive a vehicle, their relative could not drive them to the gym) could be possible reasons for their lack of exercise. The extreme heat and cold weather in Nevada may also prevent them from exercising. Age is another factor. The average age of the participants was 54 years old. According to King et al. (2001) the middle-adulthood aged people are the least active group in performing exercise. Additionally, in this stage, the body's metabolic needs decrease and if exercise and diet are not part of a healthy lifestyle, excess weight begins to accumulate and health problems occur (Leifer & Hartson, 2004). Therefore, further studies are warranted to examine the barriers of physical activity among FAs.

This study also revealed 50% FAs had HTN. This finding is consistent with the study results of Dela Cruz & Galang (2008), Klatsky & Armstrong (1991), Ryan et al. (2000), and the 2000 NHLBI study on cardiovascular risk of FAs. One possible reason for the high prevalence of HTN among FAs is diet. The Filipino diet is high in salt and high in saturated fats (NHLBI, 2000; Filipino Food Recipes, 2006; The Global Gourmet, 2007). For example, about 63% of Filipinos add salt and seasonings to their food and 70% cooked poultry with the skin (Ryan et al., 2000). According to the literature, diets rich in saturated fats and salt increase blood pressure and cholesterol (AHA, 2010; Wilson, 1990). Therefore, dietary lifestyle focusing on the Filipino diet including westernization of the Filipino diet, and its impact on cardiovascular health among FAs should be explored. Kang, Yang, and Kim (2010) reported a high occurrence of CHD

among Korean Americans when they adopted a westernized diet. Westernization of the Filipino diet could also be a reason for the high prevalence of HTN among FAs.

Another possible reason for the high incidence of HTN among FAs is lack of regular exercise. It is well documented that regular physical activity in the form of exercise prevents and even reverses CHD risk factors including HTN (AHA, 2010; Apullan et al., 2008; Booth, 2000; Freeman, 2009). There are several factors that may prevent FAs from exercising which should be further explored. Additionally, raising awareness on the benefits of regular exercise should be implemented.

Studies have documented FAs are at risk of CHD because of the high prevalence of dyslipidemia (Aranetta & Barrett-Connor, 2004; NHLBI, 2000; Ryan et al., 2000). In the present study, 36.7% participants had dyslipidemia. According to McCance et al. (2010), dyslipidemia, abnormal concentrations of serum lipoproteins, is a result of a combination of genetic and dietary factors. Familial dylipidemia secondary to genetic defects in lipid-metabolizing enzymes and abnormal cellular lipid receptors could be the reason why dyslipidemia is prevalent among FAs. Further research is needed to explore the role of genetics in dyslipidemia among FAs. Another explanation of dyslipidemia among FAs is their diet and lifestyle. As outlined previously, the Filipino diet is rich in saturated fats. Most FAs like to "*salo salo*" (get together) with their family and friends. They like to serve and eat Filipino food, which is part of the Filipino tradition. Another possible reason for the high prevalence of dyslipidemia in this population is lack of exercise. It is well documented in the literature that exercise improves serum lipids in patients with dyslipidemia. Exercise lowers serum triglyceride levels, total cholesterol and low density lipoprotein cholesterol levels while increasing high density lipoprotein

cholesterol levels (AHA, 2010; Rothenbatcher, Koenig, & Brenner, 2006; CDC, 2001; Anspaugh et al., 1996; Tran & Weltman, 1985). Even intermittent or several short exercise sessions can positively alter serum lipids. In sedentary individuals, lipoprotein and lipid changes can even occur after a single exercise session when one expends at least 350 kcal (Altena et al., 2004; Crouse, et al., 1997; Visich et al., 1996). Therefore, education on exercise and its impact on health among FAs are warranted. Additionally, studies on the role of dietary acculturation and lifestyle should be further explored.

Diabetes is also a major risk factor found among FAs in this study. Twenty-five percent reported they had DMT2. This study finding is in concordance with those previously reported in the literature (Araneta & Barrett-Connor, 2005; Araneta et al., 2006; Araneta et al., 2002; Cuasay et al., 2001; Kim et al., 2008; Oza-Frank et al., 2009; Ye et al., 2009) where DMT2 was seen more in FAs than in any other ethnic groups. Several factors may explain the high incidence of DMT2 among FAs in this study. Diet, lack of exercise, obesity (including abdominal adiposity), genetic susceptibility, and socioeconomic status may play a role in the development of DM in this population. The dietary lifestyle of FAs is a major contributing factor in the occurrence of DM among FAs. According to Araneta et al. (2006), the adoption of western diet by FAs may be one reason for the high incidence of DM in this population. Further studies are needed to explore the relationship between DMT2, diet, including the dietary acculturation among FAs. The literature indicates lack of exercise, overweight, and abdominal adiposity have been linked to insulin resistance and diabetes (Araneta et al., 2002; Dela Cruz & Galang, 2008; NHLBI, 2000). As outlined previously, 65.8% of the participants did not engage in

regular physical activity, 27.5% had abdominal obesity, and 22.5% were overweight. This could be the reason for the high incidence of diabetes among FAs in this study.

It has been documented in the literature that smoking rates among FAs are higher compared to other ethnic groups (Maxwell et al., 2005). In the present study, 10% of the sample indicated they were smokers. One possible reason for this is the lack of knowledge and understanding of tobacco effects on cardiovascular health. Additionally, many Filipinos smoke because of their belief that smoking alleviates stress, boredom, and depression (Maxwell et al., 2007). Additional studies are needed to examine the knowledge and behavior of FAs on tobacco use and their cardiovascular health.

Relationships between CHD Knowledge and CHD Risk Factors

This study revealed no significant relationship between CHD knowledge and CHD risk factors (r = -.135, p = .140). Despite the higher knowledge of CHD, participants had one or more CHD risk factors. This shows a disconnect between CHD knowledge and the presence of CHD risk factors among participants. Most of the participants had a higher level of CHD knowledge but the majority of them had one or more CHD risk factors. This indicates there are causes other than knowledge that influences the development of CHD specific to FAs such as not knowing the true definition of CHD and/or its complications, health behaviors, perception of risk including underestimation of CHD risk, or optimistic bias. When people with health problems, such as having CHD risk factors underestimate their risk, they will be less likely to take precautions to prevent complications. For example, if people with HTN believe their risk is below average, they are less likely to adopt healthy behaviors. Another possible explanation to the increased prevalence of CHD risk factors among FAs is optimistic

bias. Optimistic bias is the mistaken belief that one's chances of experiencing a negative event are lower than their peers (Klein, 2002). FAs may have optimistic bias as influenced by their behaviors or cultural beliefs. Optimistic bias in personal risk perception is important because it hinders efforts to promote risk-reducing behaviors (Weinstein, 1980).

As outlined previously, culture may play a key role in CHD among FAs. According to Babor (2007), Filipinos have an exaggerated and an in-depth concern for social acceptance. They value interpersonal relationship such as *pakikisama* (camaraderie) and *hiya* (shame). They do not want to be put on shame. To avoid shame and to maintain camaraderie, they resort to *amor propio* (self-esteem, a sense of honor or personal dignity). For example, a group of FAs like to get together on the weekends drinking beer, eating snacks (side dish that has high salt and fat content), and smoking. They would ask another FA friend to join them. This FA friend may not say "no" to them because of the fear of *hiya* and/or the fear of losing friendship. *Amor propio* could be one of the many factors contributing to the high prevalence of CHD risk factors present in FAs such as HTN, dyslipidemia, DMT2, abdominal adiposity, and smoking. Therefore, knowledge alone does not always result in the adoption of recommended behaviors that can prevent or detect illness (Gordon, 2002). Thus, factors influencing knowledge such as health behaviors and risk perception, dietary lifestyle, optimistic bias, and other cultural influences, and their impact on CHD risk factors should be further examined.

