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# Predictors of Cardiovascular Health Promotion

## **Abstract**

Coronary heart disease (CHD) is the leading cause of death and disability in the United States (US), and underrepresented racial-ethnic groups experience cardiovascular health disparities in access to care, preventive services, and medical treatments. In Mexican-Americans, the burden of CHD is equal, if not greater than that of non-Hispanic whites. A health-promoting lifestyle can largely reduce cardiovascular risk and/or delay disease progression. Hence, the purpose of this study is to identify predictors associated with cardiovascular health-promoting lifestyle behaviors in Mexican-American women.

A descriptive cross-sectional study design targeted Mexican-American women residing in the Philadelphia area. A sample of 128 women, at least 18 years old and free of CHD, was enrolled. Analyses consisted of correlations and multiple linear regressions to determine the influence between knowledge of CHD and associated risk factors, perceived health status, acculturation level, and menopausal status on cardiovascular health promotion. Spanish surveys were used for data collection.

A mild positive correlation was found between perceived health status and cardiovascular health-promoting lifestyles ( $r=.495$ ,  $p=.001$ ) and also with knowledge levels of CHD and risk ( $r=.305$ ,  $p=.001$ ). In adjusted models, cardiovascular health promotion was only associated with perceived health status ( $b=.112$ , 95% CI=.058-.165,  $p<.001$ ). Demographic variables that also supported heart-healthy lifestyles were: increased age ( $b=.009$ ,  $p=.050$ ); post college versus less than five years of formal schooling ( $b=-.327$ ,  $p=.038$ ); and needing reading assistance ( $b=-.373$ ,  $p=0.002$ ).

Study findings reveal a relatively young sample of Mexican-American women who preferred to speak Spanish, regardless of birth country, length of US residency, or acculturation level. These women perceived they could influence the present, when it becomes necessary, but maintained a positive health outlook. Study findings thus broaden existing knowledge of cardiovascular health promotion in underserved ethnic populations and add depth to the prevailing health disparity paradigm that affects Hispanic healthcare in the US today. Enhanced understanding fosters future development of sex-specific and culturally-sensitive strategies to promote heart-healthy lifestyles and effectively eliminate health disparities in this growing cohort of women.

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**Keywords**

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PREDICTORS OF CARDIOVASCULAR HEALTH PROMOTION  
IN MEXICAN-AMERICAN WOMEN

**Viola Gonzales Benavente**

A DISSERTATION

in

Nursing

Presented to the Faculties of the University of Pennsylvania

in

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2010

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Predictors of Cardiovascular Health Promotion in Mexican-American Women

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Viola Gonzales Benavente

## DEDICATION

A dedication is made to my loving and patient husband, Larry, who has lived my dream with me and shared his magnificent inner strength to help me finish this dissertation. I also would like to dedicate this work to my beloved parents, Reynaldo and Felicita Gonzales, who brought me up to be an independent person and not fear adversity, and sometimes even challenge it. The last dedication is to my guardian angel, Francesca Alcozer. She was an endearing friend and exceptional nurse colleague whose spirit guided me to the University of Pennsylvania School of Nursing. Without the love, support, and encouragement from my family here on earth and from the heavens above, I would not be living my dream.

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ABSTRACT

PREDICTORS OF CARDIOVASCULAR HEALTH PROMOTION  
IN MEXICAN-AMERICAN WOMEN

Viola G. Benavente

Dissertation Supervisor: Kathleen McCauley, PhD, RN, ACNS-BC, FAAN, FAHA

Coronary heart disease (CHD) is the leading cause of death and disability in the United States (US), and underrepresented racial-ethnic groups experience cardiovascular health disparities in access to care, preventive services, and medical treatments. In Mexican-Americans, the burden of CHD is equal, if not greater than that of non-Hispanic whites. A health-promoting lifestyle can largely reduce cardiovascular risk and/or delay disease progression. Hence, the purpose of this study is to identify predictors associated with cardiovascular health-promoting lifestyle behaviors in Mexican-American women.

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A mild positive correlation was found between perceived health status and cardiovascular health-promoting lifestyles ( $r=.495, p=.001$ ) and also with knowledge levels of CHD and risk ( $r=.305, p=.001$ ). In adjusted models, cardiovascular health

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Study findings reveal a relatively young sample of Mexican-American women who preferred to speak Spanish, regardless of birth country, length of US residency, or acculturation level. These women perceived they could influence the present, when it becomes necessary, but maintained a positive health outlook. Study findings thus broaden existing knowledge of cardiovascular health promotion in underserved ethnic populations and add depth to the prevailing health disparity paradigm that affects Hispanic healthcare in the US today. Enhanced understanding fosters future development of sex-specific and culturally-sensitive strategies to promote heart-healthy lifestyles and effectively eliminate health disparities in this growing cohort of women.

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# Chapter 1

## INTRODUCTION AND BACKGROUND

Coronary heart disease (CHD), the most prevalent form of cardiovascular disease, is a global concern heightened by the influence of racial and ethnic disparities that, in turn, influence medical evaluation and healthcare treatment of underrepresented groups (Institute of Medicine [IOM], 2009; Office of Minority Health [OMH], 2006a; Ounpuu, Anand, & Yusuf, 2000). The fastest-growing underrepresented group in the United States (US) is the Hispanic/Latino population, currently numbering 48.4 million or 15.1% of the total US population (U.S. Census Bureau, 2010). Mexican-Americans are the largest subcultural ethnic group, comprising 64% of the US Hispanic/Latino population today (U. S. Census Bureau, 2010). In Mexican-Americans, the burden of CHD is known to be equal, if not greater than that of non-Hispanic whites (NHW) (Pandey, Labarthe, Goff, Chan, & Nichaman, 2001; Sundquist & Winkleby, 1999).

Mexican-American women, considered a younger subgroup of the Hispanic/Latino population, are less informed than NHW women and other women about behaviors that promote cardiovascular health and prevent CHD (Mosca, Ferris, Fabunmi, & Robertson, 2004; Pinn, 2003). Despite profuse availability of Spanish language health education materials, information is not reaching them or making a difference (Christian, Rosamond, White, & Mosca, 2007). Therefore, research is needed to identify predictors associated with healthy behaviors of Mexican-American women.

The purpose of this study was to identify predictors associated with self-reported heart-healthy lifestyle behaviors of Mexican-American women. Specific heart-healthy

lifestyle behaviors are regular physical activity, low-saturated fat and low-salt diet, cigarette smoking abstinence or cessation, weight control or reduction, and controlled blood pressure (hypertension), glucose (type 2 diabetes), and serum cholesterol and other lipids (dyslipidemia). Engaging in heart-healthy lifestyle behaviors prevents CHD or delays its onset to reduce overall cardiovascular risk (Grundy, Pasternak, Greenland, Smith, & Fuster, 1999; Mosca, Banka, Benjamin, Berra, Bushnell, Dolor, et al. 2007).

Additionally, known predictor variables associated with cardiovascular health promotion in women are knowledge of CHD and major risk factors, perceived health status, social acculturation, and menopausal status (Marks, Garcia, & Solis, 1990; Stampfer, Hu, Manson, Rimm, & Willett, 2000). The effects of the relationships between each variable, independently or combined, and the level of influence in promoting cardiovascular health among Mexican-American women are unclear. This study sought to clarify those factors that predispose or inhibit Mexican-American women to engage in heart-healthy lifestyle behaviors. Study findings also have enhanced our understanding of cardiovascular health in Mexican-American women to possibly facilitate future development of culturally appropriate interventions for widespread adoption of heart-healthy lifestyles. These outcomes direct future research endeavors for cardiovascular health promotion, ultimately improving quality of life and Hispanic healthcare in the US.

### **Cardiovascular Health Promotion**

Early risk factor detection can largely prevent CHD or delay its onset, promoting cardiovascular health (Agency for Health Care Policy and Research [AHRQ], 1999; American Association of Women's Health Obstetric and Neonatal Nursing [AWHONN],

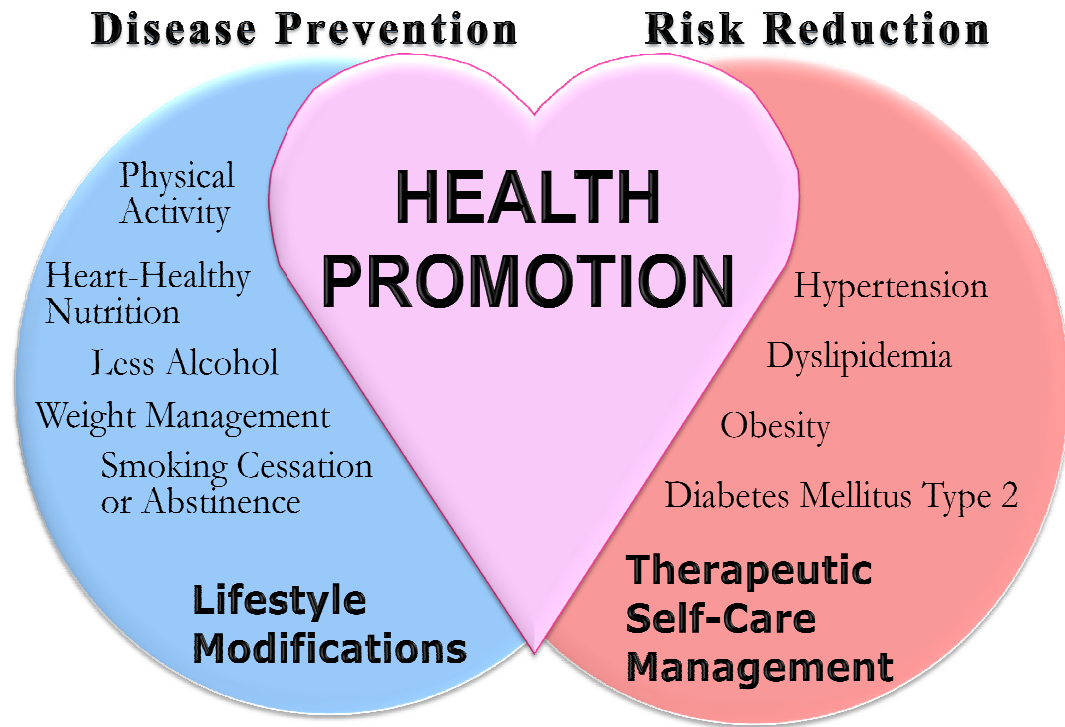
2001; Mosca, Grundy, Judelson, King, Limacher, Oparil, et al., 1999). The complex behavioral determinants underlying cardiovascular health are organized by two major dimensions of CHD, specifically disease prevention and risk reduction. Coupling these two dimensions emphasized the “health promotion” focus of this study and operationalized the term, “cardiovascular health promotion,” illustrated in *Figure 1-1*.

Disease prevention is defined as decreasing the probability of an individual acquiring an illness (Glanz, Rimer, & Lewis, 2002; Greenland, Grundy, Pasternak, & L'Enfant, 1998). Risk reduction involves altering health conditions, personal habits, or living environments to decrease the chances of developing an illness or decelerate its progressive worsening (National Heart, Lung, and Blood Institute [NHLBI], 2005; Woolf, 1996). This phenomenon of cardiovascular health promotion also accommodates psychosocial influences of CHD knowledge, illness perceptions, and certain demographic characteristics within the broader sociocultural environment that can affect lifestyle behaviors.

Lifestyle behaviors associated with health promotion are positively valued, personally fulfilling, and life-saving (Pender, Murdaugh, & Parsons, 2005). Performance of behaviors for cardiovascular health promotion is referred to as “cardiovascular health-promoting lifestyle behaviors,” commonly called a “heart-healthy lifestyle” in the general public. These two terms are used synonymously in this study. Having volitional control of behaviors differentiates health-promoting lifestyle behaviors from risk-enhancing or illness behaviors (Ajzen, 1985).



*Figure 1-1. Cardiovascular Health Promotion*



Furthermore, the overlapping dimension between disease prevention and risk reduction represents the health promotion focus of this study. Additional behaviors affected by psychological, social and cultural issues are exemplified within this dimension. The pressing health problems of Mexican-American women, therefore, fall into three domains of health promotion for discussion: disease prevention, risk reduction, and psychosocial factors. These recognizable health problems are briefly described to facilitate understanding of Hispanic healthcare issues in this growing cohort of women.

#### **Disease Prevention and Cardiovascular Health Promotion**

**Physical Activity.** Strong family and social support creates a conducive environment for Mexican-American women to engage in regular physical activity for

CHD prevention (Harralson et al., 2007; Ruiz, 2007). This type of environment facilitates completion of household responsibilities and allows sufficient time for exercise, given that they possess the motivation to exercise, even if they had the time.

The expected effects of regular physical activity are increased weight loss and improved cardiovascular fitness. Conversely, being *gordita* (overweight) or *llenita* (full-bodied) is positively valued in Mexican-American culture (Juarbe, Lipson, & Turok, 2003). Physical activity then appears to be incongruent with culturally acceptable lifestyles and value systems. Therefore, emerging research is seeking to understand cultural influences and underlying motivators of Hispanic women to increase physical activity (Albright et al., 2005; Dergance, Mouton, Lichtenstein, & Hazuda, 2005).

**Obesity and Weight Management.** Additionally, recognized benefits for psychological well-being in women of all ages are associated with reducing excessive weight and/or maintaining ideal weight (Yeh, Viladrich, Bruning, & Roye, 2009). However, a cultural dichotomy exists between the “normal” body size of Mexican-American and Anglo-American women. A larger body-size image is culturally accepted among Mexican-American women (Juarbe, et al., 2003). This acceptance supports a higher body mass index (BMI) level resultant from increased weight.

Both of these circumstances, known to elevate the risk for type 2 diabetes and CHD in women, are recognized components of the metabolic syndrome (Allan, 1998; Pepine, 2006). The metabolic syndrome, a complex cardiovascular risk factor, spurred new research on weight management, physical activity, and nutrition with findings that

are relevant to Mexican-American women (NHLBI Obesity Education Initiative Expert Panel, 1998; Paul & Smith, 2005).

**Heart-Healthy Nutrition.** The NCEP, American Heart Association (AHA), AWHONN, National Institutes of Health (NIH), and Office of Women's Health (OWH) endorse good nutrition for weight management and cardiovascular health in all women. Heart-healthy nutrition encompasses behaviors associated with meal preparation and healthful eating, as well as making healthy choices when food shopping and restaurant dining. These behaviors reflect a diet that is low in salt, cholesterol, and fats (particularly saturated and trans-saturated fats), and has increased servings of fruits, vegetables, fish, and whole grains.

Further, this type of diet is similar to a more traditional Mexican diet. Mexican-American women who follow a traditional Mexican diet tend to be healthier than those who eat a more Westernized diet (Guendelman & Abrams, 1995). Altered nutritional habits are linked to overweight and obesity among Mexican-American women, resultant from consuming the American diet and becoming more acculturated or having more of an Anglo-orientation (Ayala, Elder, Campbell, Slymen, Roy, Engelberg, et al., 2004; Gregory-Mercado et al., 2006). This change in eating habits in Mexican-American women warrants further exploration for cardiovascular health promotion.

**Cigarette Smoking.** Another lifestyle habit known to increase with acculturation in Mexican-American women is cigarette smoking (Marks, et al., 1990). Younger, more acculturated Mexican-American females are more likely to smoke cigarettes than other age groups (Wagenknecht et al., 1998; Wenger, Speroff, & Packard, 1993). In general,

smoking among Hispanics in the US is relatively low compared to non-Hispanic whites and African-Americans (Rosamond et al., 2007). Even when compared to Puerto Ricans and Cuban-American populations, Mexican-Americans still have a lighter smoking pattern (Haynes, Harvey, Montes, Nickens, & Cohen, 1990).

Nevertheless, tobacco smoke is associated with increased CHD risk by at least a factor of two and cannot be ignored (Stangl et al.2002). Given the absence of recent comparative data, assessment of smoking status in this study is particularly important for cardiovascular health promotion. This importance is magnified in the presence of other chronic conditions that increase CHD risk, such as hypertension, diabetes, and dyslipidemia.

### **Risk Reduction and Cardiovascular Health Promotion**

**Hypertension.** Higher blood pressure readings deleteriously escalate the risk for a heart attack, stroke, heart failure, and kidney disease (Chobanian et al., 2003). The Seventh Report of the Joint National Committee (JNC 7) on prevention, detection, evaluation, and treatment of high blood pressure advocates for more rigorous management of hypertension than has been practiced (Chobanian, et al., 2003). In Mexican-American women, hypertension is a silent disease that frequently goes unrecognized and undetected (Gierach et al., 2006; Soto-Greene, Salas-Lopez, Sanchez, & Like, 2004). Having a condition with non-specific symptoms, like hypertension, makes it difficult to identify and report (Satish, Markides, Zhang, & Goodwin, 1997). Hence, additional research is needed to identify the extent of incidence and prevalence of

hypertension in Hispanics, particularly among subgroups, to effectively develop health promotion strategies.

**Diabetes Mellitus, Type 2.** The prevalence of type 2 diabetes increases with age, predominantly in post-menopausal women, and is higher among Hispanic/Latinos, as validated by cause of death through blind reviews (Poirier & Coburn, 2000; Swenson et al., 2002). Diabetes, also referred to as insulin resistance, accelerates atherosclerotic cardiovascular disease, markedly increasing CHD risk. Diabetes has been shown to exponentially increase risk in Mexican-American women up to eleven-fold when treated and nineteen-fold when untreated (Beckman, Creager, & Libby, 2002; Haffner, Hazuda, & Mitchell, 1991; Kannel & McGee, 1979). Overwhelming evidence of elevated CHD risk calls for new research to rethink therapeutic care approaches that address self-management of diabetes, particularly in Mexican-American women (Mitka, 2002).

**Dyslipidemia.** A higher CHD risk also is associated with high-density lipoprotein (HDL) levels of less than 40 mg/dL and elevated triglyceride levels in women, but it is unclear whether this applies to Mexican-American women (Grundy, Cleeman, Bairey Merz, Brewer, Clark, Hunninghake, et al., 2004). Elevated levels of total cholesterol, small dense low-density lipoproteins (LDL), and triglycerides, plus reduced HDL levels confirm a diagnosis of dyslipidemia (National Cholesterol Education Program [NCEP] Expert Panel, 2002). Mexican-American women tend to have lower prevalence rates of elevated cholesterol levels than men and similar LDL levels to NHW women (Rosamond, et al., 2007). Thus, research is needed to identify the positive behaviors or genetic influences responsible for this favorable health outcome.

## **Summary**

In summary, disease prevention and risk reduction are overlapping dimensions of health promotion. The probability of acquiring CHD gauged by the number of risk factors together with individual health knowledge and perceptions of risk behaviors describe the phenomenon of cardiovascular health promotion in this study. In order to decrease cardiovascular risk, women must understand and acknowledge personal risk and then choose to engage in health-promoting over risk-enhancing behaviors. Risk-enhancing behaviors associated with increased CHD risk in Mexican-American women are physical inactivity and unhealthy food intake that make it difficult to manage particular chronic health conditions, such as hypertension and diabetes. Consequently, more preventive research that focuses on lifestyle interventions is needed to augment understanding of its pivotal role in cardiovascular health promotion.

### **Psychosocial Factors and Cardiovascular Health Promotion**

Additionally, the relations between behavioral beliefs, social values, and cultural norms within the larger sociopolitical environment influence health promotion and lifestyle behaviors (Ajzen, 1991). Regardless of proclivity for certain health problems, Mexican-American women have the lowest participation in health promotion services than other women. Therefore, this study investigated important psychosocial factors of Mexican-American women about general knowledge of CHD and associated risk factors, health status perceptions, acculturation levels, and menopausal status.

**Knowledge of CHD and Associated Risk Factors.** Healthy behaviors associated with cardiovascular health promotion are influenced by the person's cognitive

ability to process information (Waldstein & Elias, 2003). Knowledge of health-promoting versus risk-enhancing or illness behaviors is of paramount importance for CHD prevention and risk reduction. Knowledge of illness and illness behaviors of Mexican-American women shaped by cultural beliefs has been widely studied among Hispanics (G. Becker, Beyene, Newsom, & Rodgers, 1998; Kleinman, 1988; Kleinman, Eisenberg, & Good, 1978; Larkey, Hecht, Miller, & Alatorre, 2001; Maduro, 1983).

More recently, it has been established that Mexican-American women lag behind in knowledge and awareness of cardiovascular disease than other women (Christian, et al., 2007). However, less is known about the cultural views of health and health promotion behaviors. In this study, it is assumed that the cultural component of existing views of illness served as a foundation for health knowledge and perceptions.