Relationships between CHD Knowledge, Sociodemographic and Socioeconomic Characteristics

In the present study, gender, education, and income highly correlated with CHD

knowledge. Education level and income status have been linked to CHD development. Individuals with low education levels, have more CHD risk factors than those with high education levels (Barcelo, Saez, & De Tuero, 2009; Shaw et al. 2008). Additionally, individuals with lower socioeconomic status are more at risk of CHD (Barcelo et al., 2009; Shaw et al. 2008).

This study showed a higher knowledge of CHD among female participants. As outlined previously, education level of the participants, sample size, women's inclusion in heart awareness programs and research, and the participants' connection with primary care services might have influenced the findings of this study.

Although the results show participants were knowledgeable on heart disease, many still have CHD risk factors. There is still a gap between participants' CHD knowledge and their actual CHD risk. Going beyond knowledge such as understanding health care behavior and practices of FAs including self-efficacy, may help reveal the factors contributing to the development of CHD and CHD risk factors.

Predictors of CHD Knowledge

This study revealed gender (b = .190, t = 2.21, p = .029) and education level (b = .256, t = 2.85, p = .005) were the significant predictors of CHD knowledge. As outlined previously, individuals with higher education level are more likely to have higher cognitive function and better comprehension capability (Kang et al., 2010). This perhaps explains the higher CHD knowledge scores of FAs because more than 50% of the sample completed college. However, it is interesting to know despite the higher CHD knowledge scores of FAs, many are still at risk of CHD. This finding is inconsistent with the work of Barcelo et al. (2009) and Shaw et al. (2008). Their research revealed that individuals with

higher education level have less CHD risk compared to those individuals with lower education level, which was not found in the present study. Income did not turn out to be a significant predictor for CHD knowledge which is in contrast with previous studies. A possible explanation for this could be the sample composition. This study was focused on FA population, other studies were not.

Relationship of Findings to the Neuman Systems Model

Findings from this study revealed that FAs are at risk of CHD due to the presence of many risk factors. Stressors and the reaction to stressors are the two major concepts of the Neuman Systems Model. Having one or more CHD risk factors disrupt the flexible and normal lines of defenses (see Figure 2). This study revealed that FA's flexible and normal lines of defenses have been disrupted by CHD risk factors (stressors). If these risk factors are recognized by both patients and their primary care providers, appropriate and aggressive treatment and management may be provided. This will strengthen their lines of resistance and will prevent reactions to stressors such as MI, stroke, or diabetes complications.

Limitations of the Study

The results of this study cannot be generalized to the entire FA population because the sample was not randomly selected and the size was small ($N = 120$). Additionally, the findings cannot be generalized to the overall population because the sample was drawn from a geographically limited setting (Las Vegas, NV) and from three primary care clinics, and the sample was highly educated. However, despite these limitations the results are of sufficient significance to encourage for further studies utilizing a larger, non-geographically restricted sample of FAs. These findings may also

inspire researchers and minority advocates in promoting heart health and preventing cardiovascular disease among FAs.

Implications for Nursing

This study provides insight into the cardiovascular health of FAs. Based on the literature and findings from the present study, FAs are at an increased risk of developing CHD because many of them have one or more CHD risk factors. Nurses, nurse practitioners, and other health care providers serve a vital role in the health promotion, disease prevention and management of patients.

This study shed important information regarding the cardiac health of FAs that will assist health professionals in the care of their FA patients. This study revealed knowledge on CHD alone may not help decrease the high prevalence of CHD and its risk factors among FAs. Focusing on FAs' behaviors and their understanding about CHD and developing strategies to help change their lifestyle such as dietary modification, weight loss, promoting exercise, and smoking cessation may help decrease their CHD risk. The impact of culture on heart disease should also be emphasized. For example, FAs should know and understand the concept of *amor propio* and how it can affect cardiac health. Utilization of community-based screening programs and the use of mass media to promote heart health are examples of primary prevention that may be implemented by nurses and nurse practitioners. Identification of asymptomatic individuals who have already developed risk factors such as HTN, dyslipidemia, and DM through screening tests is an example of secondary prevention that may also be implemented by nurse practitioners and other health care providers. With early case finding, appropriate and aggressive treatments may be provided to avoid or delay the development of CHD.

The inclusion of FAs in cardiovascular research is also important. This helps raise awareness regarding the overall cardiac health status of FAs.

Recommendations for Future Research

Based on the findings of this study, the following recommendations are suggested for future research:

1. Replicate the present study using a larger sample in more than three clinics and from various geographical regions.

2. Replicate the study using a larger sample outside primary care services.

3. Compare the CHD risk factors between the first generation and the second generation FAs.

4. Examine the impact of dietary lifestyle (acculturation, westernization of diet) on CHD and its risk factors among FAs.

5. Examine the barriers of physical activity among FAs and its impact on CHD.

6. Compare the attitude and behaviors of FA men and FA women on CHD and CHD risk factors.

7. Examine the impact of FA culture such as *amor propio* on CHD risk factors.

8. Compare the CHD risk factors between FAs and other ethnic groups (i.e. African-Americans).

9. Examine self-efficacy and risk perception of FAs on CHD using Bandura's Self-Efficacy Model.

10. Examine the impact of health behaviors and beliefs on CHD in FAs utilizing the Health Belief Model.

Conclusions

CHD continues to be the leading cause of death among FAs. This study revealed FAs are still at a greater risk for CHD because of the high prevalence of CHD risk factors in this population. More than half of the FA population did not engage in regular physical activity, 50% had HTN, almost 40% had dyslipidemia, 25% had DMT2, and 10% were

smokers. Additionally, many FAs were overweight, obese, and many had abdominal adiposity. This study revealed a disconnect between CHD knowledge and the presence of CHD risk factors among participants. In this study, although most participants had a higher level of CHD knowledge, the majority had one or more CHD risk factors. This places them at risk for the development of CHD. Gender and education level were significant predictors of CHD knowledge. Women had a higher CHD knowledge total score than men, and the level of education positively influenced CHD knowledge. Despite this finding, equitable treatment and access to health care services, regardless of education and gender should be provided.

Awareness of heart disease is important in the lives of FAs. To help decrease the increasing prevalence of CHD among FAs, nurses, nurse practitioners, and other health care providers should educate and manage the health of FAs aggressively and they should also advocate for more research on cardiovascular health focusing on this population. This may help decrease health disparities and may decrease the increasing prevalence of CHD risk factors among FAs.

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APPENDIX A

FIGURES

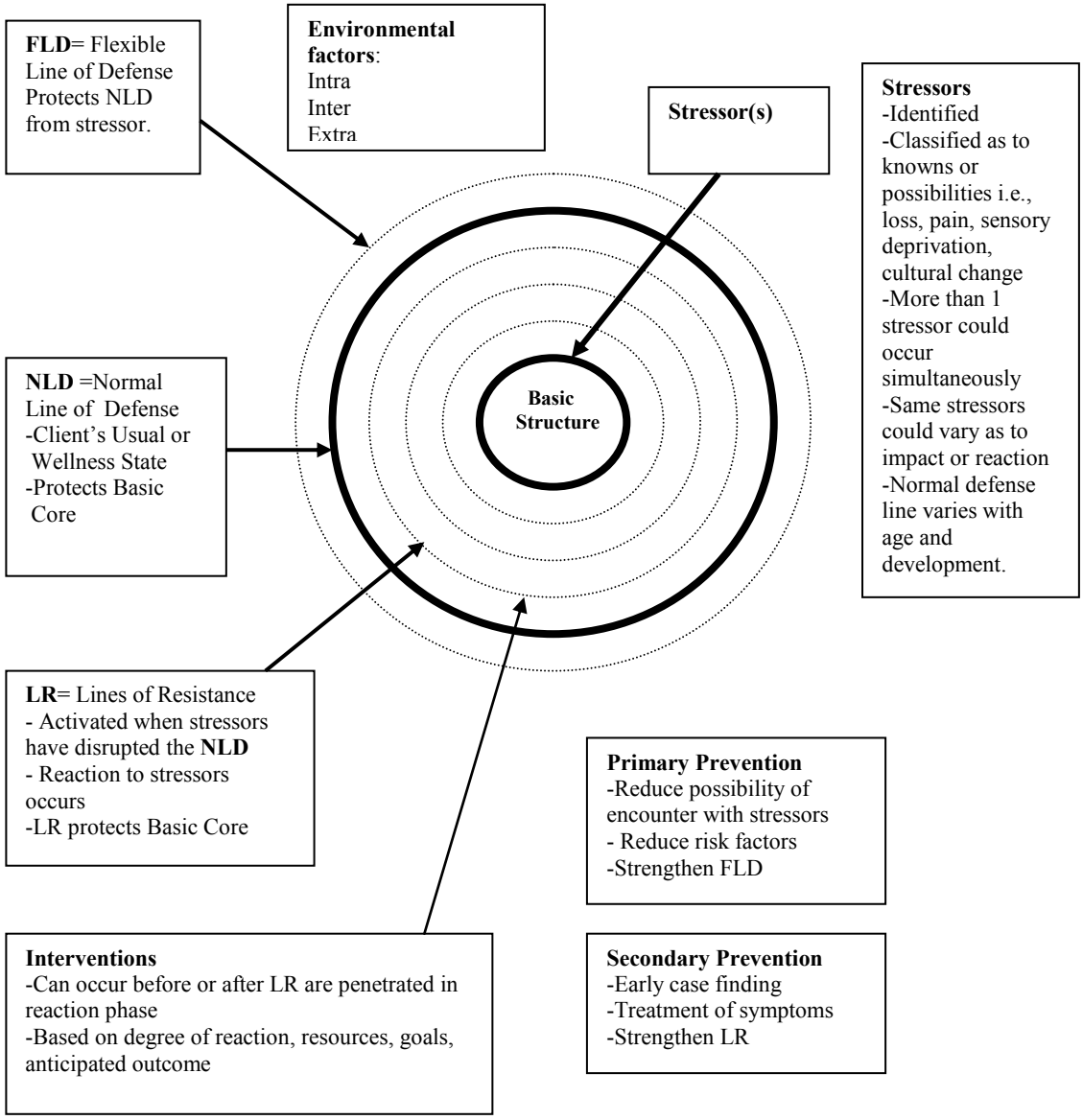
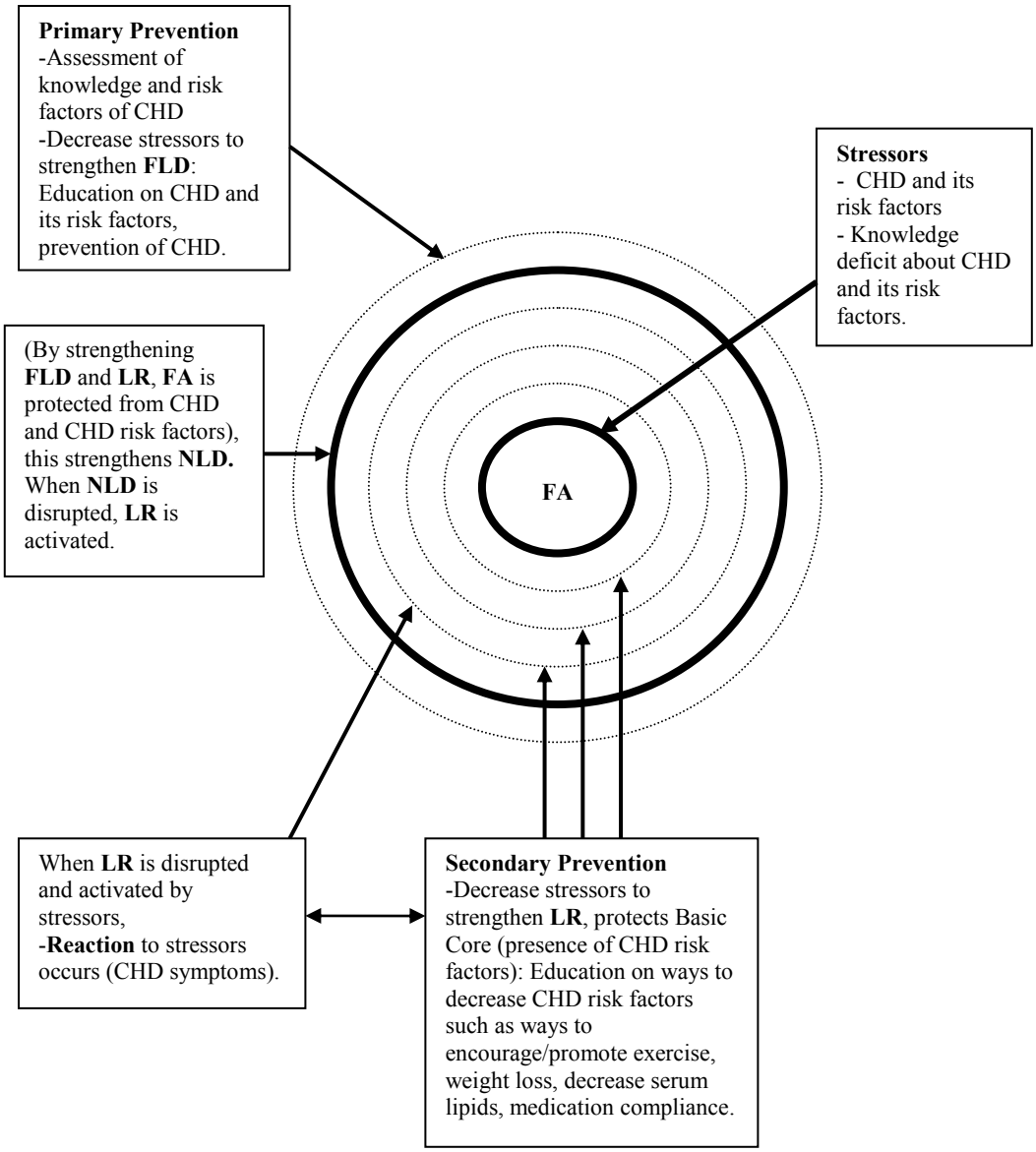


Figure 1. Diagram of the Neuman Systems Model (NSM) with emphasis on primary and secondary preventions.