**Perceived Health Status.** Cardiovascular health behaviors are contingent on the individuals' interpretation of personal health, derived from perceptions (Ajzen, 1991). In any culture, every behavior is connected to a belief, and influenced by cultural value systems. These behavioral beliefs are individually valued as positive or negative (Ajzen, 1991; Fishbein & Ajzen, 1975). Placing a value on behavior is contingent on subjective and cultural norms. Those behaviors that are positively-valued are more likely to be performed, whether they are healthy or not, affecting cardiovascular health outcomes (AHA, 2010b; Fishbein & Ajzen, 1975).

As an intrinsic element of the cognitive process, individual perception is a powerful cognitive skill that can potentially alter behavioral beliefs and change behavior (Ajzen, 1991; Waldstein & Elias, 2003). Perceived health status is known to be

associated with changing behavior, but its predictive ability on health promotion for Mexican-American women is unclear. Nor, is it apparent how the perceived health status of Mexican-American women influences current lifestyle practices, despite knowledge and acculturation levels (Hartweg & Isabelli-García, 2007; Kleinman, et al., 1978; Oliver-McNeil & Artinian, 2002).

**Acculturation Level.** Culture describes common behaviors, thoughts, actions, customs, and beliefs shared among people from diverse racial and ethnic groups (National Alliance for Hispanic Health, 2001). In its simplest form, acculturation is defined as an integration of two cultures, whereby traditional values and beliefs are retained within the larger dominant society (Berry, 2003). This integration conveys the degree that Mexican-Americans adopt American cultural norms and lifestyle behaviors.

Subjective and cultural norms are interdependent and embedded in value systems within the social environment (Villarruel & Leininger, 1995). In turn, the social environment influences lifestyle behaviors that are culturally valued by the person (Ajzen, 1991). This perspective incorporates the numerous dimensions of the acculturative process that can be demonstrated by dynamic interactions between the individual, family unit, ethnic community, American society, and the broader sociopolitical environment (DuBard & Gizlice, 2008; Rueschenberg & Buriel, 1980). This multidimensional process of acculturation on lifestyle behaviors is gradually becoming better understood with emerging research.

After living in the US for three years or more, changes in health risk have been noted in Mexican-Americans (Evenson, Sarmiento, & Ayala, 2004; Harley & Eskenazi,



2006; A. M. Padilla, 1980; Wilkinson et al., 2005). This observation has linked acculturation to unhealthy changes in physical activity and dietary behaviors, as well (Crespo, Smit, Andersen, Carter-Pokras, & Ainsworth, 2000; Gordon-Larsen, Adair, & Popkin, 2002). Current research indicates that as individuals become more acculturated to American society, CHD risk increases similar to or surpassing that of NHW (Khan, Sobal, & Martorell, 1997; Steffen, Smith, Larson, & Butler, 2006). Further, it is known that differing levels of acculturation in US Mexican-American households exist, but its influence on enabling heart-healthy lifestyles in Mexican-American women is unclear.

**Menopausal Status.** Lifestyle behaviors also are affected by the menopausal process that is typically comprised of three stages. Cultural and genetic influences affect the variations of the menopausal experience (Bell, 1995; Silvas Villalobo, 1997-2007). Menopause occurs at an average age of 51 years, but the menopausal experience can extend up to ten years from its onset (North American Menopause Society, [NAMS], 2006).

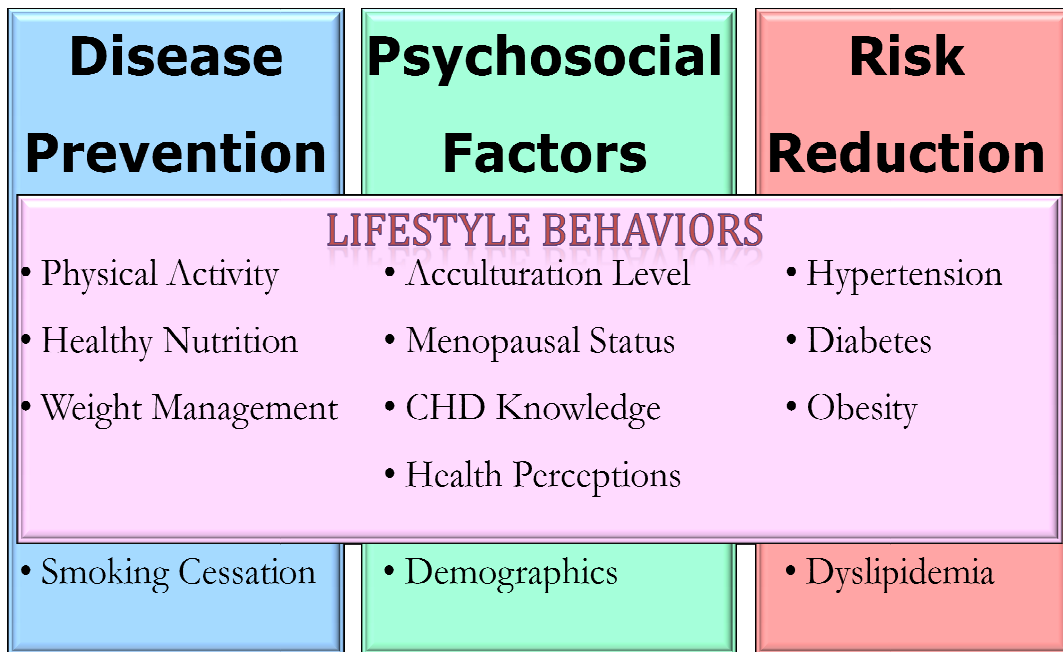
Additionally, menopausal status has been associated with a growing awareness, knowledge, and perception of CHD in women (Christian, et al., 2007; Mosca et al., 2000). Prior to reaching menopause, the rate of CHD in women is low, speculated to be from hormonal protective mechanisms (AWHONN, 2001). Following menopause, however, women present with other co-morbidities that can quickly lead to deleterious consequences (National Institute of Aging, 2005). Given that menopausal status influences CHD risk, a clearer understanding of the importance that Mexican-American

women ascribe to their CHD risk before, during, and after menopause is needed, particularly as it relates to health promotion.

**Summary**

In summary, knowledge of CHD and risk, health status perceptions, acculturation level, and menopausal status are associated with healthy and unhealthy behaviors. Behavioral patterns of Mexican-Americans are affected by strong cultural belief systems that, in turn, influence health practices. Cultural tendencies, however, appear to be altered with prolonged exposure to American society, producing more unfavorable than favorable effects on health promotion. The present study was designed to investigate the underlying relationships influencing those effects. To simplify the primary relationships affecting cardiovascular health promotion in Mexican-American, three categorical domains have been identified thus far, and are depicted in *Figure 1-2*.

**Figure 1-2. Cardiovascular Health for Mexican-American Women**



This conceptual illustration matches lifestyle behaviors to a corresponding domain of disease prevention, risk reduction, or psychosocial factors. The pink box symbolizes “health promotion,” and is based on findings from an extensive review of the literature that is further discussed in the next chapter. Pertinent conditions found to affect lifestyle behaviors of Mexican-American women, either favorably or unfavorably, for health promotion are featured in the pink box. Moreover, investigating behavioral patterns and health practices is essential to augment our understanding of cardiovascular health and disease, and altogether driven by major underlying assumptions.

### **Major Assumptions**

Four major assumptions underscored the need for this study and summarized important points. First, it was assumed that Mexican-American women have CHD risk factors, develop CHD, and have the capability to alter behaviors to maintain health (Mosca, Banka, et al., 2007). Therefore, it is important to target preventive care services that assess knowledge of CHD and risk factors, and evaluate current lifestyle practices and perceptions of health status. This study sought to clarify behavioral and normative beliefs to identify positively valued behaviors.

Second, it was assumed that lifestyle choices are influenced by cultural values. These values are interdependent and derived from subjective and cultural norms within the broader sociopolitical environment. Therefore, perceived health status is subject to cultural variation and affects behavioral tendencies, acting as a stimulus for behavioral change (Conway, Ryder, Tweed, & Sokol, 2001). Understanding health perceptions of

cardiovascular health-promoting lifestyle behaviors within a specific cultural context can guide the future development of culturally appropriate health promotion programs.

Third, it was assumed that health illiteracy or inability to learn is not based on language differences. Learning capacity, however, is contingent on the language spoken (Shin & Kominski, 2010 ). Therefore, language becomes the vehicle for healthcare communication that involves Mexican-Americans, and it is only one dimension of social acculturation. Further, the acculturative process is composed of a complex series of numerous cultural dimensions experienced by Mexican-Americans and other groups migrating to the US (Berry, 2003).

Fourth, it was assumed that CHD risk in Mexican-American women increases with age and is affected by menopause, as in non-Hispanic women. Menopausal status is an explicit determinant of health promotion for this study (Matthews et al., 1989; Mayo Clinic, 2007; Petitti, 2002). Within the Mexican cultural context, this topic is a private and personal one. Nevertheless, the menopausal process persists as a contributing risk factor to CHD.

In conclusion, current research on CHD in Mexican-American women as a whole is lacking information on cardiovascular health promotion approaches. The effects of the predictor variables—perceived health status, knowledge of CHD and risk, acculturation level, and menopausal status—on behavioral tendency to engage in a cardiovascular health promotion are unknown in Mexican-American women. By investigating heart-healthy lifestyle behaviors and identifying important relationships between and across variables, this study has added new knowledge to decrease an existing scientific gap.

## **Statement of the Problem**

With the increasing number of Mexican Americans in our population, culturally competent care to diverse groups of people is critical and informed through new research. Existing research affirms these women are underserved and under-researched with poor resources, knowledge deficits, disadvantaged living conditions, and marginalization experiences that lead to alarming cardiovascular risk (R. C. Becker, 2005; Christian, et al., 2007; Gierach, et al., 2006). A younger Hispanic subgroup that is expected to grow exponentially as a proportion of the total US population, Mexican-American women are in a position to greatly benefit from new research (Office of Minority Health, [OMH], 2006; Therrien & Ramirez, 2000). Health promotion research, however, in this subgroup is limited, making it a priority area. Future development of sex-specific and culturally sensitive strategies to promote heart-healthy lifestyles in this growing cohort of women is anticipated to effectively eliminate health disparities associated with CHD (Allen & Szanton, 2005; Lerman & Sopko, 2006). Study results can then inform nurse scientists and clinicians, as well as healthcare administrators and public policymakers.

## **Study Purpose and Specific Aims**

### **Study Purpose**

The purpose of this study was to identify predictors associated with healthy behaviors among Mexican-American women. Healthy behaviors comprising a cardiovascular health-promoting lifestyle in Mexican-American women are regular physical activity, a heart-healthy diet, weight management or reduction, and controlled

high blood pressure, high serum cholesterol, and diabetes. Conceptually, these behaviors were organized by the phenomenon of cardiovascular health promotion.

### **Specific Aims and Study Hypotheses**

The primary aim of the study was to identify factors that predispose or inhibit adult Mexican-American women to engage in healthy behaviors for cardiovascular health promotion, also referred to as cardiovascular health-promoting lifestyle behaviors. Standard survey forms were available in both English and Spanish languages, except for the demographic sheet that was translated from English into Spanish by the principal investigator and back translated by a cultural expert for verification. Information from four surveys and a demographic sheet yielded descriptive quantitative data for the following four specific aims.

**Specific Aim 1:** To determine the relationship between knowledge of CHD and risk and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 1a.* There is a relationship between knowledge of CHD and risk and cardiovascular health-promoting lifestyle behaviors.

**Specific Aim 2:** To determine the relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 2a.* There is a relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 2b.* The relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors persists when adjusting for knowledge of CHD and risk.

**Specific Aim 3:** To determine the relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 3a.* There is a relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 3b.* The relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors persists when adjusting for perceived health status and knowledge of CHD and risk.

**Specific Aim 4:** To determine the relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 4a.* There is a relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 4b.* The relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors persists when adjusting for perceived health status, knowledge of CHD and risk, and acculturation level.

### **Significance of the Study**

Disparities associated with cardiovascular disease in Mexican-Americans have important public, professional, and policy concerns. The IOM (2003) recommends that scientific investigators conduct focused research to decrease or eradicate disproportionate quality of care among underrepresented groups that currently extends across clinical settings. *Healthy People 2010* urges new scientific efforts be aimed at increasing the quality and years of a healthy life and toward eliminating health disparities (DHHS2000). The OMH (2006) advocates eliminating cardiovascular health disparities in racial-ethnic

groups living in the US. Therefore, this study investigated factors that influence cardiovascular health promotion in Mexican-American women by identifying important relationships between CHD knowledge and risk, perceived health status, acculturation level, and menopausal status.

This study is a first step in a program of research that aims to promote widespread adoption of heart-healthy lifestyles in Mexican-American women. Heart-healthy lifestyles could promote cardiovascular health in three ways. First, chronic illnesses known to significantly increase CHD, such as hypertension, dyslipidemia, and diabetes mellitus, can be effectively treated and managed. Enhanced cultural understanding of health concepts can assist in identifying effective strategies that are both sex-specific and age-selective. Lastly, health promotion strategies can extend longevity in a population that is relatively young and proportionally increasing in the US. Solutions for promoting heart-healthy lifestyles in this disadvantaged group of women are well within our capacity to produce and this study is responding to the call (AHRQ, 1999; IOM, 2009; OMH, 2006a).



## Chapter 2

### REVIEW OF THE LITERATURE

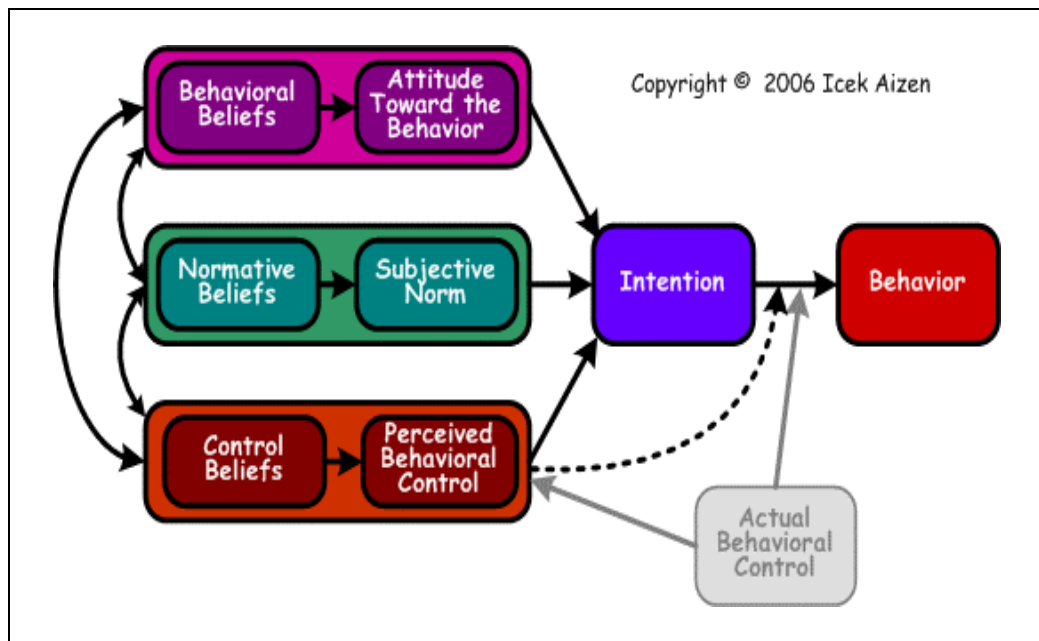
Cardiovascular disease is emerging globally as a transnational health threat (WHO Global InfoBase team, 2005). Coronary heart disease (CHD), the most prevalent form of cardiovascular disease, is the leading cause of death and disability in Hispanics (Rosamond, et al., 2007). Yet, lower cardiovascular mortality rates have been reported among Hispanics compared to the general population, in spite of evidence showing an elevated cardiovascular risk due to greater prevalence of type 2 diabetes, dyslipidemia, obesity or overweight, and untreated hypertension (Palloni & Arias, 2004). To further understand this growing public health concern with immense personal, social, and economic consequences, this chapter provides an: (a) introduction of the underlying theoretical framework that organized study variables and measurement tools; (b) examination of existing research through an integrative literature review that guided appropriate research methodology; and (c) identification of scientific gaps and ways in which this study contributed to the science, as well as future research efforts.

#### **Theoretical Framework**

The tenets of the Theory of Planned Behavior (TpB), developed by Ajzen and Fishbein (1975) and illustrated in *Figure 2-1*, served as the organizing framework for this study. A series of premises about beliefs, attitudes, and intentions converge to explain and predict health behaviors (Ajzen & Fishbein, 1980). Briefly, individual *intention* to perform a behavior is a combination of the (a) *behavioral beliefs* associated with the expected outcome of performing the behavior, (b) *normative beliefs* related to the

likelihood of performing the behavior based on the approval or disapproval of important others, and (c) *control beliefs* gauged by the presence or absence of barriers or facilitators to performing the behavior (Ajzen, 1985). Collectively, these are *salient beliefs* that people possess about performing desirable behaviors (Ajzen & Fishbein, 1980).

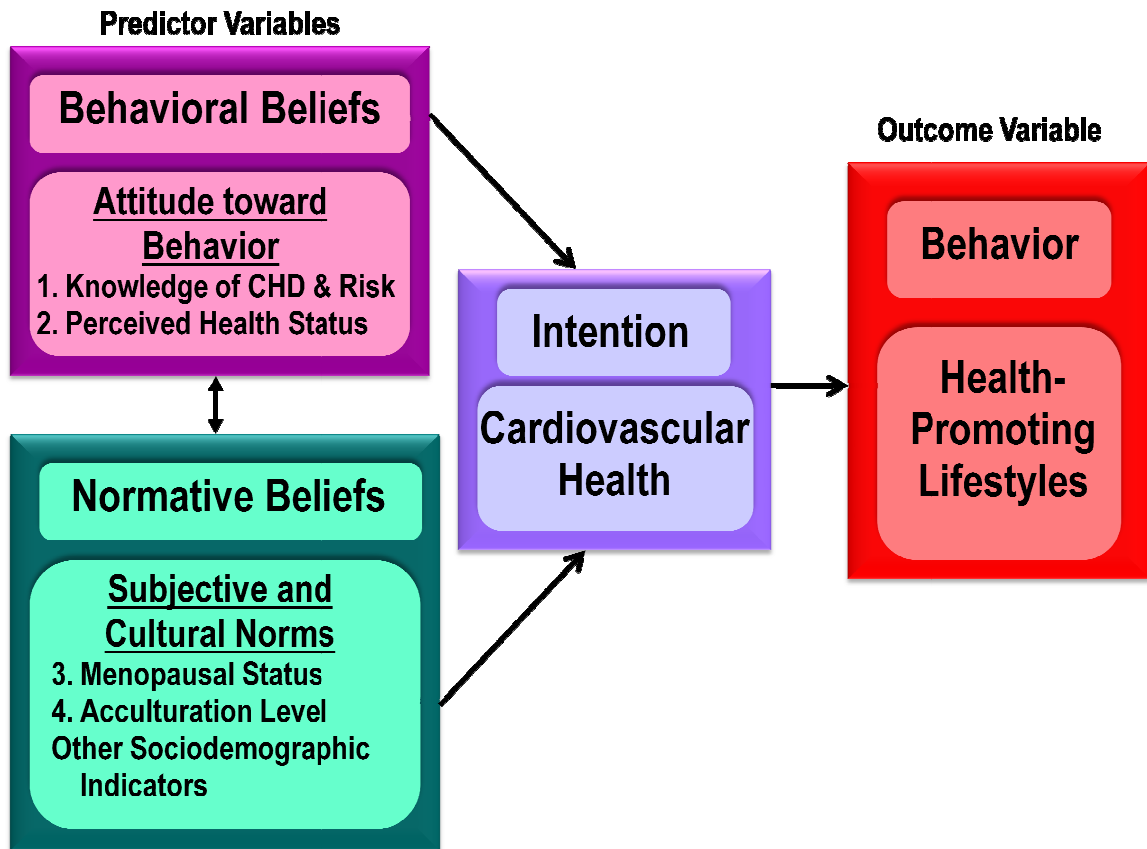
**Figure 2-1. Theory of Planned Behavior, copyrighted by Icek Ajzen**



Although the TpB has successfully been applied and empirically tested in a wide range of studies across populations, including health and social science, an adapted version of the model was used in this study (Armitage & Conner, 1999; Godin & Kok, 1996; Jemmott & Jemmott, 2007). The adapted version features the first two components of the TpB, as shown in *Figure 2-2*, and fully captures the importance of social values within a Mexican cultural context. The modified model emphasizes the influence of

behavioral and normative beliefs of Mexican-American women on the intention to adopt a heart-healthy lifestyle that is central to the health promotion focus of this study.