Legend:

FA = Filipino-American
FLD = Flexible Line of Defense
NLD = Normal Line of Defense
LR = Lines of Resistance

Figure 2. Application of the NSM: CHD in FAs

APPENDIX B

FLYER

ATTENTION!

Filipino-Americans Needed for Research Study

Your Participation Counts!!

The leading cause of death of Filipinos is heart disease. The U.S. Department of Health and Human Services reports that more than half of the Filipino-American population in the U. S. dies from heart disease.

My name is Alona D. Angosta. I am a faculty member at the University of Nevada, Las Vegas and a PhD student at the University of Hawaii at Manoa School of Nursing. I am conducting a research on heart disease in Filipino-Americans. I am looking for Filipino-Americans between the ages of 35-75 years, who can write and speak English, with no history of heart problems or neurological problems (such as stroke, head injury, seizures, Parkinson's disease) and who are willing to participate in my study. The study is in a form of questionnaire. Total time to complete questionnaire: approximately 20-30 minutes. The information gathered from this study will be kept strictly confidential. A $5.00 Philippine phone card will be given at the completion of the questionnaire.

If you are interested and would like further information, please contact Alona Angosta at (702) 895-1218 or angosta@hawaii.edu. I will be available in Dr. _____ clinic every _____ to answer any questions that you may have and to collect completed forms from participants. Maraming Salamat Po.

APPENDIX C

INSTRUMENTS/TOOLS

DEMOGRAPHICS

1. **ID #:** ____ (Skip this part)

2. **Age:** ____

3. **Place of birth:** _____

4. **How long have you been living in the U.S.?** _____

5. **What language do you speak at home?**

English __ Filipino __ (please specify: _____)

Please check or circle your answer:

6**. Gender:** Male ____ Female ____

7**. Marital Status:** Married __Never been married _Widowed __

Divorced or separated ____

8. **What is your employment status:** Unemployed ___

Employed ____

If employed, how many jobs do you have? ___ (ex. 2, 3, 4).

If you have more than 1 job, list each type of job or occupation:

9. **What is the highest level of education you have completed?**

___Grade school

___Some high school

___High school graduate

___ Some college

___ College graduate

___ Post graduate work (example, Master's degree, PhD, etc).

10. **Which of the following best describes your total <u>yearly</u> income? (*Check one*)**

____ Less than $10,000

____ $10,000 - $19,999

____ $20,000- $29,999

____ $30,000- $39,999

____ $40,000- $49,999

____ $50,000- $59,999

____ $60,000- $69,999

____ $70,000- $79,999

____ $80,000- $89,999

____ $90,000- $99,999

____ $100,000 – more

11. **Where are you living? (Place of residence) (*Check one*)**

____ My own home

____ Apartment that I am renting.

____ A house that I am only renting.

____ Other (please specify: _____)

12. **Who lives with you? (Check all that apply)**

____ Live alone

____ Live with children

____ Live with spouse

____ Live with children and spouse

____ Other (please specify: _____)

13. **What type of health insurance do you have?**

____ Medicaid ____ Other (please specify: _____)

____ Medicare ____ None

14. **Do you have any of the following? (Check all that apply)**

____ Hypertension (high blood pressure)

____ Diabetes Type I

____ Diabetes Type II

____ Dyslipidemia (high cholesterol)

____ Overweight

____ Obesity

____ Abdominal obesity (fat belly)

____ Smoking

____ Lack of exercise

The Heart Disease Fact Questionnaire (Modified Version):

Instructions:

The following questions ask about heart disease. Please circle true or false, if you are unsure about the correct answer, you may circle "I don't know."

1. A person always knows when they have coronary heart disease:

A. True
B. False
C. I don't know

2. If you have a family history of coronary heart disease, you are at risk for developing heart disease:

A. True
B. False
C. I don't know

3. The older a person is, the greater their risk of having coronary heart disease:

A. True
B. False
C. I don't know

4. Smoking is a risk factor for coronary heart disease:

A. True
B. False
C. I don't know

5. A person who stops smoking will lower their risk of developing coronary heart disease:

A. True
B. False
C. I don't know

6. High blood pressure is a risk factor for developing coronary heart disease:

A. True
B. False
C. I don't know

7. Keeping blood pressure under control will reduce a person's risk for developing heart disease:

A. True
B. False
C. I don't know

8. High cholesterol is a risk factor for developing coronary heart disease:

A. True
B. False
C. I don't know

9. If your "good" cholesterol (HDL) is high, you are at risk for heart disease:

A. True
B. False
C. I don't know

10. If your "bad" cholesterol (LDL) is high, you are at risk for heart disease:

A. True
B. False
C. I don't know

11. Eating fatty foods does not affect blood cholesterol levels:

A. True
B. False
C. I don't know

12. Being overweight increases a person's risk for coronary heart disease:

A. True
B. False
C. I don't know

13. Regular physical activity will lower a person's chance of getting heart disease:

A. True
B. False
C. I don't know

14. Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease:

A. True
B. False
C. I don't know

15. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease:

A. True
B. False
C. I don't know

16. Diabetes is a risk factor for developing coronary heart disease:

A. True
B. False
C. I don't know

17. High blood sugar makes the heart work harder:

A. True
B. False
C. I don't know

18. A person who has diabetes can reduce their risk of developing coronary heart disease if they keep their blood sugar levels under control:

A. True
B. False
C. I don't know

19. Abdominal obesity (fat belly) is a risk factor for developing coronary heart disease:

A. True
B. False
C. I don't know

20. Stress may cause an increase in blood sugar, blood pressure, and cholesterol levels:

A. True

B. False
C. I don't know

21. Slow deep breaths, counting to 10 before speaking, going for a walk, are examples of stress stoppers:

A. True
B. False
C. I don't know

STOP!

END OF QUESTIONNAIRE. PLEASE PLACE THE COMPLETED FORM IN THE ENVELOPE PROVIDED TO YOU BY THE INVESTIGATOR.

APPENDIX D

LETTERS/CONSENT FORMS/IRB

Human Subject Approval

ORIGINAL

MAY 13 2010

CHS # 18183

Please type the information below. Thank you.

Researcher name: Alona Angosta

Researcher email: alona.angosta@univ.edu Researcher phone: 702-895-1218

Department: Nursing Campus: UHManoa School of Nursing and Dental Hygiene

Status: ☐ Faculty ☒ Student
☐ Masters ☒ Ph.D. ☐ Other:

If student, name of faculty advisor: Clementina Ceria-Ulep PhD

Advisor email: clem@hawaii.edu Advisor phone: 808-956-5225

Title of Research Project: Coronary Heart Disease Knowledge And Risk Factors Among Filipino-Americans Connected to Primary Care Services.

Signatures

I certify that the information in this application is accurate and complete.