**Figure 2-2. Adapted Model of the Theory of Planned Behavior for Cardiovascular Health Promotion in Mexican-American Women**



Commitment to cardiovascular health-promoting behaviors encourages the development of a genuine *intention* to engage in health-promoting rather than risk-enhancing lifestyle behaviors (Fishbein, 1967; Scheier & Carver, 1992). When testing the TpB, the endpoint is performing the *behavior*. The utility of the TpB was not evaluated in this study; rather the *behavior* in question was a self-reported measure of the

subject's lifestyle behaviors tested by four different hypotheses to identify important relationships and determine the strength of those relationships. Therefore, the third component of the TpB is beyond the scope of this study and was not included in the adapted model, but may be useful in future research efforts.

The first component of the TpB is concerned with *behavioral beliefs* and *attitudes toward the behavior*. Behavioral beliefs shape the prevailing attitude toward a given behavior (Ajzen & Fishbein, 1980). In the first component of the adapted model used in this study, measurement of knowledge of CHD and risk and perception of health status provided a glimpse of prevailing attitudes and future outlooks about health promotion. The second component of the TpB deals with *normative beliefs* and *subjective norms*. Normative beliefs emphasize the valuing process that affects performing the behavior (Ajzen & Fishbein, 1980). In the second component of the adapted model for this study, measures of menopausal status and acculturation level provided information about behaviors that were not necessarily under volitional control, and yet, can influence health practices. Hence, by adapting the first two components of the TpB, it became a model framework to guide the investigation of underlying factors associated with the individual *intention of promoting cardiovascular health*.

### **Review of the Literature**

A systematic literature search was conducted and limited to the English language yielding journal articles and books from 1970 to the present, enabling access to primary sources. Computerized searches were done in the following databases: Ovid MEDLINE, CINAHL/Nursing, and PsychINFO. Keywords were many and varied, used singly or in

numerous combinations: *cardiovascular disease, heart disease, cardiovascular risk and risk factors, cardiovascular health, health promotion, lifestyle behaviors, disease prevention, Hispanic women, Latina, Mexican-American women, Hispanic culture, acculturation, menopause, and health disparities*. The Google search engine was supplementary and used for additional clarity of key concepts. Classic articles and well-known books that date back to the 1960's also were identified, ranging from published works of the theoretical model, research methodology, and Hispanic psychology to cultural anthropology, including Mexican-American cultural studies.

Select research studies comprising this integrative review of the literature are organized by the three categorical domains described in Chapter 1, illustrated in *Figure 1-2* (Ganong, 1987). Research efforts that explore CHD prevention and risk management in Mexican-American women are described in detail. Exigent effects of Hispanic communities on lifestyle behaviors is thoroughly examined, including the influence of attitudes, knowledge, perceptions, and other psychosocial factors. Of prime importance, the literature review begins with an introductory scrutiny of the health of Mexican-American women as a growing cohort of the total US Hispanic/Latino population.

### **Hispanic Health Issues in the United States**

#### **Who are Hispanic/Latinos?**

Hispanic/Latinos are comprised of people who are influenced by Spanish colonization and language regardless of race, whose origins are Mexican, Puerto Rican, Cuban, Central or South American, or other Hispanic/Latino, such as Dominicans (U. S. Census Bureau, 2004). Hispanic/Latinos generally identify themselves or claim ethnicity

by country of birth (Oboler, 1995). Hispanics comprise 15.1% of the total US population, reaching 48.4 million (U. S. Census Bureau, 2010). In this study, the terms *Hispanic* and *Latino* are used interchangeably referring to the population as a whole.

### **Why is it important to study Hispanics at this time?**

Investigating Hispanics at this time is important for two main reasons. First, the rapidly growing numbers of Hispanics call for immediate action of prevention research. Current population surveys indicate that Hispanics are a younger population with a median age of 27.2 years, while the total population is 36.2 years (U. S. Census Bureau, 2006). Additionally, one-third of the Hispanic population is under age 18, compared to one-fourth of the total US population. As this younger population begins to age, healthcare systems must be prepared to handle the increased numbers of multicultural people with language differences.

This future projection magnifies the importance of considering the needs of Mexican-Americans, who are the largest ethnic subgroup, numbering 64% of the total US Hispanic/Latino population (U. S. Census Bureau, 2010). When under-represented groups comprise approximately one-third of the total US population, giving attention to the demographic changes in the landscape of America is critical. Further, Hispanics are projected to grow as a proportion of the total US population, requiring enhanced health promotion efforts. This projection calls attention to immigration issues surrounding the health of Hispanics in the US, which is the second reason to study Hispanics at this time.

Immigration issues appear to amplify the health disparities that occur by race and ethnicity, gender, education, income, disability, or geographic location, among those who

are naturalized citizens (OMH, 2006b). According to current vital statistics reports, natural increase, defined by births minus deaths, accounted for the rapidly increasing numbers of Hispanics in the US. In 2005, the total US minority population was 33%, or 98 million of 296.4 million in the country (U. S. Census Bureau, 2006). Hispanics accounted for 49% (1.3 million) of the nation's population growth that year. Of this 1.3 million in growth, natural increase accounted for 800,000, meaning only 500,000 was due to immigration. Thus, the future health of the nation as a whole will be influenced considerably by the success of improving the health of Mexican-Americans, a racial-ethnic group not only expanding rapidly, as evident by vital statistics and census data (Therrien & Ramirez, 2000; U.S. Census Bureau, 2010).

As major changes unfold in the business of healthcare delivery, a national focus on the enormity of health disparities among Hispanics becomes particularly important. New research-based evidence is needed to guide health promotion programs and decrease health disparities in Hispanics. Present study findings about cardiovascular health promotion in Mexican-American women can foster the development of innovative research that emphasizes sex-specific differences and provides the basis for quality care to the people who are changing and will continue to change the face of the nation over the next decade (U. S. DHHS, 2000).

### **Who are Mexican-American women?**

The ethnonym, *Mexican-American*, describes US citizens of Mexican ancestry, as well as Mexican citizens who reside in the US (Oboler, 1995). For participation in the present study, Mexican-American women resided in the US, but could be born in either

country and are ethnically referred to as *Latinas*. The term *Latina* explicitly defines women born of Spanish heritage (Arce & Hurtado, 1987). Another term that is frequently cited in the literature describes *Latinas* as “women of color.”

Researchers use both terms when addressing women from different Spanish backgrounds. In certain parts of the country, the term *Chicana* is used to describe Mexican-American women, a highly politicized term during the Chicano Movement in the 1960’s (Oboler, 1995). Today, it is mostly accepted as a way to differentiate those individuals of Mexican ancestry born in the US and have accepted a new ethnic identity from those residing in the US who have not (Castro, 2001).

Mexican-Americans exhibit preventive health behaviors that are influenced by cultural health beliefs, reflected in four key values (Delgado, 2002; Larkey, et al., 2001). The first key value is rooted in the concept of allocentrism (or collectivism), and emphasizes the needs, objectives, and viewpoints of an ingroup or institution versus those of the individual (Conway, et al., 2001). *Personalismo* (formal friendliness or meaningful connections), on the other hand, is an emotive value that stresses personal relationships, underscoring the need for behaviors that promote pleasant and agreeable social relationships, such as between healthcare providers and patients (National Alliance for Hispanic Health, 2001).

The second key value is largely embedded within the sociocultural environment. Mexican-Americans are influenced by cultural norms associated with family dynamics, or the culture-specific value of *familismo* (familism) (Larkey, et al., 2001; Ruiz, 2007). Strong identification with and attachment to members of the nuclear and extended family



describes the dynamics occurring within Mexican-American households. This demonstration of collective loyalty, reciprocity, and solidarity among family members increases familial bonding and the density of social networks and support systems (Cohen, Gottlieb, & Underwood, 2000; National Alliance for Hispanic Health, 2001).

Lastly, *confianza* (trust) and *respeto* (respect) are key values to have between healthcare providers and patients (Delgado, 2002). Trust and respect in the healthcare provider-patient relationship requires reciprocity of appropriate deferential behavior grounded in the foundation of cultural competence (Benavente, 2004). Constant changes in public health systems may hinder the delivery of culturally competent care, while restrictive insurance plans have caused the decline of long-term relationships between healthcare providers and patients (Brach & Fraserirector, 2000). In today's healthcare system, establishing positive relationships is becoming increasingly difficult to achieve in clinical and research settings.

### **What culturally sound research has been conducted exploring CHD in Mexican-American women?**

Little progress has been made in the state of the science that explores CHD among Mexican-American women due mainly to the dearth of research with this focus. In addition, the stress of the acculturative process and the undersupply of culturally competent care complicate issues of health illiteracy and contribute to the under-diagnoses and under-treatment of CHD in Mexican-American women (National Alliance for Hispanic Health, 2001). Research data regarding diagnoses and treatment of CHD in women have inadvertently led to the belief that Mexican-American women may be

“genetically protected” from developing CHD (Health Resources and Services Administration, [HRSA], 2001).

Nurse researchers, however, have made great scientific contributions to women’s heart health and disease, to date. In particular, the areas of symptom recognition and management of CHD, risk factor identification, care-seeking and treatment delays, diagnosis and recovery outcomes, and cardiac rehabilitation are well investigated. These studies have focused predominantly on non-Hispanic white (NHW) women. Studies on preventive care behaviors, such as heart-healthy nutrition (Ayala, Mueller, Lopez-Madurga, Campbell, & Elder, 2005; Lagana, 2003), physical activity (Dergance et al. 2005; Juarbe et al. 2003), and obesity and weight issues among Hispanics (Ayala, et al., 2004; Mobley et al., 2006), and more specifically in Mexican-American women, have only recently emerged.

### **Cardiovascular Disease in Mexican-American Women**

#### **What disease prevention approaches exist for assessing CHD in Mexican-American women?**

Substantial declines in cardiovascular mortality in the US, as a whole, have resulted from a widening array of preventive and therapeutic tools of modern medicine and adoption of healthier habits (Mosca et al., 1997). Several respected organizations listed in *Table 2-1* are giving top priority to women’s heart health through national campaigns and programs. By instituting major policy programming and mass media efforts, these national organizations have contributed to increased awareness and knowledge of CHD in women. These efforts extended to healthcare screening services

for vulnerable women who have no insurance or little income, a reality that includes a Hispanic majority.

**Table 2-1. National Campaigns of Cardiovascular Health and Disease in Women**

Organization	National Campaign
American Heart Association	<i>Go Red for Women, or Por La Vida, El Rojo</i>
American Association of Women’s Health, Obstetrics, and Neonatal Nursing	<i>Cardiovascular Health for Women Initiative</i> produced Primary Prevention Evidence-Based Clinical Practice Guidelines and Quick Care Guide
National Heart, Lung, and Blood Institute	<i>The Heart Truth, or La Verdad Acerca del Corazón;</i> and <i>Health for Your Heart, or Salud para su Corazon</i>
Office of Women’s Health	<i>Steps to Healthier Women</i> , affiliated with HealthierUS and Steps to HealthierUS; and <i>Pick your Path to Health</i>
Centers for Disease Control and Prevention	WISEWOMAN, the <b>Well-Integrated Screening and Evaluation for Women Across the Nation</b> program

As a result, overall awareness of CHD as the leading cause of death in women has nearly doubled in the last ten years (Mosca, et al., 2000). However, awareness has not reached the expected magnitude, especially in Latinas (Christian, et al., 2007). The incidence and prevalence of CHD also has not dropped significantly in this cohort to match concerted efforts of all involved parties (Wenger, 2005). This outcome suggests that more research is needed in the area of health promotion to augment CHD prevention efforts among Latinas, as this study was designed to do for Mexican-American women.

National surveys, supported by the AHA, have tracked women’s awareness, perception, and knowledge of heart disease over the last decade (Mosca, Ferris, et al., 2004; Mosca, et al., 2000). The latest findings showed an increase to 57% of American women who know that heart disease is the leading cause of death of women from 46% in

2003, 34% in 2000, and 30% in 1997 (Christian, et al., 2007). Data for these national surveys were collected via telephone interviews, excluding Hispanic women who could not speak English and those Hispanic households without telephones. Therefore, it is not surprising that gaps in awareness among racial-ethnic women have shown little improvement. Only 29% of Hispanic women know that heart disease is the leading cause of death in women compared to 68% in NHW women.

Nonetheless, these national educational campaigns demonstrated a commitment to promote women's heart health. Through rigorous efforts to reach Latinas, they also have improved the health status of racial-ethnic women. Besides translating and printing educational materials in Spanish, Latina models of all ages were used in multimedia advertisements, including radio, television, and billboards, to convey the message of awareness (Huerta & Macario, 1999). While technological advances permit free computer downloads of online resources and easy electronic access to Spanish programs, computer use and access is not evenly distributed among racial-ethnic groups. A reasonable number of Hispanics may know how to operate a computer, but the number of households owning a computer is slight (Galanti, 2003). Unfortunately, translated material does not assure its distribution, neither does having Spanish online programs assure accessibility, especially in vulnerable populations with low socioeconomic status (SES).

Although the commitment to the health and well-being of all women demonstrated solidarity, a further problem is the lack of preventive care services available to racial-ethnic women. The Division for Heart Disease and Stroke Prevention

of the CDC attempted to address this issue by implementing a program called WISEWOMAN, an acronym for the **Well-Integrated Screening and Evaluation for Women Across the Nation**. The design of the WISEWOMAN program is based on the inability of vulnerable populations to pay for health services. This notion ties into the premise that SES influences health status and often contributes to ethnic differences of cardiovascular risk (Winkleby, Kraemer, Ahn, & Varady, 1998). Therefore, low-income and under insured or uninsured women between 40 and 64 years with access to this program's services are provided with chronic disease risk factor screenings, lifestyle intervention information, and referral care services.

In sum, these national campaigns and programs accentuated the *Healthy People 2010* objectives to eliminate cardiovascular health disparities in vulnerable populations. Indisputably, national endorsement must continue for increased awareness of cardiovascular disease in women and include culturally appropriate, evidence-based strategies to raise awareness among Latinas. Although awareness was reported to have improved slightly in Latinas, they continue to have lower rates of awareness and higher risk of CHD than NHW women (Christian, et al., 2007). Cultural practices may explain the relative advantages or disadvantages of health and illness behaviors of Hispanics (Markides & Coreil, 1986). These practices require special attention, and this study was specifically designed to identify those factors that influence health-promoting lifestyles.

#### **What is known about CHD risk factor assessment in Mexican-American women?**

Traditionally, CHD risk factors have been grouped into three categories recognizable to healthcare professionals: (1) *non-modifiable* (2) *modifiable*, and (3)

*treatable* (AHA, 1998; Woolf, 1996). *Non-modifiable* risk factors consist of explicit traits and characteristics that cannot be changed, namely age, sex and gender, race and ethnicity, heredity and family history. *Modifiable* risk factors are lifestyle behaviors and habits that can be altered, such as cigarette smoking, dietary patterns, alcohol consumption, exercise regimens, and weight control. *Treatable* risk factors are medical conditions that can be managed, such as hypertension, diabetes, and dyslipidemia. These risk factor categories apply to Mexican-American women.

Coronary heart disease, itself, is not categorical, implying that either one has it or not. Instead, CHD is increasingly viewed more on a continuum of health and illness based on individual risk (Mosca et al., 2004). Individual risk is determined by the presence of certain cardiovascular risk factors. A cardiovascular risk factor is a trait, condition, element, or activity that adversely affects blood circulation to the heart and leads to the development of CHD, or its exacerbation (Grundy et al., 2001; Woolf, 1996).

Initial research efforts showed new evidence that identified cardiovascular risk factor differences between women and men. The well-known Framingham Heart Study (FHS) reported advancing age, cigarette smoking, elevated systolic blood pressure, high total serum cholesterol, high-density lipoprotein (HDL) levels, and the presence of diabetes as risk factors strongly associated with adverse cardiovascular outcomes in both women and men (D'Agostino, Grundy, Sullivan, & Wilson, 2001). Continued efforts from the AHA, the NCEP, and the American College of Cardiology (ACC), among other prestigious professional organizations in preventive cardiology, proved worthwhile when

a general consensus about CHD risk factors particular to women was reached between researchers and clinicians.

In women, primary risk factors for all cardiovascular diseases are: age over 55 years, family history of premature CHD (first degree male relative under age 55 or a female under age 65), and personal history of cardiovascular diseases, peripheral vascular disease, dyslipidemia (high LDL and/or low HDL), diabetes mellitus, smoking, and hypertension (NCEP Expert Panel, 2002). Elevated triglycerides, obesity, and a sedentary lifestyle are added risk factors highly associated with CHD in racial-ethnic women (Winkleby, et al., 1998). Researchers and clinicians considered lifestyle modifications deserving of more attention for health promotion. Scientific inquiry was redirected, shifting the paradigm of healthcare from disease management to one of health promotion (Grundy, Pasternak, et al., 1999; Pearson et al., 2002).

During this paradigm shift, landmark population-based studies emerged, such as the renowned FHS, that led to a clearer understanding of the causes of cardiovascular diseases and associated risk factors (D'Agostino, et al., 2001; Grundy, Pasternak, et al., 1999; Kannel, McGee, & Gordon, 1976). Further, the ability to predict cardiovascular risk was a groundbreaking discovery for preventive medicine, as was the discovery of the "Metabolic Syndrome." The metabolic syndrome was reported to be highly predictive of new-onset diabetes (Grundy, Brewer, Cleeman, Smith, & L'enfant, 2004; Grundy, Hansen, Smith, Cleeman, & Kahn, 2004). Diabetes is a first degree cardiovascular risk factor associated with severe consequences in women (DERI Study, 1991; Laing, Swerdlow, Slater, & et al., 1999; Swenson, et al., 2002). Therefore, heightening

awareness of the metabolic syndrome became the focus of the scientific community (Grundy, et al., 2001; Wilson et al., 1998).

**What is the “Metabolic Syndrome” and how does it modify CHD risk assessment and evaluation in Mexican-American women?**

When the NCEP Adult Treatment Panel III report (ATP III) identified the “Metabolic Syndrome,” empirical evidence was finally available to show an increased probability of acquiring CHD in the presence of certain risk factors (NCEP Expert Panel, 2002). The metabolic syndrome is diagnosed when an individual has three or more of the following components: abdominal obesity, atherogenic dyslipidemia (meaning high triglyceride levels and low concentrations of HDL cholesterol), elevated blood pressure, and insulin resistance (with or without glucose intolerance) (Grundy, Brewer, et al., 2004). This diagnosis poses the highest risk in the development of CHD across all groups and is particularly prominent in Hispanics and Asian-Americans (Ford, Giles, & Dietz, 2002; Wilson, et al., 1998).

In Mexican-Americans, three different research teams have consistently reported low SES, high levels of obesity, untreated hypertension, and increased prevalence of adult onset diabetes mellitus, as CHD risk factors (Iribarren et al., 2006; Satish, et al., 1997; Sundquist & Winkleby, 1999). This observable pattern of CHD risk has linked racial-ethnic subgroups to the metabolic syndrome. The cardiovascular research community responded by recommending therapeutic lifestyle modifications that emphasized weight reduction as first-line therapy of the metabolic syndrome (Mosca, et al., 2007; NCEP Expert Panel, 2002). Further consideration is needed to better manage



cardiometabolic risk factors of Mexican-American women, in whom the main focus of cardiovascular health promotion remains an unresolved research challenge.

**How is CHD risk currently being reduced to prevent cardiovascular disease in Mexican-American women?**

The *Primary Prevention Evidence-Based Clinical Practice Guideline* and *Quick Care Guide*, are two clinical practice tools developed by AWHONN (2001), as part of the *Cardiovascular Health for Women Initiative*. Additionally, the AHA issued the *Evidence-based Practice Guidelines for Cardiovascular Disease Prevention in Women* as a published statement for healthcare professionals (Mosca, Appel, et al., 2004; Mosca, et al., 2007). The latter guideline contributed to CHD risk assessment in women in two ways. A different risk factor typology for women was developed and endorsed by the AHA, ACC, NHLBI, and OWH, among other professional practice organizations. This new typology groups CHD risk factors into (a) lifestyle behaviors, (b) physical health status, and (c) preventive pharmacology (Mosca, Appel, et al., 2004).

The second contribution was the development of a tool called the *Framingham Risk Score for Women* that assists clinicians to assess a baseline CHD risk level (2004). Although this tool provides credence to health promotion, it requires blood specimen collection for computational analyses and, therefore, was not used in this study. Limited data are available to describe how these risk factor categories and clinical practice guidelines relate to CHD risk profiles of Mexican-American women and overall cardiovascular disease prevention.

Favorable advances have been made in women's heart health to produce two sets of evidence-based clinical guidelines to prevent CHD, but neither has produced sufficient research data regarding use and application in Hispanic women. Evidence-based guidelines are clinical recommendations provided to assist healthcare professionals optimize preventive care (Marek, 1995). As a result, therapeutic lifestyle changes, referred to by the acronym "TLC," became an effective treatment to prescribe as first-line treatment for certain CHD risk factors in women for cardiovascular health.