Researcher: [redacted] Date: 5/11/10

I have reviewed and approved this application:

Advisor: [redacted] Date: 5/11/10
(for student research)

This box for CHS Use Only: CHS#

Exempt Request: ☑ *Approved* ☐ *Approved with Stipulations* ☐ *Not Approved* *Exempt Category* 2

Reviewer comments / recommendations:

[redacted] 5.21.10

Exempt Application Revised 5/2/2010 Page 4 of 6

Application for Human Subject Approval

Application for Exempt Status for Human Subjects Research

University of Hawaii Committee on Human Studies (CHS)

1960 East-West Road, Biomedical Building B-104, Honolulu, HI 96822, (808) 956-5007, uhirb@hawaii.edu

Aloha! Most research involving human subjects at the University of Hawaii must be approved by the UH Committee on Human Studies (CHS). Some research may be exempt from certain Federal requirements. Please read and follow all instructions carefully when filling out this application. For more information, please go to the CHS website at www.hawaii.edu/irb or contact CHS with any questions. Underlined words are defined in the Glossary on page 5.

I. Is Your Project "Research"?

To determine if your project qualifies as research, please answer the question below.

If you answer "Yes" to the following question, your project meets the federal definition of research. Please answer Section II to determine of your project is human subjects research. If you answer "No", your project does not meet the federal definition of research. No CHS application is required.	
1. Is your project a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge? (Underlined words are defined in the Glossary on page 5.)	☒ Yes ☐ No

II. Is Your Project "Human Subjects" Research?

To determine if your project qualifies as human subjects research, please answer the questions below.

If you answer "Yes" to either of the following 2 questions, your project does not require CHS review and approval and you do not need to complete or submit this application.	
1. Does your project involve **only** the analysis of publicly available data? Examples include census data, large public survey datasets with no individual identifiers, and public information available on the internet.	☐ Yes ☒ No
2. Is this a UH class project (whether individual or group) from which the data will only be submitted to your instructor for a class grade and will not be published, presented at an academic conference, given to an agency as a formal report, and will not be used in future research or to qualify for a graduate degree (e.g. Master's or Doctoral dissertation)?	☐ Yes ☒ No
If your answer to the following questions is "Yes" for both 1 and 2, or both 1 and 3, please complete Section III of this form. If you answer "No" for 1, 2, and 3 below, your project does not require CHS review and approval and you do not need to complete or submit this application.	
1. Does your research involve obtaining information about living individuals?	☒ Yes ☐ No
2. Will the information be obtained through intervention or interaction with these individuals?	☒ Yes ☐ No
3. Will your research involve access to private information from which individuals can be identified directly or indirectly through a link or code? This includes access to existing data that identifies individuals but these individuals will not be contacted in your research project.	☐ Yes ☒ No

III. Categories of Exemption

Complete all the categories that apply to your research. If a category does not apply to your study, check "Not Applicable" (N/A). If your research does not meet the requirements for any of the six categories below, please complete and submit the standard CHS Application available on the CHS website at www.hawaii.edu/irb under "Forms".

Research on Educational Practices (Federal Category 1)	☒ N/A
Your research will take place in an established or commonly accepted educational setting, involving normal educational practices.	☐ Yes
If Yes, complete **Section IV** and **Section V** of this application.	

Research Involving Surveys or Interviews (Federal Category 2)	☐ N/A
1. Your research will involve the use of educational tests, surveys or interviews for participants ages 18 and older. (educational tests may include cognitive, diagnostic, aptitude, and achievement tests)	☒ Yes
2. Your survey/interview research will involve only adult participants (18 and older) who would **not** be considered part of a vulnerable population. (for definitions, see glossary on page 5)	☒ Yes
3. The research data that you collect (including field notes) will be recorded in such a manner that if participants can be identified, they would not be at risk of damage to their reputation, financial standing, employability, or criminal and civil liability **or** this data will be recorded anonymously (so that participants cannot be identified, either directly or through identifiers linked to them).	☒ Yes
If you answered "Yes" to 1, 2 and 3, complete **Section IV** and **Section V** of this application.	

Research Involving Public Observation (Federal Category 2)	☒ N/A
Your research will involve observation of human subjects in a public setting where there is no expectation of privacy.	☐ Yes
If Yes, complete **Section IV** of this application.	

Research Involving Public Officials (Federal Category 3)	☒ N/A
Your research will involve surveying or interviewing elected or appointed public officials (or candidates for public office).	☐ Yes
If Yes, complete **Section IV** and **Section V** of this application.	

Research Involving the Use of Existing Data (Federal Category 4)	☒ N/A
1. Your research will involve the study of existing data, documents, records, pathological specimens, or diagnostic specimens.	☐ Yes
2. You will record the information in such a manner that participants cannot be identified either directly or through identifiers linked to the participants, **or** the sources of these data are publicly available.	☐ Yes
If you answered Yes to 1 and 2, complete **Section IV** of this application.	

Research Involving Public Benefit or Service Program Evaluation (Federal Category 5)	☒ N/A
Your research will evaluate, study or otherwise examine a public benefit or service program at the request of a department or agency head. (CHS permission is required to perform research under this category.)	☐ Yes
If Yes, complete **Section IV** and **Section V** of this application.	

Research Involving Taste and Food Quality (Federal Category 6)	☒ N/A
Your research will involve an evaluation of taste and food quality, or a consumer acceptance assessment.	☐ Yes
If Yes, Complete **Section IV** and **Section V** of this application.	

IV. Description of Project

Please attach 1 – 2 typed pages answering questions 1 – 6. (Do not attach a master's proposal or contract/grant.)

1. Briefly describe the purpose and objectives of your research in non-technical language.
2. Briefly describe your research design and methods.
3. For research being conducted as "educational practice," describe how the activity being studied is part of "normal" educational practice.
4. If you are using existing data, describe the source(s), the extent to which individuals are identified, and how you have access to the data.

5. If your research will be observational, describe how the observations will be recorded (e.g., audio, video, field notes). If you are planning to audio or videotape the participants, please see Section IV. If videotaping, please explain how you plan to use and store the videotape(s). In most cases, if your project involves videotaping, it will not qualify as exempt.

6. Describe your participant population (e.g., age, as special needs, etc...). How will you identify, contact and recruit participants? How many participants do you intend to involve in your research? How will you explain your research to participants?

V. Attachments

1. Please provide a consent form to be given to research participants. Examples can be found on the CHS website under "Forms".
    a. If audio or video recordings will be a part of the research records, there must be a clear description in the consent form of: 1) how the recordings will be used including any uses beyond this research project, 2) how the recordings will be stored, 3) and what will be done with the recordings when the project is complete. A separate consent form, or yes/no checkbox on the main consent form must be provided so that participants can agree or refuse to be recorded.
    b. As applicable, include language in the consent form that describes how the data or recordings are likely to be used for future research purposes.

2. For research involving minors (ages 17 and younger), you must provide the following:
    a. A parent/guardian consent form for their child to participate in research that includes space for a signature and date.
    b. A way of obtaining assent or refusal to participate from the child(ren) that is understandable to them. If the participants are 5 to 11 years old, please provide an oral assent script with an explanation of how you will explain the project to them and obtain their assent or refusal to participate. If the participants are 12 to 17 years old, please provide a written assent form that includes space for a signature and date.

3. Attach a copy of all survey instruments and interview guides. If you are using recruitment flyers, or advertisements, please provide copies of these as well. If draft instruments are submitted, final drafts must be submitted for final CHS approval before use.

Approval of this Exempt Application is valid for the entire life of the research project and does not need to be renewed annually. However, any changes in the procedures or instruments must be prospectively approved by CHS, a process which can occur via email for Exempt projects. Once the study is complete, please notify CHS.

If you have questions, or you are unsure whether your research project is Exempt, please call the CHS Office at (808) 956-5007, or send an inquiry by email to uhirb@hawaii.edu.