### **What is a heart-healthy lifestyle and how does it support cardiovascular health?**

Health behaviors are embedded in the everyday conduct of the "business" of daily living, demonstrated by our actions (Everson-Rose & Lewis, 2005). Behaviors that produce beneficial health consequences comprise a "healthy lifestyle." This results in a "style of life" deemed as a positive approach toward living that drives individuals to reach their highest potential; in this case, achieve cardiovascular health (Walker, Sechrist, & Pender, 1987). Cardiovascular health consists of lifestyle behaviors and activities that supports optimal well-being for a more fulfilling and rewarding life (NHLBI, 2005). Approaches to cardiovascular health are modes of disease prevention and risk management that emphasize behavioral modifications, as well as therapeutic and restorative measures (Grundy, et al., 2001). In short, TLC supports the phenomenon of cardiovascular health in this study (see *Figure 1-1*).

### **Summary**

Scientific investigations, such as national educational campaigns, behavioral studies, and randomized clinical trials, have elucidated mechanisms underlying

preventive medicine to best address Hispanic health issues in the US, particularly those concerning Mexican-American women. First, explanations regarding knowledge, awareness, and the predictive power of known CHD risk factors for disease prevention in women have been clarified. Unfortunately, Mexican-American women are less aware and less knowledgeable about the development of CHD than other women. Therefore, they frequently do not recognize symptoms associated with CHD risk factors.

Second, reports guiding the therapeutic management of CHD through lifestyle modifications and clinical practice guidelines have been published. Both sets of clinical practice guidelines focused on adult women with a broad range of cardiovascular risk. Drawn from study samples consisting primarily of NHW women, they each lack specific analyses for racial-ethnic group categories, as well as subgroup differentiation. To date, the *Framingham Risk Score for Women* has not been empirically tested in Hispanic females, while the well-known Framingham CHD predictor equations require manual adjustments to adequately assess CHD risk when used in Hispanics.

These two major research outcomes help clinicians implement preventive care strategies, as well as offer recommendations to avoid initial or recurring cardiovascular events. As a result, “lifestyle” has emerged as an extremely useful construct in health-related research. By quantifying health behaviors, this construct provides empirical support and, thus, was used in this study (Walker & Hill-Polerecky, 1997).

## **Heart-Healthy Lifestyle Behaviors of Mexican American Women**

### **What is known about heart-healthy lifestyle behaviors of Mexican-American women?**

For the purposes of this literature review, research on heart-healthy lifestyle behaviors of Mexican-American women was divided by its corresponding domain, illustrated in *Figure 1-2*. Studies investigating lifestyle behaviors associated with disease prevention were examined in the first section. Due to the paucity of research of physical activity, heart-healthy nutrition, obesity and weight management, and cigarette smoking on health promotion, the literature review extended back three decades.

Studies exploring the chronic, but treatable conditions of hypertension, diabetes, and dyslipidemia were evaluated in the second section. A careful screening process was required in light of the abundance of research investigating these CHD risk factors. Only those studies pertaining to self-care management health behaviors associated with therapeutic lifestyle changes were included in this literature review. Therapeutic lifestyle changes are now a first-line prescription for healthier lifestyles among women (Grundy, Pasternak, et al., 1999; Mosca, et al., 2007).

Though severely limited, the third section presents research of psychosocial and cultural influences on cardiovascular health and lifestyle behaviors. Lifestyle behaviors are considered modifiable activities that are under the individual's volitional control and can therefore be altered. This information is critical to understanding the perceptions of health promotion of Mexican-American women in this study that might either predispose or inhibit them from adopting heart-healthy lifestyles.

## **Research on Lifestyle Modifications for Disease Prevention**

### **Physical Activity**

Among the few studies available on Hispanic women, Mexican Americans are reported to be less physically active, and overweight or obese with higher waist circumference and body mass index (BMI) measurements than other ethnic groups (Allan, 1998; Crespo, et al., 2000; Dergance, et al., 2005; Juarbe, Turok, & Perez-Stable, 2002). Data from these studies indicate that Mexican-American women do not perceive higher weights and greater BMIs as a risk for CHD compared to NHW women. Mexican/Mexican-American women in Texas and California are comfortable weighing more, making larger body frames culturally acceptable (Allan, 1998; Juarbe, et al., 2003). However, constraints related to “women’s work” and responsibilities as a “wife and mother,” imposed by social and cultural values, were found to interfere with Mexican/Mexican-American women’s intention to engage in regular physical activity (Juarbe, et al., 2003).

The prevalence of leisure time physical inactivity has been compared in 4893 Mexican-American, 5071 non-Hispanic black, and 8146 NHW women and men (Crespo, et al., 2000). Mexican-Americans had the highest prevalence of inactivity in every category of social class that was measured. Inactivity was most prevalent among the least educated, those working in blue-collar jobs and living below the poverty line (Crespo, et al., 2000). Overall, women across racial-ethnic groups had a higher incidence of leisure time physical inactivity than men.

A randomized controlled trial designed to assist women become more physically active evaluated the effects of a preparatory course (R. Collins, Lee, Albright, & King, 2004). Of 51 women who participated in the precourse assessment, consisting of 73.2% Latina, 15.9% White, 3.7% African-American, and 3.7% Asian, only 38% of women returned for the postcourse assessment. Illness, unavailability of childcare, and lack of time were given as reasons for absences. Despite a low return percentage, knowledge gained about leisure time physical activity was significant (precourse mean =  $60.70 \pm 16$ , postcourse mean =  $78.48 \pm 15$ ,  $p < .001$ ), indicating almost a 20% increase of knowledge as a result of participating in the eight-week course.

A more physically active lifestyle is contingent on the security of residential neighborhoods. Low SES and residential segregation of inner city neighborhoods prevent physically active lifestyles in many racial-ethnic groups, including Hispanics. This impediment is mostly due to issues with safety, limited recreational centers, or unavailability of exercise facilities (Mobley, et al., 2006; Williams & Collins, 2001). These issues suggest that the relationship between social class, race, ethnicity, and disease is an important determinant of health and may be mediated by lifestyle behaviors (Dergance, et al., 2005; LaVeist, 2002).

The present study contributed to these issues by examining the degree of influence of predictor variables on cardiovascular health-promoting lifestyle behaviors. Although ample evidence has shown that women from racial-ethnic groups engage in less physical activity than NHW women, an appropriate balance of physical activity and food intake maintains weight sufficiently to support heart-healthy lifestyles. Therefore, it is

important to consider the trends of obesity and being overweight in Mexican-American women.

### **Overweight and Obesity**

Generally, overweight among adults is defined by a body mass index (BMI) that is greater than 25 but less than 30, while obesity is defined as a BMI greater than 30 but less than 40, and severe obesity is a BMI greater than 40 (NHLBI Obesity Education Initiative Expert Panel). By this definition, an onrush of overweight and obese people is rising to epidemic proportions in the US (Stein & Colditz, 2004). This trend magnifies the already elevated risk of obesity-linked diseases that increases with age and includes CHD. (Mosca, Appel, et al., 2004).

Overweight status and BMI levels are considered cardiovascular risk factors across Hispanic subgroups in the US. Mexican-American women (BMI = 27.0) were found to have higher BMI levels than Cuban-Americans (BMI = 25.5) and Puerto Ricans (BMI = 26.6) (Crespo, Loria, & Burt, 1996). These measures suggest a greater prevalence of overweight status in Mexican-American women (N = 1964, 41.8%) than Cuban-American (N = 497, 31.4%) and Puerto Rican (N = 835, 40.0%) women. Additionally, poverty ( $\beta = .388, p = .001$ ) and being female ( $\beta = -.300, p = .01$ ) were significant correlates of obesity in Mexican-Americans (N=7052) (Pawson, Martorell, & Mendoza, 1991).

Further, Mexican-Americans with moderate levels of overweight and obesity as children and young adults tended to weigh more as older adults (Pawson, et al., 1991). Obesity research on young adults from 18 to 24.9 years, measured by BMIs in

combination with tricep/subscapular skinfold thicknesses, were cautiously compared against other age categories. Particularly, if young adults are the reference group, having increased tendencies to be leaner than older age groups (Frisancho, 2007).

The prevalence of obesity also is known to increase with age in women and men (Mokdad et al., 1999; Stein & Colditz, 2004). Women, however, appear to have higher rates overall than men, and Hispanic women have higher rates than NHW women (Crossrow & Falkner, 2004; Flegal, Carroll, Ogden, & Johnson, 2002). Measured by waist circumference, body fat composition is another component of overweight status and obesity in women. Data from the Nurses' Health Study evaluated the effects of body fat composition on the development of CHD (Stangl, et al., 2002).

Central adiposity, or abdominal obesity, is metabolically linked to insulin resistance in women (Rexrode et al., 1998). Abdominal obesity in Mexican-American women had a three-fold increase of CHD risk, but the effects of abdominal obesity on lifestyle behaviors have not been well documented (Stangl, et al., 2002). Nevertheless, the relationship between increasing BMI and CHD risk is well established (NHLBI Obesity Education Initiative Expert Panel, 1998). The present study identified health perceptions associated with weight status and food consumption in Mexican-American women that also incorporated nutritional intake.

### **Heart-Healthy Nutrition**

Heart-healthy nutrition consists of five or more fruit and vegetable servings per day, six or more servings of grain products per day (especially whole grains), at least two servings of fish per week, less than six grams of salt per day, low-fat dairy products, and



choosing fats with less than two grams of saturated fat per serving (AWHONN, 2001). For women in a high-risk category, increased consumption or supplementation of omega-3 fatty acids and folic acid is recommended, as well as limited intake of trans-fats, cholesterol (<300 mg/dl), and saturated fat (<10% of total calories) (Mosca, Appel, et al., 2004). Whole milk has been identified as a major contributor of fat in persons who consumed high fat diets (Knapp, Haffner, Young, & Stern, 1988). Furthermore, information about dietary fat intake of US Hispanics is limited.

Recently, restaurant eating and food store shopping were examined in a randomized community trial that took place in California with 357 predominantly Spanish-speaking Latinas between 18 and 67 years (mean =  $39.9 \pm 9.9$ ). Increased restaurant use, particularly fast-food consumption, was evaluated as a contributory factor to the rising obesity epidemic (Ayala, et al., 2005). Overall, 43.1% of women preferred visiting fast-food restaurants at least once weekly (mean =  $1.03 \pm 1.25$ ) (Ayala, et al., 2005). This is an alarming trend of unhealthy eating habits, affecting young, poor, yet more acculturated Latinas.

Women who participated in this randomized trial were first-generation Mexican immigrants (94.7%) residing in the US (mean =  $16.1 \text{ years} \pm 10.8$ ) and overweight (39%) or obese (41.6%) (mean BMI =  $29.7 \pm 5.6$ ). Food shopping choices were supermarkets (33.0%), grocery stores (31%), and discount or bulk-purchase stores (29.6%). Despite the availability of fewer healthy options, a high preference to shop at stores that catered to a Mexican clientele was observed, contributing to a growing CHD risk for overweight and obesity.

Having less food shopping options prevents a balance between caloric intake and energy output, maintaining this balance underscores healthy nutrition (Ayala, et al., 2005; Booth et al., 2001). A 24-hour dietary recall in 1404 Mexican-American men and 1449 women between 25 and 65 years found significant differences of nutritional intake by migration status, regardless of acculturation level (Dixon, Sundquist, & Winkleby, 2000). Migration status distinguishes those individuals who are Mexican-born and residing in the US from those who are US-born.

Dividing study participants into three groups by country of birth and language preference accentuated cardiovascular risk: (a) Mexican-born and Spanish-speaking; (b) US-born and Spanish-speaking; and (c) US-born and English-speaking (Sundquist & Winkleby, 1999). Overall, Mexican-born individuals had healthier nutrient intake than those who were US-born, supporting past studies claiming that traditional Mexican diets tended to be healthier than Westernized ones (Guendelman & Abrams, 1995). Measuring nutrient and caloric intake, however, was beyond the scope of the present study, but nutritional habits by self-report were measured. Study findings indicated whether or not Mexican-American women understood the relationship between healthy versus unhealthy food choices and CHD risk, regardless of language spoken and acculturation level. Higher levels of acculturation have been significantly associated with cigarette smoking, another lifestyle behavior linked to escalated health risk (Bethel & Schenker, 2005).

### **Cigarette Smoking**

Early studies indicate the prevalence rate of smoking among Hispanics in the US was relatively low in comparison to NHW (Marcus & Crane, 1982). The number of

Hispanics in these studies, however, was not large enough to be a representative sample or produce reliable estimates for analysis. Over the next decade, data collected from the HHANES showed Mexican Americans (18.8%) had an overall lighter smoking pattern than Cuban-Americans (48.6%) and Puerto Ricans (35.5%) (Crespo, et al., 1996).

Smoking was measured by the number of cigarettes smoked per day (20 cigarettes = one-pack). Age-adjusted smoking prevalence rates showed similar results, indicating 23.8% Mexican-Americans smoked compared to 25.8% Cuban-Americans and 31.4% Puerto Ricans. Additionally, in those who had hypertension, smoking prevalence was highest in Mexican-Americans than the other groups.

In contrast, about one in five subjects who reported light smoking behavior were actually heavy smokers in studies that included cotinine validation (Pérez-Stable, Marín, Marín, Brody, & Benowitz, 1990). Alternatively, women with seven to eleven years of education had higher smoking rates whether they were Mexican-American (N = 3326), Cuban-American (N = 865), or Puerto Rican (N = 1220) (Haynes, et al., 1990). After adjustments, Mexican-American women (23.8%) were still less likely to smoke than Cuban-American (24.4%) and Puerto Rican (30.3%) women. Smoking prevalence rates were noted to be higher among more acculturated Hispanics across ethnic groups and age categories when compared to NHW (Haynes, et al., 1990). Interestingly, acculturation levels were only significant for Mexican-American women ( $p < .05$ ), suggesting differences between women who hold a Mexican-orientation (19%) versus a more American-orientation (28%) (Haynes, et al., 1990; Wilkinson, et al., 2005).

Recently, the influence of cigarette smoking on health risk was evaluated in women from under-represented groups in the WISEWOMAN project. The WISEWOMAN project targets those uninsured women with low-incomes, less education, and limited access to healthcare services. About one-fourth (26%) of all enrollees (n = 5596) reported smoking cigarettes (Finkelstein, Khavjou, Mobley, Haney, & Will, 2004). After adjustments for age, education, BMI, and other community characteristics, Hispanic women (12%,  $p < 0.05$ ) were significantly less likely to smoke than NHW women (28%).

Smoking trends in vulnerable populations were attributed to marketing and promotion advertisements, magnified by the availability of relatively few intervention programs and anti-smoking campaigns in Hispanic communities (Fiore, 2004; Wilkinson, et al., 2005). Equally important are the atherogenic effects from direct and indirect tobacco smoke that accelerate the development of CHD, making it vital to prevent smoking in high-risk populations (CDC, 2006; Stampfer, et al., 2000). Given the young median age of Hispanics, this study identified factors associated with adverse health consequences of smoking in a group of Mexican-American women.

### **Summary**

In summary, a lifestyle that limits tobacco use, controls weight, increases physical activity, and chooses healthful foods is important to cardiovascular health promotion. Physical inactivity and obesity are well-established independent risk factors of CHD in NHW, but their role in health promotion among Hispanics and other racial-ethnic groups is less clear. Unhealthy dietary behaviors as a result of higher acculturation, increased

restaurant eating, and fast-food consumption are linked to overweight and obesity among Mexican-American women and men, elevating CHD risk. Among Hispanics with Mexican ancestry, Mexican-born women and men residing in the US had healthier nutrition profiles despite lower levels of education and living below the poverty line. As a result, the effects of migration status are important determinants of health promotion regarding dietary patterns and food choices. Current evidence indicates that smoking prevalence and patterns of tobacco use among vulnerable populations are low, but arise from complex interactions that include SES indicators, biological or genetic protection, acculturation levels, and public marketing campaigns.

On the other hand, little is known about how therapeutic lifestyle changes modify CHD risk outcomes to maintain healthier lifestyles in vulnerable populations. Important relationships have been identified between lifestyle behaviors and health status, particularly in those individual with cardiovascular risk. Accumulated evidence points to therapeutic lifestyle changes for CHD prevention and risk reduction. However, healthy lifestyle changes are a formidable challenge to everyone involved, ranging from the clinicians who offer recommendations, individuals who attempt to adhere to them, and families who support and encourage it. Hence, research on therapeutic lifestyle changes is in its infancy stages. Culturally appropriate strategies are needed to promote health in under-represented groups, particularly in those suffering from chronic illnesses. Hypertension, diabetes, and dyslipidemia are the aforementioned illnesses that substantially increase cardiovascular risk.

## **Research on Self-Care Management Behaviors for Risk Reduction**

### **Hypertension**

The relationship between blood pressure and cardiovascular risk is known to be strong, continuous, consistent, and independent of other risk factors (Haffner, Mitchell, Stern, Hazuda, & Patterson, 1990; Kannel, 2000). It is well established that the higher the blood pressure, the greater the risk for a heart attack, stroke, heart failure, and kidney disease.

The prevalence of high blood pressure has dramatically increased, affecting more than 65 million US adults over 18 years of age (Fields et al., 2004). By age 55, individuals undiagnosed with hypertension have a 90% chance of developing it (AHA, 2010a; Woltz et al., 2000). Given the increase in obesity and the aging population, this rising trend of hypertension is not unexpected.

African-Americans/non-Hispanic Blacks (36.9%) in the US are reported to have an overall higher prevalence of hypertension than other racial-ethnic groups (20.2–26.8%) (Seedat, 1996; Zhao, Ford, & Mokdad, 2008). Yet, a relatively low number of studies have been conducted in Hispanics to report relevant data (Goslar et al., 1997; Lorenzo et al., 2002; Samet, Coultas, Howard, Skipper, & Hanis, 1988; Soto-Greene, et al., 2004). Over the last decade, data show that awareness, treatment, and even control of hypertension have increased in the US, but this is accompanied by an increased prevalence of hypertension among US adults, more so in some populations than in others (Egan, Zhao, & Axon, 2010). As a result, the burden of hypertension and other related

conditions are likely to increase in Mexican-Americans (Bersamin, Stafford, & Winkleby, 2009).

This implication is important, given that a staggering percentage of Hispanic women (51%) and men (55%) are overweight and obese (Bersamin, et al., 2009). Other lifestyle behaviors that affect hypertensive status are a healthy diet, reduced salt intake, nominal alcohol consumption, regular exercise, and stress management (AWHONN, 2001; Cooper-DeHoff et al., 2007). Recently, racial-ethnic disparities were examined based on hypertension-related lifestyle behaviors in 36,770 US women with self-reported hypertension from five different race-ethnic groups: NHW=29 237, non-Hispanic black=4288, Asian=445, American Indian/Alaska native=553 and Hispanic=2247 (Zhao, et al., 2008). Using NHW women as the referent group, findings from the 2003 Behavioral Risk Factor Surveillance System (BRFSS) demonstrated that race and ethnicity are independent predictors of lifestyle behaviors related to the control of hypertension in women (Zhao, et al., 2008).

Further, age-adjusted percentage of hypertensive women who met physical activity recommendations was significantly higher in NHW than in non-Hispanic black and Hispanic populations ( $p \leq .001$ ). Fruit and vegetable consumption of 5 or more servings per day did not differ significantly by race and ethnicity. Alcohol consumption or binge drinking were significantly higher in NHW than other groups ( $p \leq .001$ ). Consistent with previous research investigating hypertension as a cardiovascular risk factor in three Hispanic subgroups of women (N=1964 Mexican-American, N=835 Puerto Rican, and N=497 Cuban-American), hypertensive Mexican-American women

were more likely to be overweight and least likely to engage in leisure time physical activity (Crespo, et al., 1996).. Additionally, less education was related to a consistently higher prevalence of hypertension in women, suggesting future research of sociocultural factors might improve lifestyle behaviors, as investigated in the present study.

Unawareness of hypertension was associated with poor access to healthcare, lack of Medicare information, lack of transportation, knowledge, language and cultural barriers, and cultural health beliefs of older Mexican-Americans over the age of 65 living in Texas, New Mexico, Colorado, Arizona, and California (Satish, et al., 1997). Of the 60% diagnosed with hypertension, more than one-third were unaware of the condition and then only a slight 10% had reached control thresholds. Similarly, young adults with stage 1 hypertension were unaware (65%) and untreated (71%) (Bersamin, et al., 2009). Among those receiving treatment, 56% had poor control of hypertensive states, while 23% had progressed to stage 2 or higher.

Hypertension remains a treatable cardiovascular risk factor, and therefore, largely controllable, when it is recognized and detected. Overall, 78% of adults are aware of hypertensive states, but control varies by age, race, and sex (Ostchega, Yoon, Hughes, & Louis, 2008). Although there was little variation in control of hypertensive states with drug therapy, approximately 50% of Mexican-Americans were receiving antihypertensive medicine compared to 69% of NHW and 72% non-Hispanic Blacks. These findings are based on higher control thresholds, including a new pre-hypertensive category, defined as a systolic blood pressure of 120-130 mmHg or a diastolic blood pressure of 80-89 mmHg, mandated by the JNC 7 (Chobanian, et al., 2003). Profuse evidence suggests that



hypertension is a contributory factor to CHD development and that risk increases with age (Fields, et al., 2004; Ostchega, et al., 2008). Unfortunately, hypertension awareness for detection and control among US adults age 18 years and older has not changed significantly by age, race, or sex with control rates disappointingly low from reaching the *Healthy People 2010* goal of 50%, and treatment rates only increasing by 10% (Kottke, Stroebel, & Hoffman, 2003; US DHHS, 2000). Further, goals of the National High Blood Pressure Education Program are to increase awareness, treatment, and control of hypertension to reduce overall morbidity and mortality (NHLBI, 2010). Therefore, the JNC 7 also recommended lifestyle modifications as effective treatment strategies for hypertensive individuals.

Although health promotion research of Mexican-American is scant, new information on therapeutic lifestyle changes for improved awareness and control of hypertension in Hispanic populations is slowly beginning to advance. Hypertension is a serious CHD risk factor of Mexican-American women, particularly because it is frequently unrecognized and undetected, and therefore, uncontrolled. The present study evaluated self-reported knowledge levels and perceptions of hypertensive states of Mexican-American women with the possibility of revealing unknown influences that may improve knowledge and awareness, and unexpected determinants of current health beliefs on lifestyle behaviors. Hypertensive adults were often overweight and or obesity and diabetic, a well recognized risk factor cluster of CHD. Diabetes is now acknowledged as a multidimensional metabolic disease with morbidity and mortality

attributed to alterations in the vascular system rather than simply a disease of altered glucose metabolism (Grundy et al., 1999).

## **Diabetes Mellitus, Type 2**

Overwhelming evidence validates that type 2 diabetes, or insulin resistance, accelerates atherosclerotic heart disease or CHD (Beckman, et al., 2002; Grundy, Benjamin, et al., 1999). Insulin resistance is defined as a defect in the ability of insulin to drive glucose into skeletal muscle (Stevens, Lynn, & Glass, 2002). Ample research evidence exists on diabetes, ranging from its pathogenesis and causation to effective care and treatment, including preventive services (DERI Study, 1991; Festa et al., 2000; Haffner, Lehto, Ronnema, Pyorala, & Laakso, 1998; Quinn, 2002).

However, when comparing research that investigates the relationship between diabetes and cardiovascular diseases (referred to as *cardio-diabetes* research) that is specific to a health promotion focus in vulnerable populations, it is extremely undersized (Kannel & McGee, 1979; Laakso et al., 1995; Stanciu, Peralta, Emanuele, & Emanuele, 2002). The dearth of health promotion research is critical because Hispanics are twice more likely to have diabetes than NHW. Of the total US Hispanic/Latino population, 20 years and older, the prevalence of diabetes in Mexican-Americans is approximately 2.5 million, or 9.5%, and rapidly climbing (American Diabetes Association, [ADA], 2005). The percentage of awareness of diabetic states among Mexican-Americans is unconfirmed, but in the general population, about one-third of adults lacked awareness and knowledge about diabetes, including its cardiovascular risk (ADA, 2005).

A longitudinal, randomized clinical trial investigated metabolic control, knowledge, and health beliefs of Mexican-Americans with type 2 diabetes, as part of the Starr County Diabetes Education Study (Brown et al., 2000). The study sample consisted of 360 predominantly Spanish-speaking participants from a rural Texas community bordering northern Mexico with 97% Hispanics of Mexican-origin. A bivariate relationship between diabetes knowledge and acculturation was statistically significant with a large correlation ( $r = .36, p = <0.001$ ) indicated less acculturated Mexican-Americans were less knowledgeable about diabetes. Further, the mean knowledge score was 60% overall, consistent with baseline knowledge levels in other studies (Brown, 1992).

Three other Texas research teams from the San Antonio Heart Study led by Haffner (1991), Hazuda (1988), and Hunt (2002) have investigated diabetes among Mexican-Americans over a 20-year time period, using NHW as the referent group. The San Antonio Heart Study cohort had 5,158 Mexican-Americans between the ages of 25 and 64 years. Major scientific contributions were made regarding obesity-related conditions associated with cardiovascular risk, including the effects of acculturation and other sociocultural factors on diabetes.

In the San Antonio Heart Study, Hunt et al. (2002) examined the associations between ethnic group and mortality described by three separate categories: (a) all-cause, (b) cardiovascular, and (c) CHD. The study sample consisted of 921 NHW and 1,438 Mexican-Americans between the ages of 45 and 64 years at baseline. Published findings indicated that after age- and gender-adjusted hazard ratios, Mexican-Americans have a

50% greater risk of all-cause mortality, a 70% greater risk of cardiovascular mortality, and a 60% greater risk of CHD mortality than do NHW (K. J. Hunt, et al.).

Additionally, after covariate adjustments, diabetes status and insulin use appeared to modify the mortality differential between Mexican Americans and NHWs. Diabetic Mexican-Americans who did not use insulin were at higher risk of all-cause mortality (HR [hazard ratios] =1.94, 95% CI: 1.23-3.06), cardiovascular mortality (HR=2.37, 95% CI: 1.25-4.52), and CHD (HR=3.20, 95% CI: 1.12-9.09) than diabetic NHWs not using insulin (K. J. Hunt, et al., 2002). Following adjustment for mortality risk factors, all-cause cardiovascular mortality had a two-fold excess risk and CHD mortality had a three-fold excess risk in Mexican-Americans whose diabetes was not treated with insulin. Interestingly, this study discovered that having a “less severe” diabetic condition, not requiring insulin use, poses a lethal risk in Mexican-Americans. This implies a health disparity issue concerning diabetic treatment, questioning whether or not medication was accessible had it been required.

In contrast, a Colorado research team found that diabetic Hispanics were at lower rather than higher risk of CHD incidence, cardiovascular disease mortality, and CHD mortality compared with NHWs (Swenson, et al., 2002). Prevalence of diabetes and mortality rates among Hispanics from the San Luis Valley Diabetes Study were examined with a Hispanic population of 44% (Rewers, Shetterly, Baxter, Marshall, & Hamman, 1992 ; Swenson, et al., 2002). Deaths that occurred between 1984 and 1998 in 1,862 Hispanic and NHW participants were examined, using medical records to classify cause of death. The study sample consisted of 1,338 participants without diabetes, divided into

767 NHWs and 571 Hispanics, as well as 524 participants with diabetes, divided into 174 NHWs and 350 Hispanics. After adjustment for risk factors, including diabetes-related factors, those findings persisted for cardiovascular disease (HR = 0.44, 95% CI: 0.26-0.74) and CHD (HR = 0.43, 95 % CI: 0.21-0.91) (Swenson, et al., 2002).

Furthermore, the San Luis Valley Diabetes Study indicated that CHD risk of cardiovascular disease and CHD death varied by diabetes status. Increased incidence of cardiovascular disease and CHD mortality was observed among nondiabetic participants in the presence of elevated LDL cholesterol levels, lower HDL cholesterol levels, and physical inactivity (Swenson, et al., 2002). Further, women with diabetes but without prior CHD have a cardiovascular risk that is similar to that of women without diabetes who have had a prior CHD event (A. Becker, Bos, DeVegt, & et al., 2003; Haffner, et al., 1998). These data emphasize the necessity of aggressive treatment in women with type 2 diabetes. Investigating lifestyle modifications for cardiovascular health, the focus of the current study, can remedy this situation.

In conclusion, approaches to diabetes education among Hispanics have not been widely studied, and traditional interventions have been found to be ineffective (Brown, et al., 2000). In the general population, women have been shown to carry a higher CHD risk due to diabetes than men, but whether this disparity holds for Mexican-American women is unclear (Haffner, Miettinen, & Stern, 1997; Hu et al., 2001; Lee, Cheung, Cape, & Zinman, 2000; Shai et al., 2006). The current study elucidated the disparity about diabetes-related knowledge and health beliefs associated with self-care management of diabetes. New insights into diabetes that extend across populations

emphasize the importance of understanding effective ways to achieve positive health outcomes in diabetic Mexican-Americans who are at-risk for CHD. Escalating this health risk is the presence of dyslipidemia, requiring even more therapeutic lifestyle changes for enhanced self-care management.

### **Dyslipidemia**

The importance of elevated total serum cholesterol and other lipids is undisputed as a CHD risk factor that drastically elevates when combined with hypertension and diabetes. In lipoprotein metabolism, increasing age is a known factor found to worsen atherogenic dyslipidemia (Graham-Garcia, Raines, Andrews, & Mensah, 2001). Pre-menopausal women have lower total cholesterol and LDL levels and higher HDL levels when compared to men (Castelli, 1988; Stangl, et al., 2002). Postmenopausal women experience adverse cholesterol changes that elevate triglyceride, total cholesterol and LDL levels, while diminishing HDL levels, suggesting a relatively alarming pattern of atherogenic dyslipidemia (Rosano, Vitale, Silvestri, & Fini, 2004).

In retrospect, neither the FHS nor the World Health Organization (WHO) Multinational **MON**itoring of trends and determinants in **C**ardiovascular disease (MONICA) projects revealed a significant relationship between elevated total blood cholesterol levels and CHD risk in women (Anderson, Castelli, & Levy, 1987; Kuulasmaa, Tunstall-Pedoe, Dobson, & et al., 2000). Added data analyses from four well-known prospective studies—the FHS, the Lipid Research Prevalence Mortality Follow-Up Study, the Coronary Primary Prevention Study, and the Multiple Risk Factor Intervention Trial—performed by Gordon and colleagues (1989) reported that increased

HDL reduced CHD risk in women by 3% compared to a 2% reduction in men among samples of NHW participants. A relevant finding, however, indicates that HDL level is a more potent risk for women than men. These study findings were generated from predominantly NHW samples, which immediately question generalizability to other racial-ethnic groups of men and women.

Although very little research focusing on lipid status (total cholesterol, LDL and HDL levels, and triglycerides) of Hispanics has been done, they have similar total serum cholesterol levels to NHW. However, Mexican-American men and women differ in total serum cholesterol levels ( $\geq 240$  mm/dL). Mexican-American men are similar to NHW counterparts (16% versus 16.1%), but only 14.2% of Mexican-American women had total serum cholesterol levels  $\geq 240$  mm/dL compared with 18.2% in NHW (AHA, 2007). Further data support total serum cholesterol levels of 240 mm/dL or higher to be similar in Mexican-American (19.4%) and Puerto Rican women (20.6%) but less in Cuban-American (16%) women (Crespo, et al., 1996).

Having LDL cholesterol levels of 130 mg/dL or higher elevates CHD risk. According to standard LDL levels of adult women, less Mexican-American women (30.7%) have an elevated CHD risk compared to NHW women (33.8%) and men (38%). Having HDL cholesterol levels of less than 40 mm/dL also elevates CHD risk. According to standard HDL levels, more Mexican-American women (13%) compared to NHW women (8.8%) have an elevated CHD risk (Rosamond, et al., 2007).

High triglyceride levels are a CHD risk independent of HDL cholesterol levels. In general, 75% of women have an elevated CHD risk from high triglycerides compared to

30% of men (Hokanson & Austin, 1996). Evidence from one early study on lipid status of Hispanics supports higher triglyceride and lower LDL levels are found more in women than men (Kato, Soto, Goldberg, & Sosenko, 1991).

Racial-ethnic disparities of awareness and treatment of high cholesterol, hypertension, and diabetes as cardiovascular risk factors were explored in the WISEWOMAN project (Finkelstein, et al., 2004). The total sample of 5, 596 had a mean age of 51.7 years, with 3,348 NHW, 895 Black/non-Hispanic, 727 Hispanic, and 626 Alaska Native. Average total cholesterol levels were the highest for NHW women (217.2) and lowest among Hispanics (203.5). Hispanics had HDL levels that were significantly lower at 52.6 ( $p < 0.05$ ), after controlling for age, education, and BMI.

Interestingly, 53% of all WISEWOMAN participants were unaware of having high cholesterol levels upon enrollment. Further, more Hispanic women (66%) lacked awareness than Alaska Native (35%) and NHW (55%) women (Finkelstein, et al., 2004). Study results revealed an overall elevated CHD risk among WISEWOMAN participants from seven geographically diverse states in the US, emphasizing racial-ethnic disparities as an explanation for group differences.

In conclusion, Mexican-American men appear to have higher total serum cholesterol levels than women. Mexican-American women have lower incidence of elevated cholesterol levels, yet lack awareness of lipid status. Although high LDL, low HDL, and high triglyceride levels are associated with elevated CHD risk in women, a knowledge disparity is evident among Mexican-American women. Clearly, more research that identifies ways to increase knowledge and awareness of elevated cholesterol



levels and other lipids in Hispanics can clarify group differences among racial-ethnic groups. Actual measurement of serum lipid levels is beyond the scope of this study. However, the present study can contribute to health promotion by identifying important associations between knowledge and lipid status through self-reported ratings.

### **Summary**

While the literature is abundant with research on hypertension, diabetes, and dyslipidemia, an emergent pattern is characterized by the dearth of preventive research among Hispanics with a health promotion focus. Although statistical significance was inconsistent, the findings emphasize two important points: (a) an overall lack of knowledge and unawareness regarding hypertension, diabetes, and dyslipidemia; and (b) the heterogeneity of the Hispanic population, including consistent differences between those who share an ancestry of Mexican-origin.

In these studies, deficient knowledge and unawareness of health status regarding blood pressure, glucose, cholesterol and other lipid levels was observed in Mexican-Americans. Although women had an unfailing tendency for higher awareness than men, it was lower than that of NHW. Research studies indicate that underlying factors for this lack of awareness may not all be mediated by SES status and other environmental factors, but rooted in subjective and cultural norms associated with health beliefs and lifestyle-related risk factors (Egan, et al., 2010; Graham-Garcia et al.2001; Satish et al.1997). Further, adherence to recommended lifestyle guidelines involving diet, exercise, and weight control has not been well studied among Mexican-American women, yet research

indicates that these behaviors are associated with a reduced CHD risk for hypertension, diabetes, and dyslipidemia in NHW women.

Contrasting differences and mixed study results direct attention to the heterogeneity of the Hispanic population based on (a) dissimilar geographic locales, (b) sample ethnic composition and variation, and (c) the strong influence of health beliefs on metabolic control of CHD risk factors (Saudek, 2002). Research conducted in dissimilar geographic locales dispersed the myth of higher health illiteracy levels among non-English speaking people. Using the subject's preferred language choice facilitated a more accurate process of data analysis, interpretation, and reporting (National Alliance for Hispanic Health, 2001). However, geographic group differences, regarding the influence of acculturation, were evident when Hispanics from urban and rural environments were compared.

Two critical methodological considerations in behavioral research conducted in Hispanic subcultural populations were sample ethnic composition and the strong influence of health beliefs. Studies exhibited striking differences regarding knowledge, perception, and risk of hypertension, diabetes, and dyslipidemia when different Hispanic subgroups comprised one category. These differences also were observed among Hispanics of Mexican-origin, particularly when acculturation level was measured (Marín & Van Oss Marín, 1991). Avoiding the tendency to group all Hispanics together in research study samples is important. Lastly, the influence of subjective and cultural norms on health beliefs and perceptions cannot be ignored. Attention to all of these factors guided the design of the study.

Research that involves making contributions to disease-specific conditions has to take into account the demographics of the population. A thorough understanding of sociocultural demographic characteristics of Mexican-Americans provides a strong foundation for researchers to incorporate basic cultural values into the study design. Enhanced understanding of underlying Hispanic cultural dynamics of the continuum of health and illness effectively integrates important demographic and psychosocial determinants central to the health promotion focus of this study (Altman et al., 1998).

### **Research on Psychosocial Factors for Health Promotion**

#### **What is the study of acculturation and how is it relevant to Mexican-Americans?**

Acculturation is a highly individualized process of cultural change experiences. Cultural change is a long-term process, consistently referred to as “social change,” that occurs in individuals who are introduced to a new and different culture from their own (Berry, 2003; Hazuda, Stern, & Haffner, 1988; Rogler, Cortés, & Malgady, 1991). This is commonly experienced by Hispanic/Latinos who come to the US from 22 different Spanish-speaking countries. The process of cultural change induces “acculturative stress,” due to language differences, perceived cultural incompatibilities, and cultural self-consciousness (Masel, Rudkin, & Peek, 2006; Rodriguez, Myers, Mira, Flores, & Garcia-Hernandez, 2002).

Acculturation extends beyond language differences; rather, it has a multifaceted nature including individual perceptions, cultural adaptations, family dynamics, social relationships, and environmental influences between two cultural dimensions that can be theoretically displayed by four distinct acculturative types: *assimilation*, *integration*,

*separation*, and *marginalization* (Berry, 1980; Cuéllar, Arnold, & Maldonado, 1995). Individuals can *assimilate* within the dominant culture by selectively adopting, maintaining, or abandoning certain cultural traits. Individuals achieve biculturalism, or *integration*, by creating a new sense of identity and comfort in both cultural groups. Other individuals resist making any changes to conform and, therefore, retain a *separate* ethnic identity between groups. Lastly, individuals can fully submit to the new culture, only to be rejected and *marginalized* (Berry, 1980). Thus, acculturation is a key variable in understanding Hispanic/Latino social behavior and role expectations.

Acculturation is a long-term process that requires a thorough understanding to elucidate its role in Hispanic culture. Culture is a broad social concept comprised of common behaviors, thoughts, actions, customs, and beliefs shared among a group of people that bind them and provide ethnic identification (National Alliance for Hispanic Health, 2001). Ethnic identification is affected by cultural changes associated with the underlying mechanisms of migration effects (F. M. Padilla, 1985). Research of individuals with Hispanic ancestry in the US has to take into consideration the heterogeneity of the population, as has been said. Mexican-American cultural patterns of language, attitudes, behaviors, and customs differ in important ways from other subcultural groups, emphasizing the influence of cultural values on health beliefs and behaviors, social and psychological resources, and health service utilization (NHLBI Working Group, 2003).

Measuring the level of acculturation commonly operationalizes “culture” in social science research of ethnic minorities (Cabassa, 2003; Marín & Van Oss Marín, 1991).

Researchers argue, however, whether or not to include acculturation as a variable in health research, particularly as an antecedent to health status or a predictor of behavior (L. M. Hunt, Schneider, & Comer, 2004; Salant & Lauderdale, 2003). Two opposing positions underlie this query. One position claims that undertones of ethnic stereotypes are embedded in behaviors when presumptions about cultural characteristics that belong to a certain ethnic group differ from “mainstream” culture (Oboler, 1995). The other position holds that the essence of the study of acculturation itself posits the existence and identification of cultural differences between ethnic and mainstream cultural orientations (Magaña et al., 1996).

Critics of acculturation research advocate that the concept of acculturation is vaguely defined in the literature (Chun, Organista, & Marín, 2003). Based on a meta-analytic review, L. M. Hunt et al., (2004) assert that researchers conducting health-related research often neglect to explicitly define “culture,” and fail to acknowledge the immense diversity of racial-ethnic populations, including Hispanic/Latinos. Researchers, who commonly ignore these differences, mistakenly presume that homogeneity exists among people of diverse Hispanic origin (Marín & Van Oss Marín, 1991). L. M. Hunt et al. (2004) also point out that researchers who define measurement of acculturation simply as language openly disregard other influences, such as the influence of social networks, family dynamics, and American society at large. Researchers who unwittingly discount these notions overlook the complexity of the acculturation process and erroneously use language preference as a uni-dimensional measure to determine an individual’s level of acculturation (Marín, 1992).

Existing acculturation instruments, scales, and outcome measurements have been calibrated, tested, and applied in health-related research with relative rigor and psychometric sophistication (Dana, 1996). Acknowledging the complexity of the acculturation process and how to appropriately measure this construct identifies that a need to recognize the psychosocial changes associated with achieving biculturalism (Guido & Samuel, 2006). In this study, a tool that reliably measures acculturation by language and media use, as well as ethnic social networks was used (Marín, Sabogal, Van Oss Marín, Otero-Sabogal, & Pérez-Stable, 1987).