VI. How to Submit Your Application:

Please provide CHS with this application (typed and signed on page 4), a description of the project, and all relevant documents listed in Section V.

- **Mail or Deliver**: Send/provide 2 copies of all materials (collated) with original signatures to UH Committee on Human Studies, 1960 East-West Road, Biomedical Building B-104, Honolulu, HI 96822.
- **Email to**: uhirb@hawaii.edu. Subject line: "Exempt Application". A signed application is required. To convert your signed application to an e-file, please scan.
- **Fax to**: (808) 956-8683, applications must be signed and dated.

CHS # _____

Please type the information below. Thank you.

Researcher name: **Alona** **Angosta**

Researcher email: alona.angosta@unlv.edu Researcher phone: [redacted]

Department: Nursing Campus: UHManoa School of Nursing and Dental Hygiene

Status: ☐ Faculty ☒ Student
☐ Masters ☒ Ph.D. ☐ Other: _____

If student, name of faculty advisor: Clementina Ceria-Ulep PhD

Advisor email: clem@hawaii.edu Advisor phone: 808-956-5225

Title of Research Project: Coronary Heart Disease Knowledge And Risk Factors Among Filipino-Americans Connected to Primary Care Services.

Signatures

I certify that the Information in this application is accurate and complete.

Researcher: _____ Date: _____

I have reviewed and approved this application:

Advisor: [redacted] Date: 5/11/10
(for student research)

This box for CHS Use Only: **CHS#**

Exempt Request: ☐ *Approved* ☐ *Approved with Stipulations* ☐ *Not Approved* *Exempt Category* _____

Reviewer comments / recommendations:

Informed Consent

Title of the Study: Coronary Heart Disease Knowledge and Risk Factors among Filipino-Americans Connected to Primary Care Services

Principal Investigator: Alona Angosta, APN, FNP, NP-C, RN, MSN, PhD (c)

You are being asked to participate in a research project. This is a research project of Ms. Alona Angosta, a PhD student at the University of Hawai′i, School of Nursing. This study is being conducted as part of Ms. Angosta's dissertation towards completion of her PhD degree. This is a consent form to provide you with information about this study.

The purposes of this study are to examine what Filipino-Americans know about heart disease and to describe if age, education, gender, employment status, and income are related to or contribute to heart disease. You are being asked to participate in this study because you are a Filipino-American and you meet the criteria for this study: you are between 35-75 years old; you can understand, speak, and write English; and you do not have any heart or medical condition such as heart attack, stroke, and paralysis.

This study will consist of filling out 2 forms: a demographic form about your background information and a questionnaire consisting 21 true/false questions about heart disease. No personal identifying information such as name, date of birth, or social security number will be included with the study results. Ms. Angosta will not have access to your medical records. Completion of both forms will not take longer than 30 minutes. One hundred twenty-five (125) Filipinos will be needed in this study.

There will be little or no risk to participating in this study. Although name and date of birth will not be included in this project, small risk that you may experience include psychological pain when giving away information about your background information such as income, occupation, living arrangements, education, marital status, age, and gender.

Although you may not benefit directly from this study, you may gain further understanding of heart disease. This study may also help the health care professionals in delivering health care to Filipino-American patients at risk of heart disease.

Please take your time to review this consent form and discuss any questions you may have with Ms. Angosta. If there are any words or sections in this consent form that you do not understand, please ask Ms. Angosta to explain them. Ms. Angosta will be available in the clinic during completion of the questionnaires. If you agree to take part in this research project, you will be asked to sign this consent form. It is important that you understand that taking part in this study is of your own free will (voluntary). You may decide not to participate, or you may

decide to stop being in the study at any time, and it will not affect your health care services and/or your relationship with your physician now, or in the future. A $5.00 phone card will be given to you upon completion of the study.

If you have questions about this study, please contact Ms. Alona Angosta directly. If you have questions about your rights as a research subject, contact the University of Hawai′i Committee on Human Studies at (808) 956-5007.

Participant:
I have read and understand the above information and agree to participate in this study. I have had the opportunity to discuss this study with Ms. Alona Angosta and I have had my questions answered. I take part in this study of my own free will, and I understand that I may withdraw from participation at any time. A copy of this consent form has been given to me.

_____

Participant's Name (print) Signature Date

Principal Investigator:
I, the undersigned, have fully explained the relevant details of this study to the participant named above and believe that the participant has understood and has knowingly given their consent.

_____

Principal Investigator's Name (print) Signature
Date

MEMORANDUM OF UNDERSTANDING
CALDERON MEDICAL GROUP
AND UNIVERSITY OF HAWAI'I

This memorandum of understanding is entered into on this 27th day of April, 2010, by and between the UNIVERSITY OF HAWAI'I, an institution of higher education, organized and existing under the Constitution and laws of the State of Hawai'i, with its principal office located at 2530 Dole Street, Honolulu, Hawai'i, 96822, hereinafter referred to as "School", and Calderon Medical Group, business address at 3100 West Charleston Blvd., Las Vegas, NV 89102, hereinafter referred to as "Agency".

The UH School of Nursing and Dental Hygiene shall:

1. assume full responsibility for planning and execution of the educational programs including programming, administration, curriculum content, faculty appointment, faculty administration, and the administration and the requirements for matriculation, promotion, and graduation.

2. provide qualified faculty who shall be responsible for collaborating with appropriate Agency personnel in planning, selecting, and evaluating student experiences.

3. provide one liaison school faculty who shall confer at agreed intervals with the liaison Agency staff person designated by the Agency, and with other Agency officers as may be appropriate to insure the establishment and maintenance of mutually beneficial working relationships.

4. require the faculty and students to be appropriately covered by professional liability insurance with limits of liability not less than $1,000,000 per occurrence, $3,000,000 aggregate.

5. instruct faculty and students to abide by Agency's rules and regulations.

The Agency shall:

1. designate a liaison staff person or persons whose responsibility it shall be to assist faculty in selection and coordination of student experiences appropriate to the various levels of learning.

2. provide necessary facilities and related services for students learning and educational experiences, including use of appropriate equipment and supplies as agreed to between the parties. Agency is responsible for instructing school's students and faculty members participating in the program of all policies, procedures, rules and regulations of the Agency.

3. retain full responsibility for patient care and welfare.

The parties mutually agree:

1. there will be no exchange of funds between School and Agency.

2. under no circumstance is any member of the School student body to be considered an agent, officer and/or employee of the School.

3. this agreement shall become effective as of the date first noted above and will continue in full force and effect until terminated as hereinafter provided. The agreement may be modified upon request of either party and with the agreement of the other in writing at any time. This agreement may be terminated by School or Agency for any reason upon receipt of written notice to the other, setting forth the date upon which termination shall become effective.

Approved: Calderon Medical Group

BY [redacted]
Benito Calderon, MD
Owner and Medical Director

Approved: School of Nursing and Dental Hygiene

BY [redacted]
Victoria Niederhauser
Associate Dean for Academic Affairs
School of Nursing & Dental Hygiene

Approved: Calderon Medical Group

BY [redacted]

Approved: University of Hawai'i

BY [redacted]
for Gary K. Ostrander
Vice Chancellor for Research
& Graduate Education

MEMORANDUM OF UNDERSTANDING
PRIMARY CARE MEDICAL SERVICES, INC
AND UNIVERSITY OF HAWAI'I

This memorandum of understanding is entered into on this 14th day of April, 2010, by and between the UNIVERSITY OF HAWAI'I, an institution of higher education, organized and existing under the Constitution and laws of the State of Hawai'i, with its principal office located at 2530 Dole Street, Honolulu, Hawai'i, 96822, hereinafter referred to as "School", and Primary Care Medical Services, Inc, business address at 3443 South Eastern Avenue, Las Vegas, NV 89169, hereinafter referred to as "Agency".