### **How does the acculturative process affect preventive health behaviors in Mexican-American women?**

Previous studies have shown that with increased US acculturation, favorable health behaviors in Hispanics worsen (Abraído-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999; Black & Markides, 1993; Guendelman & Abrams, 1995; Khan, et al., 1997). Current research consistently indicates that higher acculturation levels may lead to adverse health outcomes in Hispanics similar to those experienced by NHW, particular among Hispanics born in the US, regardless of language spoken (Ayala, et al., 2005; Borrayo & Jenkins, 2003; Dixon, et al., 2000; Larkey, et al., 2001). As Mexican-Americans spend more time in the US, they tend to become more acculturated and socially integrated into American society, which is largely manifested by switching language use from Spanish to English in the household. This change in linguistics does not necessarily mean that Hispanic cultural values have been replaced with American ones (Ayala, et al., 2005; F. M. Padilla, 1985). The notion that higher acculturation

levels do not necessarily alter inherent cultural beliefs about health and illness has not been studied in recent times (Marín & Van Oss Marín, 1991).

In conclusion, cultural lifestyle behaviors, such as eating and dietary patterns (Gregory-Mercado, et al., 2006), smoking and alcohol use (Otero-Sabogal, Sabogal, Perez-Stable, & Hiatt, 1995), physical activity and exercise (Crespo, Smit, Carter-Pokras, & Andersen, 2001) are influenced by the level of acculturation. As the time spent in the US lengthens, these lifestyle behaviors change, increasing CHD risk (Angel, Buckley, & Sakamoto, 2001). During the acculturative process, specific cultural health beliefs, attitudes, and values about health behaviors are altered. Achieving biculturalism can act as a powerful agent for social change and positively influence preventive health behaviors (Borrayo & Jenkins, 2003; Parrado, Flippen, & McQuiston, 2005).

Individuals “acculturate” at different rates along separate dimensions for language use, family roles, and health behaviors (Dana, 1996). Preventive health behaviors of Mexican-American women are influenced at three levels: (a) as a family member, (b) an ingroup member of the Hispanic community, and (c) a new member of American society and the existing healthcare system. From a Hispanic cultural perspective, healthcare providers are viewed as figures of authority because of educational levels and training proficiency, as well as special “healing” abilities (National Alliance for Hispanic Health, 2001). Thus, an improved understanding of factors associated with health promotion in Mexican-American women must include an examination of the influence of acculturation, as the present study was designed to do.

## **What are the normative beliefs of Mexican-American women toward menopause and cardiovascular health?**

For centuries, cultural norms and social values have been powerful enough to make women feel incomplete when the ability to have children is lost because of menopause (Martinez-Schallmoser, MacMullen, & Telleen, 2005). The menopausal experience of Latinas is called *el cambio de vida*, or change of life (Delgado, 2002). Studies about the menopausal experience in Latinas are sparse, and in the exploratory stages delving into attitudes and perceptions of older Mexican-American women. Data from two research studies disclose that attitudes, perceptions, and behaviors toward menopause are influenced by culture-specific health beliefs arising from cultural norms and social values (Bell, 1995; Silvas Villalobo, 1997-2007).

In order to recognize when to seek preventive healthcare services in the Western world, Mexican-American women need to understand the bodily changes that occur with menopause. Eliciting this information from Mexican-American women, and other Latinas, about such a personal and private experience takes a certain amount of *personalismo*, *confianza*, and *respeto* from researchers and clinicians. Interventions for preventive behaviors in women's health issues, such as Pap tests and mammography, have been established in NHWs, but the benefits of these advances have lapsed for Latinas (Larkey, et al., 2001).

In conclusion, cultural beliefs may affect how Hispanic women describe menopausal experiences. Typecasting it as either a "loss of womanhood" or a "disease," neither society nor physicians have responded well historically to this very personal and



private experience (Delgado, 2002; Thomas & Braus, 1998). Whether menopause is spontaneous or induced, abrupt hormonal changes may cause women to experience residual menopausal symptoms that are poorly understood (National Institute of Aging, 2005). The onset of menopause is predictable by age, ranging from 40 and 58 years, but its course is not; nor is the best way to manage it prescribable. Thus, menopause is a varied personal experience for all women.

### **What is known about the implications of menopausal status on CHD in Mexican-American women?**

Since women were included in clinical trials, research on hormone therapy before and after menopause is well established, as well as research on the atherogenic progression of menopausal status on CHD (Bailar, 2003; T. Gordon, Kannel, Hjortland, & McNamara, 1978; Grady et al., 2002; Hodis et al., 2003). Onset of menopause causes changes that quickly accelerate the development of CHD or aggravate its progression to create life-threatening situations and unexpected hospitalizations (Hodis, et al., 2003). A heightened CHD risk and elevated incidence of cardiac events occur whether menopause is spontaneous or induced, but every year that menopause is not reached reduces CHD risk by approximately 2% (Stangl, et al., 2002).

As has been said in previous sections, menopause affects lipid profiles, systemic blood pressure, serum glucose metabolism, and activities of daily living. Briefly, adverse changes in lipid profiles occur due to declining levels of estrogen. Higher prevalence of hypertension and diabetes lowers the quality of life in post-menopausal Mexican-American women (Gierach, et al., 2006; Kayana, Herrington, Vittinghoff, & et al, 2005).

Obesity and higher weights increase the vulnerability of post-menopausal Mexican-American women (Paul & Smith, 2005). Engaging in regular physical activity may become extremely difficult and challenging for some post-menopausal women. Thus, menopause brings a cluster of serious atherogenic factors that dramatically increase the risk for cardiovascular diseases.

In conclusion, the combination of adverse bodily changes that are atherogenic and associated with a deficit of natural estrogen connects menopause to the need for health-promoting lifestyle behaviors. Women of varying ages and cultures interpret menopause differently, and therefore, its management is different for every woman. In society, these differences generate multiple interpretations of health and illness arising from a certain level of knowledge and a subjective perception (Larkey, et al., 2001). For Mexican-American women, the response to symptom identification, recognition, and treatment is based on cultural interpretations of health and illness (Bates, Rankin-Hill, & Sanchez-Ayendez, 1997; Kleinman, 1988). Older post-menopausal women may possess differing knowledge levels and health status perceptions of engaging in heart-healthy lifestyles from that of younger pre-menopausal or even mid-life perimenopausal women. The present study was designed to examine the influence of menopausal status, knowledge and acculturation levels on cardiovascular health-promoting lifestyle behaviors.

**What is the current scope of knowledge of health-promoting lifestyles in Mexican-American women?**

Research evaluating the knowledge level of Mexican-American women regarding cardiovascular health is lacking, specifically related to CHD prevention and risk

reduction. The Spanish translated version of the Health-Promoting Lifestyle Profile (HPLP) is a direct measure of knowledge of health-promoting lifestyles, and was used in the present study (Walker, Kerr, Pender, & Sechrist, 1990; Walker, et al., 1987). In this instrument, knowledge of health-promoting lifestyle behaviors is measured by six subscales: nutrition, physical activity, health responsibility, stress management, interpersonal relations/support, and spiritual growth (Walker & Hill-Polerecky, 1997).

Six research studies demonstrated the widespread migration of Hispanics, who came to the US from Mexico, Central America, the Caribbean, and South America, by regional variation. Knowledge of health-promoting lifestyle behaviors among Hispanics residing in the Midwest was tested by Hulme et al. (2003) and Kerr and Ritchey (1990). Bond (2002) and Duffy (1997; Duffy, Rossow, & Hernandez, 1996) led research teams in the Southwest, while Kuster and Fong (1993) tested knowledge of Hispanics on the West coast. Demographics from these six studies consistently showed a relatively younger mean age group by means (27.7 to 32.8 years), roughly half women participants (46.8 to 57.7%), lower educational attainment (mostly grade school to some high school), and generally married or partnered (43.4 to 63.6%) subjects.

In comparing the subscales, spiritual growth, or self-actualization, ranked the highest followed by the interpersonal support subscale. The health responsibility subscale had the lowest score in psychometric testing and in non-Hispanic study samples. In the two studies investigating health promotion lifestyles of Mexican-Americans, the exercise subscale had the lowest score. In two groups divided by language ability, Kerr and Ritchey (1990) reported significant differences in the dimensions of self-

actualization, exercise, and stress management. The Spanish-speaking group consistently scored higher on all subscales except for interpersonal support than the English-speaking group. This means that the Spanish-speaking workers engaged more in health promotion activities. Knowledge scores of overall health-promoting lifestyle ranged from 2.4 to 2.7 on the 1 to 4 metric of item responses that allowed for meaningful comparisons of scores across subscales and studies (Hulme, et al., 2003; Walker & Hill-Polerecky, 1997).

Hulme et al. (2003) reported women engaged more in nutrition and health responsibility behaviors than men, while men engaged more in physical activity and spiritual growth behaviors than women. Kuster and Fong (1993) found men scored higher for exercise than women; married individuals scored lower for exercise and higher for nutrition than single ones; and older people tended to score higher for nutrition, health responsibility, stress management, self-actualization, and overall health-promoting lifestyle. Bond and colleagues (2002) only found nutrition differed significantly by age. Duffy (1997) reported a minimal influence from age and education on two of six health promotion practices that explained 15% of the shared variance. These findings are consistent with past research reports of higher caloric intake and physical inactivity commonly reported in Mexican-American women, while older women had more awareness of health status than younger women.

Knowledge differences by acculturation level were consistently associated with increased participation of health-promoting behaviors across studies. Acculturation level was reported to have a substantial explanatory effect on knowledge of health-promoting lifestyle behaviors, despite the use of different acculturation scales (Cuéllar, et al., 1995;

Deyo, Diehl, Hazuda, & Stern, 1985; Marín, et al., 1987). Additionally, it was evident that women who believed they were knowledgeable and understood health issues, regardless of age, education, marital status, income or prior health status, were more likely to engage in all six health-promoting lifestyle behaviors, demonstrating higher knowledge levels.

In conclusion, knowledge level is influenced by many factors, outside of cognitive ability. In Mexican-Americans, the grasp of knowledge is largely dependent on migration status and the depth of the acculturative stress experienced to achieve biculturalism. Research comparing both Mexican-born and US-born individuals supports that higher levels of acculturation are associated with increased knowledge, but this does not necessarily translate into healthier behaviors. The current study incorporated the contribution of demographic variables on acculturation and knowledge levels of Mexican-American women. Measuring the actual performance of these behaviors is beyond the scope of this study, but an important future research consideration. Further, current findings added to the small body of evidence in this understudied population.

**What are the behavioral beliefs associated with perceived health status in Mexican-American women?**

The contribution of perceived health status to knowledge of health-promoting lifestyle behaviors has not been well studied. Health perception is a critical psychosocial component of a health promotion program that influences cardiovascular health and lifestyle modifications (Grundy, et al., 2001).

Mexican-Americans incorporate cultural traditions, such as dietary modifications and spiritual elements, in efforts to prevent a cardiovascular event or in the self-care management of hypertension and diabetes (National Alliance for Hispanic Health, 2001). Kleinman (1988) and Landy (Landy, 1977) found Hispanics strongly valued cultural views of health and illness, which incorporate attitudes, beliefs, and perceptions.

Initial research on women's health perceptions emphasized a structural and functional health dimension. In a seminal qualitative study on women that included Latinas between 18 and 45 years, Woods et al. (1988) expanded our understanding of women's health perceptions. Perry and Woods (1995) revealed a surprising study finding regarding the health perceptions of older women in a later study. Despite the presence of chronic illnesses, older women focused less on the clinical emphasis and more on positive images of health in life. While healthcare professionals may view them as unhealthy, this finding suggests that older women increasingly view themselves as healthy in spite of having multiple system dysfunction and a compromised health status (Everson-Rose & Lewis, 2005).

Latinas have a holistic view about health, although this view was not investigated directly, McCarthy et al. (2004) confirmed this belief when health perceptions of older Latinas (57 to 81 years) from the US, Mexico, and Central America were explored. Anglo-American women tended to have a uni-dimensional health perception based on the presence or absence of disease, while Latinas had a composite view emphasizing spirituality more than physical functioning. Properties of the "good life" reported by McCarthy et al. (2004) divided into "states of being" or "states of doing" with each one

having a spiritual component, equating with “being healthy”. Similarly, other studies expanded on the Latinas’ holistic view of health (C. A. Collins, Decker, & Esquibel, 2004; Damron-Rodriguez, Frank, Enriquez-Haass, & Reuben, 2005; Yoho & Ezeobele, 2002). Perceptions about health promotion and maintenance among older Latinas were associated with positive attitudes and a good mentality, socialization, familial support, and spiritual satisfaction.

In younger women, three studies (Clingerman, 2006; Hartweg & Isabelli-García, 2007; Mendelson, 2002) found Latinas also highly valued spirituality, and shared the traditional belief that attributes the responsibility of health to God in two ways. One way is through prayer, which directly helps the individual. The second way is having doctors and nurses treat them whom God has chosen as healers. Other added themes of importance were the absence of illness, performing self-care (nutrition and exercise), and seeking preventive care. Study samples consisted of female Mexican-American migrant workers educated in the US, ages 21 to 66 years, with moderate to high acculturation levels. Hartweg and Isabelli-García (2007) compared Latinas between the ages of 25 and 64 years from Mexico and Central America, primarily from El Salvador and Guatemala, and found more similarities than differences, emphasizing that perceptions were best revealed by using the respondent’s preferred language.

In conclusion, although nursing research on individual health perception is vast, it is limited among Hispanics because too often researchers do not take into account the powerful influence of cultural values on health beliefs and behaviors. It is evident that Mexican-American women’s health perception, as a psychosocial variable of interest to

researchers, has an inherent component of spirituality. Spirituality has a strong cultural influence among Mexican-Americans, and was measured by the Spirituality Growth Subscale of the HPLP II in the current study. Study design also must account for cultural differences. Offering Spanish language survey instruments and the presence of bilingual investigator to offset any language differences between researcher and subjects' accounts for cultural differences in the current study (Delgado, Johnson, Roy, & Treviño, 1990; Marín & Van Oss Marín, 1991). These actions support the conduct of culturally sound research.

### **Summary**

The rapid growth of research on psychosocial factors and cardiovascular health and disease, over the past few decades, has brought about a greater focus on health promotion and maintenance. The ways in which people from different cultures describe health and attribute meaning to health and function in society are fundamental to an understanding of effect of culture on healthcare (Portillo et al., 2001). Understanding the psychological, environmental, and spiritual considerations of health conceptualizations of Mexican-American women will provide an insight for innovative behavioral approaches to “being heart-healthy” (Hartweg & Isabelli-García, 2007). Conceptualizations that consider the broader social and cultural context of people’s lives and reflect can pave the way for the development of culturally sensitive health services.

Cardiovascular health involves approaches to disease prevention and risk reduction. Health perception is a subjective perspective of one’s own general health and well-being (Hartweg & Isabelli-García, 2007). Knowledge is based on the quality of



education and learning ability (Bates, et al., 1997; National Alliance for Hispanic Health, 2001). Women, in general and particularly Mexican-American women, should be able to recount a basic definition of CHD related to a “heart attack.” They should also have a grasp of underlying CHD risk factors, including a rudimentary understanding of the metabolic syndrome. Thus, a lack of knowledge can permit a fallacy or fallible perception to persist and impede efforts to adopt positive lifestyle changes.

### **Conclusions and Gaps in the Literature**

Although Mexican-American women have been understudied, the research that has been done has tended to use qualitative methods to understand individual beliefs, perceptions, and behaviors. An increasingly complex social and cultural system makes qualitative data necessary. This methodology is preferred when little is known about a group’s behavioral patterns and beliefs. Further, the majority of quantitative research repeatedly compares Hispanics to NHW, African-Americans, and other vulnerable populations. Frequently, it is unclear which Hispanic women are being studied, because sample ethnic composition is not reported. Latinas in the US can be born in one of 22 different countries that make up the Hispanic population and share the Spanish language. Inappropriate grouping of different populations in a sample could confound research findings, making it difficult to distinguish between group differences.

Research on cardiovascular disease for sex-specific differences in seeking care, risk factors, prevention, symptom recognition, disease management, and cardiac rehabilitation has made great scientific advances for NHW women. In the present study, these factors are integrated into an investigation of relationships among variables that are

known predictors of healthier lifestyles. Although great advances in the healthcare of racial-ethnic groups and other US populations have been made over the last century, little clarity is offered about those factors that could better explain the disparities of CHD prevention and risk reduction in Mexican-American women. Those aspects were integrated into this investigation by study hypotheses that tested for significant relationships between variables and known predictors of healthier lifestyles.

Research focused on healthier lifestyle behaviors among Hispanics that incorporates a cultural element is emerging. Studies that accommodate “culture” into the design can uncover important information about the influences of individual preferences, family structures, and social networks. The primary aim of accommodating the cultural element is to understand the underlying psychological, social, and spiritual aspects that influence the development and progression of CHD, and potentially lower cardiovascular risk. This type of research is needed to provide a sound foundation for future development of culturally appropriate interventions and prevention programs, but it is being done in piecemeal fashion with researchers focusing on one healthy behavior or a combination of behaviors at a time. In this study, a cardiovascular health promotion focus was incorporated, investigating a more complete set of heart-healthy lifestyle behaviors among Mexican-American women, specifically observing for the influence of acculturation, menopause, knowledge, and perception in both English- and Spanish-speaking populations.

Much of the research on Hispanics who do not speak English or prefer to speak in their native language requires that researchers consider data collection instruments

available in both English and Spanish languages. Additionally, the Spanish version of the instrument must be equivalent to the English one because an improper translation may make responding to the questions for which the study was designed unachievable (Marín & Van Oss Marín, 1991). Choosing translated Spanish instruments is comparable in importance to the original process of instrument development, or even data collection and interpretation (Jones & Kay, 1999; Streiner & Norman, 2008).

Lastly, while further research exploring the intersection of culture and behaviors in Hispanics is needed, the heterogeneity of the population must also be considered. Therefore, only women who self-identified as Mexican-American were approached for participation. The current study also was designed using methodological considerations that would accurately reflect the state of the science.

## Chapter 3

### RESEARCH DESIGN AND METHODOLOGY

The purpose of this study was to identify predictors associated with healthy behaviors among Mexican-American women. Healthy behaviors that comprise a cardiovascular health-promoting lifestyle are regular physical activity, healthy nutrition, weight control or reduction, smoking cessation, and controlled hypertension, diabetes, and dyslipidemia (Mosca, et al., 2007). Evaluating knowledge levels, health perceptions, and behavioral performance underline the research methodology used in this study. Therefore, this chapter describes the research design, sample and sampling procedures, data collection protocol, study variables, survey tools, data analysis plan, and protection of human subjects.

#### **Research Design**

A quantitative study design using a cross-sectional survey methodology that includes four survey instruments was used to meet the specific aims of the study. Specific aims tested the relationships among the predictor variables of knowledge of CHD and risk, perceived health status, menopausal status, and acculturation level on Mexican-American women's report of engaging in cardiovascular health-promoting lifestyle behaviors. Only adult Mexican-American women free of a CHD diagnosis were recruited from six study sites in the northeast region of the US, having had a rapid influx of Mexican-Americans in the last decade (Yancey, Ortega, & Kumanyika, 2006). Spanish-language psychometrically tested instruments were used to collect data in a one-to-one physical encounter. Simple linear regressions tested the correlations between

study variables (Munro, 2004). Plausible explanations and interpretations of study findings ascertained through rigorous data analysis provided new evidence for cardiovascular health promotion in Mexican-American women.

### **Theoretical Framework**

A quantitative design was chosen for use in this investigation to more fully understand the underlying factors that predispose or inhibit Mexican-American women to engage in cardiovascular health-promoting lifestyle behaviors. The research design was guided by the basic tenets of the TpB, originally derived from the paradigm of value-expectancy theories (Ajzen, 1991). Value-expectancy theories are based on a well-established body of knowledge in the psychological literature. Modern models characterize and predict a person's intention to perform a specific behavior (Bandura, 1986). This premise is reliant on the notion that people's actions are greatly affected by personal beliefs concerning the probable outcomes of those actions (Ajzen & Fishbein, 1980). This is particularly pertinent in health research that investigates patterns of behaviors during the course of day-to-day living. The steps of the research protocol were therefore guided by these premises.

### **Methodology**

Research methods were divided into four sections: (a) participant selection process; (b) data collection procedures, (c) data analyses plan, and (d) protection of human subjects. The participant selection process described the accessible population, sampling procedures, study sites, and recruitment and enrollment strategies. Data collection procedures included a study timeline, research protocol, as well as descriptions

of the variables and survey instruments. Statistical techniques and records management were explained in the data analysis plan. Lastly, details of the protection of human rights were provided to safeguard study participants, concluding this chapter.

## **Participant Selection Process**

### **Sampling Method**

A nonprobability sampling method was used to access Mexican-American women from the US Hispanic/Latino population. Women were enrolled in this study, if they claimed Mexican ancestry and were free of a CHD diagnosis. Another determinant factor was exhibiting a willingness to discuss health status, current health practices, and knowledge levels. Therefore, a purposive sample was used to target adult Mexican-American women.

A sample size was calculated by a formula incorporating a  $\beta$ -power of 80% and a  $p < 0.05$  for level of significance. Using the Health-Promoting Lifestyle Profile-II survey questionnaire ( $r = 0.269$ ) yielded an  $r^2 = 0.724$  for a moderate to high effect size. This computation required 106 participants for an adequate sample size. Supplementary oversampling of 20%, equivalent to 21 additional participants, was applied for discretionary issues of incomplete or missing data. Thus, the total targeted sample size equaled 127 study participants, and the actual sample consisted of 128 respondents.

### **Inclusion and Exclusion Criteria**

**Inclusion Criteria.** The main inclusion criterion was ethnic self-identification, as a Mexican-American, *Chicana*, or a Hispanic/Latina with Mexican ancestry, (Arce & Hurtado, 1987; Oboler, 1995). Mexican-American women born either in Mexico or the

US, but currently residing in the US, were eligible for this study. The age criterion regards only adult women, defined as being at least 18 years old. A person is considered an adult at this age, having the right to give consent without parental permission.

Language spoken was another important inclusion criterion, emphasizing that women could be bilingual in English and Spanish or monolingual in either language. Cognitive ability must be sufficiently intact to describe present health status, as well as recount past health and illness experiences. Women at-risk for CHD were included in this study if they demonstrated one or more of the following risk factors: hypertension, type 2 diabetes mellitus, high serum cholesterol and other lipids, smoker or exposed to smoking, physical inactivity, unhealthy diet or eating habits, overweight or obese, or a positive family history of CHD (Grundy, Brewer, et al., 2004). Lastly, pregnancy states did not prevent any woman from participating in the study.

**Exclusion Criteria.** Women were excluded from this study if they presented with a compromised health status. In particular, altered cognitive processes, severe metabolic conditions and/or musculoskeletal conditions, extending to dementia, psychiatric illness, severe depression, arthritis, and end-stage renal disease, were assessed based on self-reported responses to questions concerning past medical history. These questions were included in a quick screening checklist that was created by the principal investigator.

If Mexican-American women also confirmed a diagnosis of CHD, they were ineligible for enrollment. Females under 18 years old are perfunctorily ineligible because heart disease in younger age groups tends to originate from congenital birth defects and

warrants a separate investigation. For the same reason, type 1 diabetes mellitus was another exclusion criterion. Men were excluded, as well, by study design. This study was specifically designed to assemble new knowledge about a lifestyle component in an understudied group of women.

### **Study Sites**

Most of the research on Hispanic populations tends to originate from the traditionally heavy-populated areas of the South and Southwestern regions of the US. Exploring the current demography, recent history, and unidentified culture of Hispanics in untested regions of the country is a salient research endeavor. The tri-state area of the Delaware Valley is one such region, located in the Northeastern part of the US and illustrated in *Figure 3-1*.

***Figure 3-1. The Delaware Valley Region***





Further, Roman Catholic Church parishes are worthwhile venues in which to recruit Mexican-American women for this study because a vast majority of them are members of the Catholic Church (Dolan & Hinojosa, 1994). The Delaware Valley in the Northeastern region of the US is currently experiencing a growing Hispanic population, as demonstrated by rising census reports from the Office of Research and Planning of the Archdiocese of Philadelphia (2007a). Six Roman Catholic Churches were designated as study sites, and are situated in Southeastern Pennsylvania, within the Philadelphia area.

St. Thomas Aquinas Catholic Church located in South Philadelphia and its sister parish, the Annunciation Blessed Virgin Mary (BVM), were two study sites used. The total population of St. Thomas parish is 12,562, with 2.2% of Hispanic origin. Ethnic composition is mainly Mexican and Puerto Rican (Archdiocese of Philadelphia, 2007b).

Four additional church study sites were used, including St. Agnes Catholic Church in West Chester, St. Patrick's in Norristown, Our Lady of Fatima in Bensalem, and Mision Santa Maria, Madre de Dios in Avondale. According to census reports from the Office of the Archdiocese of Philadelphia (2007a), all of these church sites reflect a massive implosion of the Hispanic population. From 1990 to 2000, St. Agnes had a dramatic increase, going from 5% to 20% Hispanic of 40,193 parishioners. St. Patrick showed an escalating 326% climb, which equals 12% Hispanics of the 16,117 comprising the total parish population. Our Lady of Fatima reports another remarkable 84% increase of Hispanics of 9,098 parishioners.

Mision Santa Maria, Madre de Dios consists of four more churches that Mexican/Mexican-Americans attend in the Delaware Valley region. St. Patrick in

Kennett Square had a 96% climb for 12% Hispanics of 18,211 parishioners. Assumption BVM in West Grove showed a striking 294% increase for 7% Hispanics of 19,647 parishioners. St. Gabriel in New Garden demonstrated an 87% rise, reaching 19% Hispanic of 15,081 parishioners. Our Lady of Consolation in Parkesburg reported a 155% of Hispanics of 23, 484 parishioners. Due to transportation and distance issues, Mision Santa Maria was not visited as regularly as the other church sites.

### **Recruitment and Enrollment**

**Recruitment.** Getting the church community involved, supported both *personalismo* (formal friendliness) and *confianza* (trust), two important Hispanic cultural values that build trust in interpersonal relationships (National Alliance for Hispanic Health, 2001). The principal investigator exhibited an embracing nature with an attitude that was warm and friendly that accelerated the relationship building process with church leaders and parishioners. Identification of “cultural insiders” within church communities encouraged the cooperation of formal and informal leaders with the course of recruitment (Yancey, et al., 2006). Cultural insiders are key people who are known and respected in the community. Church personnel, staff, and parishioners who actively participated in church events and volunteered to be group leaders, project directors, or educational facilitators were regarded as cultural insiders. Once identified, these people did not hesitate to assist with the recruitment and enrollment process.

**Enrollment.** Mexican-American women living in Philadelphia, PA and the surrounding areas of the Delaware Valley were recruited for screening and enrollment based on inclusion and exclusion criteria. When candidates were eligible and interested

in participating, the consent form and Health Insurance Portability and Accountability Act (HIPAA) authorization forms were offered and reviewed. Based on individual choice and preference, informed consent was discussed with each candidate in Spanish prior to obtaining written consent from each participant (Appendix F). In consideration of language differences and literacy levels, assistance was offered in the form of reading the survey questions aloud to subjects. The investigator is fluent in speaking and reading both English and Spanish languages. This procedure assured completion of all survey forms, while emphasizing a sampling approach that showed *respecto* (respect) to the study participant.

A false assumption that certain populations are unwilling to participate in health research was recently disputed in the literature. The predominant reason for the low numbers of racial-ethnic study participants was failure to establish access to a sufficient quantity of people from these groups from the onset of the study (Wendler et al., 2006; Yancey, et al., 2006). This component was integral to this study and ensured satisfactory attainment of an adequate sample of Mexican-American women.

### **Data Collection Procedures**

#### **Research Plan**

The research plan is outlined in *Table 3-1*, showing a two-year study timeline that consists of three representative phases, plus preliminary preparation that included the Institutional Review Board (IRB) application process for the University of Pennsylvania (UPENN). The *Local Phase* marked the beginning of the data collection process.

Quantitative data were collected from subjects in six Roman Catholic Church study sites until the sample size was reached.

The *Data Phase* included surveillance of all records, extending from monitoring paper documents, performing computer data entry and statistical analyses to interpretation of study findings. Data entry were methodically entered into a computer system using the chosen statistical software program, supported by regular statistical consultations. The first two phases concomitantly overlapped, leading into the *Results Phase*.

The last phase involved preparing data for reporting, including manuscript preparation for publishing. Formal dissemination of research findings will occur through the dissertation defense and journal publications. Developing a research plan with an action protocol that contains a series of steps facilitated efficient survey data collection and clearly marked its completion (Cook & Campbell, 1979).

**Table 3-1. Two-Year Study Timeline**

YEAR ONE April 2008 – May 2009		YEAR TWO May 2009 – June 2010	
<i>Preliminary Groundwork</i>	<u>Local Phase</u> <i>Data Entry</i>	<u>Data Phase</u> <i>Records Surveillance</i>	<u>Results Phase</u> <i>Project Closure</i>
Research plan	Sampling	Organization	Data reporting
IRB approval	Recruiting	Monitoring	Dissertation defense
Study site search	Screening	Entry	Dissemination of
Form preparation	Enrolling	Analyses	study findings
	Surveying	Interpretation	

## **Survey Data Collection Protocol**

Each step in the action protocol, summarized in *Table 3-2*, outlined a specific task that expedited timely achievement of the entire data collection process. The first step of the action protocol consisted of regular and consistent contact with faculty advisor, dissertation committee, and statistical consultant. The remaining steps were standard tasks that guided completion of survey data collection in approximately 14-months.

Prior to gaining IRB approval from UPENN, the Vicar for Hispanic Catholics, Msgr. Hugh Shields, was approached and asked for a letter of support. This step was critical to accessing Roman Catholic churches that served Mexican communities in the Delaware Valley. The Vicar recommended six church study sites with growing Mexican populations, and also supplied names of contact people at each site to set up visits. Church contacts were mostly nuns in charge of educational programs or community outreach efforts, and one priest at Mision Santa Maria. Formal and informal church leadership networks were identified over a six-month period. Regular communication during this time supported the process of relationship building with these unfamiliar Hispanic communities in the Northeastern region of the US.

Collaborating with church leaders maintained open channels of communication, identified practical venues for data collection, and aided the course of recruitment. Both Sr. Maria Lauren, from St. Thomas and the Annunciation BVM, and Sr. Mary Ann, from Our Lady of Fatima, printed approved study announcements in Church bulletins. They also made formal announcements after Sunday masses. Groups of women would gather on Church grounds, either in the parish office or school classrooms. At the Annunciation

BVM, the rosary-prayer garden was another gathering site for data collection, depending on the weather. Sr. Connie, a parish nurse from St. Patrick's Catholic Church, coordinated regular visits to the English-as-a-Second-Language (ESL) classes that are offered twice a year in the Fall and Spring.

At other times, more formal leadership networks were used to recruit interested participants. St. Agnes supports a "Latina Day" coordinated by Sr. Rosemary and hosted by a parish nurse volunteer that features a weekly discussion on different topics. Following these discussions, women would be approached about participating in the study. In the summer, St. Agnes offered a socialization course for children who were entering kindergarten the following year. While the children were in class, the mothers waiting in the Day Room were screened for study participation and enrolled, if eligible. The Day Room was a social gathering place for parishioners to interact with open seating to talk or play board games. It also included an area for children with books, toys, and kid-size tables and chairs.

Additionally, Sr. Connie from St. Patrick's Church in Norristown recommended to use a free social service agency in the community that serves the parish community called ACLAMO (*Acción Comunal Latinoamericana de Montgomery County*). This agency operated on a first-come, first-serve basis. People who wanted to visit with the Social Worker would arrive early in the morning to sign up. During this waiting period, a private office was used to screen women for eligibility and enroll them in the study. In addition, this agency offered a year-round structured program for mothers and young children. Children, under age five years, participated in formal education classes while

mothers attended ESL classes. Over a 14-month period of data collection, each site provided different venues for successful recruitment and enrollment of subjects.

Generally, during the face-to-face encounter, all potential participants underwent a screening process for eligibility, beginning with ethnic self-identification followed by the remaining inclusion criteria posed as questions on a screening checklist. At this encounter, an official flyer announcing the study was shown, and the purpose of the study also was explained. If eligibility requirements were met and an interest to participate in the study was evident, then the informed consent process took place (See Appendix F).

Following written informed consent, a code number verified enrollment of a subject. This numerical code was previously recorded on both the informed consent form and survey instruments during preliminary preparation of research packets. Coding ensured that subject information would not be identified or traced back to the individual. When respondents had finished completing survey packets, coded survey forms were visually scanned prior to placement in a collection container. This action safeguarded against subject privacy violations, maintained anonymity and assured survey completeness. Lastly, respondents were not monetarily compensated. Instead, as a token of appreciation of the time given, all respondents were given a colorful personalized pen and a Spanish-language patient education packet containing important information about heart-healthy lifestyles.

***Table 3-2. Action Protocol for Survey Data Collection***

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<b>Procedural Steps</b>	
1.	Meet regularly with faculty advisor, dissertation committee, and statistical consultant for guidance and mentorship; consistently review data with advisor.

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2. Approach church leaders to gain access and identify appropriate study sites.
3. Request letters of support from church leaders to gain IRB approval.
4. Prepare survey instruments:
  - (a) Print out the correct number of paper-and-pencil surveys needed;
  - (b) Print out two copies of the English and Spanish informed consent forms
  - (c) Separate English and Spanish surveys and informed consent forms;
  - (d) Organize the surveys in the designated order (see below);
  - (e) Use informed consent form as a cover sheet;
  - (f) Staple together as separate research packets, after the coding process.
5. Code all survey forms and match to consent forms for subject de-identification; consult with a statistician at UPENN.
6. Initiate the data collection process (*Local Phase*).
7. Collaborate with church leaders to:
  - (a) Identify formal and informal leadership networks;
  - (b) Build trusting relationships;
  - (c) Plan the course of recruitment of potential participants.
8. Identify regular church activities and special events in each parish as possible venues for data collection.
9. Discuss advertisement options for recruitment with church leaders:
  - (a) Create flyers for posting at church sites to inform the parish community about the research project;
  - (b) Announce research study on the weekly church bulletin or monthly calendar to recruit potential participants;
  - (c) Hand out “recruit-contact cards” to stimulate interest for study participation.
10. Visit church parishes regularly to maximize recruitment efforts at each site.
11. Use different methods for the screening process, as deemed appropriate:
  - (a) Regularly set up a booth or table on church grounds on different days and times to accommodate a variety of work schedules and other demands;
  - (b) Attend church functions and screen eligible participants using a quick checklist on a clipboard to expedite enrollment process.
  - (c) Connect with community outreach agencies linked to church sites and service activities, as an alternative form of recruitment.
12. Screen candidates in a one-to-one physical encounter asking for language preference.
13. If participant is eligible and agrees to participate, obtain informed consent.



Two copies are signed, one serves as an official document and one is given to the participant.

14. Provide research packet and writing instrument; offer assistance and appropriately mark the following category:
    - (a) “Self-Report,” if the respondent does not need reading assistance;
    - (b) “Read-Assist,” if respondent needs reading assistance.
  15. Visually scan all forms for completion; place unidentified forms in a collection container to maintain anonymity.
  16. Give all respondents, who show interest or consent to participate, a patient education packet in preferred language and a personalized pen.
  17. Begin systematic computer entry of data using PASW software and continue until its completion (*Data Phase*).
  18. Analyze data and interpret results.
  19. Prepare data for dissertation defense and formal dissemination of findings (*Results Phase*)
- 

Collection of quantitative data consisted of a Spanish-language information sheet for demographic details and four survey instruments. The entire survey data collection process took less than one hour, and was not a considerable burden to the respondent (Yancey, et al., 2006). After obtaining informed consent, survey forms were administered in the following order:

1. *Hoja de Información Demográfico y Personal*, or the Sociodemographic Information Sheet (Sp-SIS) (Appendix A);
2. *Cuestionario del Estilos de Vida II*, or the Health-Promoting Lifestyle Profile II (Sp-HPLP II) (Appendix B);
3. *Cuestionario sobre Enfermedades del Corazón*, or the Heart Disease Fact Questionnaire (Sp-HDFQ) (Appendix C);

4. *Cuestionario sobre su Percepciones de Salud*, or the Health Perceptions Questionnaire Form II (Sp-HPQ-II) (Appendix D); and
5. *Cuestionario de la Aculturación de Latinos/Hispanos*, or the Short Acculturation Survey for Hispanics (Sp-SASH) (Appendix E).

### **Study Variables and Survey Instruments**

This study was purposefully designed to acknowledge cultural and linguistic differences that have been a study limitation in prior research. The primary languages of Mexican-Americans are English and Spanish. Four survey instruments were selected having been psychometrically tested in both languages yielding adequate reliability and validity scores. The study variables are listed in *Table 3-3* and matched to the corresponding survey instrument.

***Table 3-3. Instruments and Study Variables***

<b>Instruments</b>	<b>Predictor Variables</b>	<b>Outcome Variable</b>
Sociodemographic Information Sheet (SIS): Appendix A	Menopausal Status	
Health-Promoting Lifestyle Profile II (HPLP II): Appendix B		Cardiovascular health promotion
Heart Disease Fact Questionnaire (HDFQ): Appendix C	Knowledge of CHD and risk	
Health Perception Questionnaire II (HPQ II): Appendix D	Perceived health status	
Short Acculturation Survey for Hispanics (SASH): Appendix E	Acculturation Level	

The predictor variables were: (1) *knowledge of CHD and risk* that were measured by the Sp-HDFQ; (2) *perceived health status* was measured by the Sp-HPQ; (3) *acculturation level* was measured by the Sp-SASH and two other questions on the Sp-SIS that asked for country of birth and length of US residency; and (4) *menopausal status* was determined by self-report from one question on the Sp-SIS, inquiring about the stage of menopause. The Sp-SIS also gathered other relevant personal information regarding sociocultural factors. The outcome variable was *cardiovascular health promotion* and was measured by the Sp-HPLP II comprised of six subscales. These lifestyle behaviors were collapsed into one category for accurate measurement.

#### **Predictor Variable: Menopausal Status**

For the purposes of this study, *menopausal status* was defined by the three stages. Derived from its medical definition, these stages are pre-menopausal, peri-menopausal, and post-menopausal. Progression through the three stages signifies the end of menstruation and fertility. The medical definition of menopause is the cessation of a menstrual cycle for 12 consecutive months without a pathological reason (NAMS, 2006).

In the pre-menopausal state, a woman experiences a regular menses. When women claim to have “entered menopause,” they begin to experience obvious menstrual cycle and endocrine system changes. This menopausal transition occurs between the ages of 40 and 58 years, and takes six years or more to complete. This time period is formally known as the peri-menopausal stage (NAMS, 2006). A woman has reached menopause upon experiencing one full year of amenorrhea, and is considered post-menopausal from that point forward (NAMS, 2006).

The Sp-SIS was used to ascertain menopausal status of study participants. Inclusion of menopausal status as a predictor variable is important because of its relationship to cardiovascular risk. Menopause, however, is not a topic that is overtly discussed among Mexican-American women (Silvas Villalobo, 2007). Simply offering a choice to mark about menopause on a demographic information sheet circumvented discussions of a sensitive topic and discreetly elicited this essential information. For subjects needing assistance with instrument completion, the investigator explained the three choices to the women in their preferred language.

### **Survey Instrument: Sociodemographic Information Sheet**

Demographic data were collected using the Sp-SIS, a structured questionnaire designed by the principal investigator that took less than five minutes to complete. Information regarding personal data, health status, and medical history was elicited from respondents. Personal data included sex, date of birth, religion, country of origin, length of time in the US, and self-identification of racial-ethnic subgroup and ancestry. Other information about educational level, marital status, and financial circumstances, including employment and household income, was included. Questions about health status asked respondents to self-rate present health, menopausal status, and use of folk medicine. Lastly, information of present medical conditions and past health concerns of study participants and their parents was queried.

Selection of conditions to query for health profiles was based on two principles. The first principle underscores the known association of high blood pressure, diabetes type 2, high cholesterol, overweight status, and cigarette smoking with increased CHD

risk in the general population. Except for cigarette smoking, these particular chronic conditions are known CHD risk factors and components of the Metabolic Syndrome, a serious threat that deleteriously increases CHD risk (Grundy, Brewer, et al., 2004). The second principle emphasized the conditions that pose barriers to engage in lifestyle behavioral modifications for disease prevention. Arthritis and depression are two such conditions that induce debilitating states of poor mental clarity and bodily incapacitation for physical activity, increasing CHD risk (Albright, et al., 2005)

**Scoring the SIS.** Questions on the Sp-SIS were coded as separate variables to facilitate data entry and statistical analyses. Coding refers to the process of “translating” research data into numerical form to make it compatible for computer analysis (Munro, 2004). A system of identifying each item on the questionnaire yet de-identifying the subject was instituted with appropriate coding techniques recommended by the statistician. As a result, a codebook for the Spanish version was created and used a handy reference for data analyses. The English form of the SIS was not coded because it was not used in this study.