The UH School of Nursing and Dental Hygiene shall:

1. assume full responsibility for planning and execution of the educational programs including programming, administration, curriculum content, faculty appointment, faculty administration, and the administration and the requirements for matriculation, promotion, and graduation.

2. provide qualified faculty who shall be responsible for collaborating with appropriate Agency personnel in planning, selecting, and evaluating student experiences.

3. provide one liaison school faculty who shall confer at agreed intervals with the liaison Agency staff person designated by the Agency, and with other Agency officers as may be appropriate to insure the establishment and maintenance of mutually beneficial working relationships.

4. require the faculty and students to be appropriately covered by professional liability insurance with limits of liability not less than $1,000,000 per occurrence, $3,000,000 aggregate.

5. instruct faculty and students to abide by Agency's rules and regulations.

The Agency shall:

1. designate a liaison staff person or persons whose responsibility it shall be to assist faculty in selection and coordination of student experiences appropriate to the various levels of learning.

2. provide necessary facilities and related services for students learning and educational experiences, including use of appropriate equipment and supplies as agreed to between the parties. Agency is responsible for instructing school's students and faculty members participating in the program of all policies, procedures, rules and regulations of the Agency.

3. retain full responsibility for patient care and welfare.

The parties mutually agree:

1. there will be no exchange of funds between School and Agency.

2. under no circumstance is any member of the School student body to be considered an agent, officer and/or employee of the School.

3. this agreement shall become effective as of the date first noted above and will continue in full force and effect until terminated as hereinafter provided. The agreement may be modified upon request of either party and with the agreement of the other in writing at any time. This agreement may be terminated by School or Agency for any reason upon receipt of written notice to the other, setting forth the date upon which termination shall become effective.

Approved: Primary Care Medical Services, Inc

BY [redacted]
Romualdo Aragon, MD
Owner and Medical Director

Approved: School of Nursing and Dental Hygiene

BY [redacted]
Victoria Niederhauser
Associate Dean for Academic Affairs
School of Nursing & Dental Hygiene

Approved: Primary Care Medical Services, Inc

BY [redacted]
[redacted]
4-15-2010

Approved: University of Hawai'i

BY [redacted]
for Gary K. Ostrander
Vice Chancellor for Research
& Graduate Education

MEMORANDUM OF UNDERSTANDING
DR. MARIA P. FAYLONA FAMILY PRACTICE, INC.
AND UNIVERSITY OF HAWAI'I

This memorandum of understanding is entered into on this 14th day of April, 2010, by and between the UNIVERSITY OF HAWAI'I, an institution of higher education, organized and existing under the Constitution and laws of the State of Hawai'i, with its principal office located at 2530 Dole Street, Honolulu, Hawai'i, 96822, hereinafter referred to as "School", and Dr. Maria P. Faylona Family Practice, Inc., business address at 4200 West Charleston Blvd., Las Vegas, NV 89102, hereinafter referred to as "Agency".

The UH School of Nursing and Dental Hygiene shall:

1. assume full responsibility for planning and execution of the educational programs including programming, administration, curriculum content, faculty appointment, faculty administration, and the administration and the requirements for matriculation, promotion, and graduation.

2. provide qualified faculty who shall be responsible for collaborating with appropriate Agency personnel in planning, selecting, and evaluating student experiences.

3. provide one liaison school faculty who shall confer at agreed intervals with the liaison Agency staff person designated by the Agency, and with other Agency officers as may be appropriate to insure the establishment and maintenance of mutually beneficial working relationships.

4. require the faculty and students to be appropriately covered by professional liability insurance with limits of liability not less than $1,000,000 per occurrence, $3,000,000 aggregate.

5. instruct faculty and students to abide by Agency's rules and regulations.

The Agency shall:

1. designate a liaison staff person or persons whose responsibility it shall be to assist faculty in selection and coordination of student experiences appropriate to the various levels of learning.

2. provide necessary facilities and related services for students learning and educational experiences, including use of appropriate equipment and supplies as agreed to between the parties. Agency is responsible for instructing school's students and faculty members participating in the program of all policies, procedures, rules and regulations of the Agency.

3. retain full responsibility for patient care and welfare.

The parties mutually agree:

1. there will be no exchange of funds between School and Agency.

2. under no circumstance is any member of the School student body to be considered an agent, officer and/or employee of the School.

3. this agreement shall become effective as of the date first noted above and will continue in full force and effect until terminated as hereinafter provided. The agreement may be modified upon request of either party and with the agreement of the other in writing at any time. This agreement may be terminated by School or Agency for any reason upon receipt of written notice to the other, setting forth the date upon which termination shall become effective.

Approved: Dr. Maria P. Faylona
Family Practice, Inc.

BY [redacted] 4/20/10
Maria P. Faylona, MD

Approved: School of Nursing and Dental Hygiene

BY [redacted]
Victoria Niederhauser
Associate Dean for Academic Affairs
School of Nursing & Dental Hygiene

Approved: Dr. Maria P. Faylona
Family Practice, Inc.

BY [redacted] 4/20/10

Approved: University of Hawai'i

BY [redacted]
for Gary K. Ostrander
Vice Chancellor for Research
& Graduate Education

February 11, 2010

Dear Dr. Aragon,

If you recall, we met in September 2009. I shared with you my dissertation project. To refresh your memory, I am a PhD student at the University of Hawaii at Manoa School of Nursing. My research is on Filipino-Americans' knowledge of coronary heart disease.

I will need about 120 Filipino-Americans in my study. Based on our discussion in September, you see approximately 40% Filipino-Americans in your clinic. You agreed that I could use your clinic, Primary Care Services, to obtain data for my research study and that I can obtain my study sample from your client pool. This study is strictly anonymous and confidential. No personal information will be obtained from clients. The data will be conducted in the form of questionnaires. It may take about 20 minutes to complete the questionnaires.

I will be posting a flyer with specific information regarding my research in your clinic's waiting area and on each of your examination rooms' wall. In the flyer, I will also have my contact information. Depending on the approval of the University of Hawaii's Institutional Review Board to conduct my research, I may begin my data collection in May or June 2010. I will be in your clinic on Mondays to collect the data and for any questions that potential participants might have.

I am formally asking your permission once again to conduct my research at Primary Care Services clinic. If you are still willing to help, please read and sign the consent form. Again, thank you very much for your support. I look forward to working with you.

Sincerely,

Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C.
University of Hawaii at Manoa School of Nursing
Email: angosta@hawaii.edu
Cell: (702) 301-0224
Work: (702) 895-1218

CONSENT LETTER TO MEDICAL DIRECTOR

Alona D. Angosta, M.S.N., A.P.N., F.N.P., N.P.-C.
3180 Cardino Court
Henderson, NV 89052

February 11, 2010

Romualdo Aragon, M.D.
Medical Director/Owner
Primary Care Medical Services, Inc.
3443 South Eastern Avenue
Las Vegas, NV 89169

Dear Dr. Aragon:

May I please have your written consent to collect data at Primary Care Medical Services clinic for my dissertation: Knowledge of Coronary Heart Disease among Filipino-Americans. This study is strictly confidential. No names will be used to ensure confidentiality and anonymity. [redacted]

I, ROMUALDO ARAGON, JR., give Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C., full consent to collect research data at Primary Care Medical Services clinic for her dissertation project.

Signature: [redacted] Date: 02-18-2010

February 11, 2010

Dear Dr. Maria Faylona,

If you recall, we met in December 2009. I shared with you my dissertation project. To refresh your memory, I am a PhD student at the University of Hawaii at Manoa School of Nursing. My research is on Filipino-Americans' knowledge of coronary heart disease.

I will need about 120 Filipino-Americans in my study. Based on our discussion in September, you see approximately 60% Filipino-Americans in your clinic. You agreed that I could use your clinic to obtain data for my research study and that I can obtain my study sample from your client pool. This study is strictly anonymous and confidential. No personal information will be obtained from clients. The data will be conducted in the form of questionnaires. It may take about 20 minutes to complete the questionnaires.

I will be posting a flyer with specific information regarding my research in your clinic's waiting area and on each of your examination rooms' wall. In the flyer, I will also have my contact information. Depending on the approval of the University of Hawaii's Institutional Review Board to conduct my research, I may begin my data collection in May or June 2010. I will be in your clinic on Thursdays to collect the data and for any questions that potential participants might have.

I am formally asking your permission once again to conduct my research at your family practice clinic. If you are still willing to help, please read and sign the consent form. Again, thank you very much for your support. I look forward to working with you.

Sincerely,

Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C.
University of Hawaii at Manoa School of Nursing
Email: angosta@hawaii.edu
Cell: (702) 301-0224
Work: (702) 895-1218

CONSENT LETTER TO MEDICAL DIRECTOR

Alona D. Angosta, M.S.N., A.P.N., F.N.P., N.P.-C.
3180 Cardino Court
Henderson, NV 89052

February 11, 2010

Maria Faylona, M.D.
Medical Director/Owner
Dr. Maria P. Faylona Family Practice, Inc.
4200 West Charleston Blvd.
Las Vegas, NV 89102

Dear Dr. Faylona:

May I please have your written consent to collect data at Dr. Maria P. Faylona Family Practice clinic for my dissertation: Knowledge of Coronary Heart Disease among Filipino-Americans. This study is strictly confidential. No names will be used to ensure confidentiality and anonymity.

I, maria p. faylona, m.d. 4200 w. charleston blvd. las vegas, nv 89102 702-312-9233, give Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C., full consent to collect research data at Maria P. Faylona Family Practice clinic for her dissertation project.

Signature: [redacted] Date: 2-18-10

I am formally asking your permission o
Medical Group clinic. If you are still wi
ch for y

April 27, 2010

Dear Dr. Calderon,

If you recall, we met on April 23, 2010. I shared with you my dissertation project. To refresh your memory, I am a PhD candidate at the University of Hawaii at Manoa School of Nursing. My research is on Filipino-Americans' knowledge of coronary heart disease.

I will need about 120 Filipino-Americans in my study. Based on our discussion, you see an average of 50 patients per day in your clinic and majority of your patients are Filipino-Americans (about 90%). You agreed that I could use your clinic, Calderon Medical Group, to obtain data for my research study and that I can obtain my study sample from your client pool. This study is strictly anonymous and confidential. No medical records involved. No personal information will be obtained from clients. The data will be conducted in the form of questionnaires. It may take about 20 minutes to complete the questionnaires.

I will be posting a flyer with specific information regarding my research in your clinic's waiting area and in each of your examination rooms' wall. In the flyer, I will also have my contact information. Depending on the approval of the University of Hawaii's Institutional Review Board to conduct my research, I may begin my data collection in June 2010. I will be in your clinic on Mondays to collect the data and for any questions that potential participants might have.

I am formally asking your permission once again to conduct my research at Calderon Medical Group clinic. If you are still willing to help, please read and sign the consent form. Again, thank you very much for your support. I look forward to working with you.

Sincerely,

[redacted] 4/27/10

Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C., PhD (c)
University of Hawaii at Manoa School of Nursing
Email: angosta@hawaii.edu
Cell: (702) 301-0224
Work: (702) 895-1218

dissertation project.

[redacted]

Signature: _____

CONSENT LETTER TO MEDICAL DIRECTOR

Alona D. Angosta, M.S.N., A.P.N., F.N.P., N.P.-C., PhD (c)
3180 Cardino Court
Henderson, NV 89052

April 27, 2010

Benito Calderon, M.D.
Internal Medicine
Medical Director/Owner
Calderon Medical Group
3100 West Charleston Blvd.
Las Vegas, NV 89102

Dear Dr. Calderon:

May I please have your written consent to collect data at Calderon Medical Group clinic for my dissertation: Knowledge of Coronary Heart Disease among Filipino-Americans. This study is strictly confidential. No names will be used to ensure confidentiality and anonymity.

I, [redacted], give Alona Angosta, M.S.N., A.P.N., F.N.P., N.P.-C., PhD (c) full consent to collect research data at Calderon Medical Group clinic for her dissertation project.

Signature: [redacted] Date: 4/28/10

Approval for Tool Use and Revision

RE: HDFQ Tool

02/11/2010 01:19 PM

From Wagner,Julie

to 'Alona.Angosta@unlv.edu'

cc Clementina Ceria-Ulep

From: "Wagner,Julie" <juwagner@uchc.edu>

To: "'Alona.Angosta@unlv.edu'" <Alona.Angosta@unlv.edu>

Cc: Clementina Ceria-Ulep <clem@hawaii.edu>

Hello Alona,

Feel free to modify the scale as you describe below.

Good luck in your work,

JW

From: Alona.Angosta@unlv.edu [mailto:Alona.Angosta@unlv.edu]
Sent: Thursday, February 11, 2010 4:15 PM
To: Wagner,Julie
Cc: Clementina Ceria-Ulep
Subject: HDFQ Tool
Importance: High

Dear Dr. Wagner,

It was nice talking to you on the phone today. Thank you once again for giving me the permission to use the Heart Disease Fact Questionnaire (HDFQ) tool for my dissertation project entitled: Knowledge of Coronary Heart Disease among Filipino-Americans. Based on our conversation, I can revise/modify the HDFQ

tool to better fit my population under study and study constructs. Additionally, I can use the HDFQ tool for people without diabetes.

There are a few questions from the tool that I may not include because the questions are addressed to patients with diabetes. Attached is the HDFQ tool containing 18 original true and false questions. Based on our phone conversation, I may also add questions to the existing tool (if needed) to better reflect my constructs. I will also perform a pilot study using this tool and I will cite the HDFQ in the presentation of my findings.

I appreciate it if you can reply to this email. Your response will be forwarded to my committee members and to UH IRB. Replying to this email gives me a full written consent to use the HDFQ tool as per our discussion. Thanks you very much for your support.

(See attached file: HDFQ Tool_Condensed Form 12.8.09.doc)

Sincerely,

Alona Angosta, MSN, RN, APN, FNP, NP-C
Lecturer/Clinical Instructor
UNLV School of Nursing
Office: (702) 895-1218
Email: alona.angosta@unlv.edu