### **Outcome Variable: Cardiovascular Health Promotion**

In this study, *cardiovascular health promotion* was defined as lifestyle behaviors that are considered heart-healthy in the overlapping dimension of disease prevention and risk reduction (illustrated in *Figure 1-1*). The phenomenon of health promotion associated with cardiovascular health is currently viewed as “cardio-protective,” meaning behavioral activities that encourage healthy lifestyles also improve heart function and support individual well-being (Everson-Rose & Lewis, 2005; Scheier & Carver, 1992;

DHHS & Public Health Service, 1998). Engaging in a heart-healthy lifestyle reduces the probability of acquiring CHD and lessens existing CHD risk (Woolf, Jonas, & Lawrence, 1996). Consistent with the concepts of disease prevention and risk reduction, cardiovascular health promotion was measured by one tool, the Sp-HPLP II.

### **Survey Instrument: Health-Promoting Lifestyle Profile II**

The HPLP II is a 52-item questionnaire that took 20 to 30 minutes to complete, depending on reading speed or if assistance was needed (Walker & Hill-Polerecky, 1997). Construct validity of the English version was supported by convergence of the instrument with the Personal Lifestyle Questionnaire ( $r = .68$ ) and by a non-significant correlation with social desirability (Walker, et al., 1987). Criterion-related validity was supported by significant correlations with concurrent measures of perceived health status ( $r = .27$ ) and quality of life ( $r = .49$ ). Three-week test-retest reliability of the English version was satisfactory at  $r = .89$ . The overall scale has an internal reliability of  $\alpha = .94$ , and the behavioral dimensions subscales ranged from  $\alpha = .79$  to  $.87$  from a sample of 712 adults from 18 to 92 years old (Walker & Hill-Polerecky).

In this instrument, health-promoting lifestyle behaviors are measured by six behavioral dimensions confirmed by factor analysis: *health responsibility*, *physical activity* (exercise), *nutrition*, *interpersonal relations/support*, and *spiritual growth* (self-actualization) *stress management*, (Walker & Hill-Polerecky, 1997). The terms in parentheses are from the original first version of the tool. The behavioral dimensions for health promotion were initially pilot tested and revised into its latest version that was used in this study. All behavioral dimensions advance knowledge and awareness to

maintain health in both the English and Spanish versions. *Table 3-4* summarizes subscale definitions and Cronbach's alpha coefficients for the Spanish version of the tool.

**Table 3-4. Internal Reliability: Spanish-Language Health-Promoting Lifestyle**

**Profile-II**

<b>Subscale and Focus</b>	<b>Cronbach's □-Coefficient</b>
Overall Tool: Health Promotion	.94
Subscale Mean: Six Behavioral Dimensions	.70
<i>Health Responsibility</i> Demonstrates accountability for one's own health and health status	.80
<i>Physical Activity</i> Involves active enrollment in standard fitness programs or leisure time behavioral activities that promote health and well-being	.77
<i>Nutrition</i> Entails cooking and eating healthful foods following recommended daily requirements based on Food Guide Pyramid	.74
<i>Interpersonal Relations</i> Uses communication as a tool to convey thoughts and feelings associated with a healthy outlook	.78
<i>Spiritual Growth</i> Adds element of inner self-awareness to maximize human potential for wellness by searching for the meaningfulness of being healthy	.89
<i>Stress Management</i> Focuses on identifying resources to effectively control or reduce tension	.73

The Spanish version of the HPLP II also was developed by Walker et al. (1990). Applying a translation and back-translation method made this instrument suitable to use in Mexican-Americans, Central Americans, and Puerto Ricans (Kerr & Ritchey, 1990; Kuster & Fong, 1993). The total instrument had an internal reliability of  $\alpha = .94$ , for a

sample of 541 Spanish-speaking adults from 18 to 81 years old, of whom 57.7% were women (Walker, et al.). Test-retest reliability at two-weeks demonstrated stability at  $r = 0.86$ . The behavioral dimension subscales yielded an average  $\alpha = .70$  (Duffy, 1988; Hulme, et al., 2003).

**Scoring the HPLP II.** Using a 4-point Likert scale, this instrument evaluated health-promoting behaviors. Respondents were asked to indicate the frequency that they engage in each behavior from  $1 = \text{Never/Nunca}$ ,  $2 = \text{Sometimes/Algunas Veces}$ ,  $3 = \text{Frequently/Frecuentemene}$ , to  $4 = \text{Routinely/Rutinariamente}$ . Scores for each of the six subscales were obtained by calculating a mean of the responses to the subscale items. Similarly, calculating a mean of individual responses to all 52 items yielded a score for an overall health-promoting lifestyle. Higher mean scores indicate greater tendencies to engage in health-promoting behaviors for healthier lifestyles.

### **Predictor Variable: Knowledge of Coronary Heart Disease and Risk**

Actual knowledge is a direct and clear understanding of a collection of facts that is grounded in awareness, not purpose (Ajzen, 2005). A collection of facts is referred to as data or information (Waldstein & Elias, 2003). Information is essential to facilitate learning and enhance cognition, particularly of decision-making and problem-solving.

In this study, *knowledge of CHD* refers to a collection of facts that are essential to the comprehension and understanding of physiological changes occurring within the cardiovascular circulatory system. These physiological changes are associated with the development of ischemic heart disease from the condition itself, as well as its progression from related risk factors. Coronary heart disease is defined as ischemic heart disease that



is caused by atherosclerosis and leads to an acute myocardial infarction, or a heart attack (Lamborn, Moseley, & Sole, 2001). A high number of risk factors substantially increases the chances of developing CHD and having a heart attack (Woolf, 1996). Thus, *knowledge*, in its broadest sense, is defined as a state of cognitive understanding that extends to what has been learned, discovered, or perceived (Glanz, et al., 2002).

### **Survey Instrument: Heart Disease Fact Questionnaire**

Knowledge, or cognitive understanding, of CHD and risk factors was evaluated using the HDFQ developed by Wagner, Lacey, Chyun, & Abbott (2005). Individual knowledge was determined from 25 true-false questions that could be completed in ten minutes. This instrument was tested in a sample of 524 English-speaking diabetic patients averaging 54 years of age, of whom 61% were female. This sample was comprised of 72% white, 16% African-American, 5% Hispanic, 2% Asian, and 5% other.

Psychometric evaluation was based on four sets of analyses. First, the instrument was written at an eighth-grade level to impose little burden on readability. Second, the Kuder-Richardson formula was used to evaluate internal consistency and it was adequate at .77 (DeVellis, 2003). Third, corrected item-total correlations indicated the degree to which the individual item related to the total score, excluding itself. Corrected item-total correlations were considered “good,” ranging between 0 and .40 with 80% of them above .30 (Nunnally, 1978). Fourth, discriminant function analysis determined criterion validity. This step accommodated knowledge differences of CHD among the respondents based on other variables, such as health insurance status, educational level, and knowledge of personal cardiovascular medical conditions (Wagner, Lacey, et al., 2005).

Wagner, Abbott, & Lacey (2005) developed the Sp-HDFQ. During the Spanish translation and back-translation process, an expert panel noted few linguistic inaccuracies that required correction (Bradley, 1994). Psychometric testing was done in the same manner as the English version and performed well on the Kuder-Richardson test for a score of .86. This sample of 94 Hispanic patients had a 10-year average of type 2 diabetes, and was economically disadvantaged with less than a high school education, suggesting perhaps poor reading ability. Although exact details of the Hispanic/Latino ethnic composition of this small sample were not adequately reported, it appeared that it was predominantly Puerto Rican. This could be problematic to its psychometric accuracy for use in Mexican-Americans.

**Scoring the HDFQ.** This instrument is a cognitive measure of CHD knowledge and associated risk factors. Respondents were asked to respond to statements with *True*, *False*, or *I Don't Know*. Scores were calculated by summing the total of the correct answers among the 25-items. The *I Don't Know* category was scored as an incorrect response. Higher scores indicate a higher level of knowledge.

**Predictor Variable: Perceived Health Status**

In this study, *perceived health status* was defined by how people view personal health and the body's ability to ward off illness or maintain control in the presence of disease (Salyers, Hunter, & McGuire, 2006). This view accommodates physiological, psychological, physical, and cultural dimensions in the presence or absence of disease (Davies & Ware, 1981). These dimensions incorporate bodily functions, physical fitness levels, spiritual energy, and psychological wellbeing. How people view personal health

drives private perceptions of health. Personal health perceptions are essential determinants of whether or not a person will engage in health-promoting behaviors (Ajzen, 1985; Duffy, 1997).

### **Survey Instrument: Health Perceptions Questionnaires**

Information about perceptions of health status was collected using the Spanish version of the Health Perceptions Questionnaire, based on 32-item English version that was developed by Ware and tested in a sample of 2000 adults (1976). Test-retest reliability estimates were obtained for both item and subscale scores from four field tests, computed by Pearson's product-moment correlations. Six subscales measure perceptions of past, present and future health, resistance to illness, and attitudes toward sickness, based on personal beliefs about health and illness (Davies & Ware, 1981). Health-related dimensions confirmed by factor analysis are *Current Health*, *Prior Health*, *Health Outlook*, *Health Worry/Concern*, *Resistance-Susceptibility*, and *Rejection of Sick Role* (Ward & Lindeman, 1978). *Table 3-5* summarizes internal reliability of the subscales in the English tool. Only an overall reliability score of the Spanish version is provided because Cronbach's alpha coefficients for the subscales have not yet been published.

The first Spanish version that was translated consisted of 29 questions (Reyes-Frausto, García-Peña, Muñoz Hernández, & Salmeron, 1998). Beaman (2000) eliminated three more items after translating, pre-testing, and testing the tool in an older Mexican population, reducing it to its present form of a 24 favorably and unfavorably worded items. An internal consistency of  $\alpha = .91$  resulted from a representative sample of 4,966

respondents. The revised 24-item questionnaire was used in this study to measure perceived health status, and took approximately 10 minutes to complete.

**Table 3-5. Internal Reliability: Perceived Health Status**

<b>Subscale</b>	<b>Focus</b>	<b>Cronbach's <math>\alpha</math>-Coefficient</b>
Spanish Tool: Perceived Health Status		.91
<i>Current Health</i>		.89-.92
Refers to how the person views his/her health at the moment, even if ill		$r = .91$
<i>Prior Health</i>		.70-.79
Involves recalling favorable/unfavorable experiences with health and illness encountered in the past		$r = .74$
<i>Health Outlook</i>		.64-.79
Incorporates person's perspective of his/her general health status and making plausible predictions regarding the future		$r = .73$
<i>Health Worry or Concern</i>		.45-.62
Estimates person's position about health and illness, ranging from having excessive concern to none at all		$r = .55$
<i>Resistance and Susceptibility</i>		.58-.80
Approximates individual probability of acquiring illness based on current health practices along a high-low continuum		$r = .70$
<i>Rejection of the Sick Role</i>		.54-.60
Demonstrates acceptance or denial of being ill		$r = .58$

The five questions that were excluded were not thought to be culturally relevant to a Mexican population (Beaman, 2000). The excluded questions were related to Factor III Scales: Sick Role Propensity. When tested, "attitude towards visiting the doctor" and "rejection of the sick role" were not consistently correlated with the specific health variables under investigation. Any correlations of significance described mostly negligible relationships, so they were collapsed into one category. The revised 24-item Sp-HPQ

measures the primary constructs of the English version in four subscales: *Current Health* (incorporates Prior Health), *Health Outlook*, *Health Worry/Concern*, and *Sickness Orientation* (incorporates Resistance-Susceptibility and Rejection of Sick Role). The terms in the parenthesis are from the English version. However, these two HPQ instruments represent an asymmetrical translation that would have required adjustments for accurate data analysis, if both versions had been used.

**Scoring the HPQ.** This tool consists of 24 statements that use a 5-point rating scale. The response scale ranges from 5 = *Definitely True/Definitivamente Verdadero* or 4 = *Mostly True/Mas o Menos Verdad* to 1 = *Definitely False/Definitivamente Falso* or 2 = *Mostly False/Mas o Menos Falso* with a midpoint anchor of 3 = *Don't Know/No Se*. Undesirable/negative items were reverse scored so that higher scores indicated perceptions closely related to the construct reflected in the name of the subscale. A subscale score was computed for each respondent using simple algebraic sum of scores.

In the Sp-HPQ, principal components analysis for categorical data gave four similar factors to those reported in the original version. Answers were dichotomized, and weighted items were scored using either homogeneous values (1 or 2) or factor loadings (0-1.0) with no significant differences found between methods. Based on recommendations of its importance in clinical research, homogenous values were used in the present study (Beaman, Reyes-Frausto, & Garcia-Pena, 2003).

### **Predictor Variable: Acculturation Level**

For the purposes of this study, *acculturation level* was defined by the generally accepted definition that emphasizes the integration of two cultures (Marín, et al., 1987).

The phenomenon of acculturation is acknowledged as the process that modifies the attitudes, beliefs, and behaviors of people from one culture due to contact with a different culture (Berry, 1986). Two distinct models have been developed to explain the complexity of acculturation (L. M. Hunt, et al., 2004; A. M. Padilla, 1980). One model is a linear, indicating the acculturative process weakens ethnic identity. The second model is two-dimensional and incorporates four acculturative stages with varying outcomes based on individual experiences (Berry, 1986).

### **Survey Instrument: Short Acculturation Scale for Hispanics**

Primarily, acculturation information was collected using the Spanish version of the SASH developed by Marín et al. (1987). The SASH is a reliable instrument with  $\alpha = 0.92$  that quickly identifies low or high acculturation among Hispanics, and has been used in Mexican Americans, Cuban Americans, Puerto Ricans, Dominicans, and Central and South Americans. Questions regarding language preference, media use, and ethnic social relations comprise the original 12-item scale that was used to measure acculturation in this study. Acculturation has been reported to be highly correlated with ethnic self-identification, respondents' generation, length of residence in the US, and age at arrival (Marín, et al.). Therefore, additional information was garnered, regarding racial and ethnic self-identification, country of birth, and length of residence in the US.

**Scoring the SASH.** In the SASH, responses provided by each respondent can be averaged across items. Scoring range for questions 1 through 8 was from *1 = Only Spanish/Sólo Español*, *2 = Spanish better than English/Español mejor que inglés*, *3 = Both equally/Ambos por igual*, *4 = English better than Spanish/Inglés mejor que*

*Español* through 5 = *Only English/Inglés mejor que Español*. For questions 9 to 12, the rating scale changed to 1 = *All Latinos-Hispanics/Todos Latinos-Hispanos*, 2 = *More Latinos than Americans/Más Latinos que Americanos*, 3 = *Both equally/Ambos por igual*, 4 = *More Americans than Latinos-Hispanics/Más Americanos que Latinos* through 5 = *All Americans/Todos Americanos*.

These questions created a cultural dichotomy between Spanish versus English orientations based on language proficiency, as well as social relations and media preferences. An average of 2.99 differentiates the less acculturated respondents from the more acculturated ones. However, a mid-point score was not indicative of biculturalism, but rather described a balance for moderate levels of acculturation.

Scoring details of all surveys are part of the *Data Phase* of the research plan. Comparisons between the English and Spanish versions of the tools could not be done because only the Spanish versions were used in this study. However, the data analysis plan outlines a systematic process employed to analyze and interpret study findings.

### **Data Analysis Plan**

Preliminary analysis included univariate and bivariate statistical analyses. Univariate descriptive statistics organized data pertaining to sociodemographic information. A bivariate analysis was used to ascertain the outcomes for the specific aims of the study, using correlational techniques to understand the relationships between variables. These data quantify the relationships between study variables by confidence intervals (CI) and significance tests ( $p < .05$ ).

Multivariable modeling explored the strength of those relationships, as well as other core relationships by demographics. Key demographic variables were tested against the predictor and outcome variables to determine other unexpected correlations. These statistical methods demonstrated the importance of using an adequate amount of subjects to detect significant study results.

Descriptive statistics were calculated from a study sample comprised of 128 Mexican-American women, tested by a statistical significance of  $p < 0.05$ . Prior power analysis indicated that 106 subjects would be sufficient to test study hypotheses. The Predictive Analytic Software (PASW) Statistics 18 was used for data analysis, formally known as Statistical Package for Social Sciences (SSPS).

### **Preliminary Data Analysis**

Univariate descriptive statistics were used to profile study participants based on data gathered from the sociodemographic information sheet. Age, employment status, education level, housing conditions, income, and marital status were key demographic variables used for univariate analyses. Measures of central tendency provided means, medians, and modes for key demographic variables. Measures of variance helped to examine the dispersion of values by percentages, interquartile ranges, and standard deviations. Country of birth and length of time in the US supplemented acculturative measures. Information about other sociocultural attributes also was elicited, such as use of folk medicine, language preference, and health literacy. Data were summarized and organized in table format to facilitate systematic reporting.



Bivariate analysis techniques were employed to test each specific aim and study hypothesis for correlations. Use of simple linear regression and correlation coefficient testing techniques aided in evaluating the relative importance of each predictor variable—perceived health status, knowledge of CHD and risk, acculturation level, and menopausal status—on cardiovascular health-promoting lifestyle behaviors, the outcome variable. Key demographic variables related to study outcomes also were tested for significance. Multivariate modeling techniques were applied to identify potential multicollinearity issues in the relationships between variables, as well as unsuspected correlations and the strength of those relationships. Differences were determined for comparison. All study findings are systematically reported in the next chapter.

### **Correlational Statistical Analyses**

Testing each study hypothesis described in the specific aims included the manipulation and control of specific variables that consisted of a two-step process:

Step 1: Testing for a correlation, or an existing relationship, between the predictor and dependent variables.

Step 2: Evaluating the correlation, or relationship. If the correlation is non-existent, then the predictor variable does not exert an influence on the outcome variable. If a correlation is found, then the meaningfulness of the correlation coefficient was tested for significance and level of influence.

After adjustments were made to control for other variables, correlations were re-tested. This two-step process was used to evaluate the predictability and significance of the relationships between predictor and outcome variables for Specific Aims 1 through 4.

**Specific Aim 1:** To determine the relationship between knowledge of CHD and risk and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 1a.* There is a relationship between knowledge of CHD and risk and cardiovascular health-promoting lifestyle behaviors.

**Specific Aim 2:** To determine the relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 2a.* There is a relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 2b.* The relationship between perceived health status and cardiovascular health-promoting lifestyle behaviors persists when adjusting for knowledge of CHD and risk.

**Specific Aim 3:** To determine the relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 3a.* There is a relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 3b.* The relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors persists when adjusting for perceived health status and knowledge of CHD and risk.

**Specific Aim 4:** To determine the relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 4a.* There is a relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors.

*Hypothesis 4b.* The relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors persists when adjusting for perceived health status, knowledge of CHD and risk, and acculturation level.

## **Data Management**

### **Data Monitoring and Surveillance**

The *Data Phase* (see *Table 3-1*) consists of monitoring, analyzing, and interpreting data generated from the study. To maintain confidentiality, only the principal investigator, statistical consultant, and faculty advisor were responsible for handling research data. Input of information from research packets was transferred and organized into computer system files. Computerized data were stored on a password-protected computer hard-drive. A backup copy was saved on an external hard drive. This device was stored in a locked drawer in the investigator's desk when not in use. Non-computerized data were kept inside a locked file cabinet. All research records, consisting of computerized/non-computerized files and paper documents, were under secure surveillance to preserve and protect data.

### **Handling of Missing and Incomplete Data**

Data monitoring and surveillance involves scrutiny of the survey forms for completeness. If respondents refuse to answer certain questions, then missing or incomplete data are inevitable. Incomplete data sets also were entered into the computer database and coded as missing data. Coding missing data appropriately ensures precise computation by the PASW program. Applying oversampling techniques, as well as vigorous recruitment efforts potentially minimized the incompleteness of data.

Additionally, spending one-on-one time with the respondent somewhat lengthened the time of survey completion, but was done to support understanding of what was being asked. Respondents' questions were answered and efforts made for consistency across subjects. Offering assistance to read the survey questions aloud to respondents also assured more complete data. This option was properly documented on the sociodemographic information sheet by the investigator. Marked as either *Self-Report* or *Read-Assist*, this variable was coded as "health literacy" for statistical analyses. Missing or incomplete data, however, were not a problem, affirming that the methodology was duly structured.

### **Data Reporting**

Research data are presented in a format that is clear, concise, and unambiguous for the final *Results Phase*. Regular statistical consultation assisted the investigator prepare for data entry and analysis. After analyzing study findings, descriptive data were summarized into a research report of graphs and tables with narrative explanations. Use of graphs and tables permitted a straightforward and uncomplicated presentation of study findings. Study findings report only aggregate data to avoid any breach in confidentiality. Aggregate data kept sensitive and personal information unidentifiable. Data reporting also addressed study strengths and limitations, scientific gaps in the science, clinical implications, and future research recommendations.

### **Protection of Human Subjects**

Protection of human subjects was insured. Subjects were informed of study details and its voluntary nature of participation. Explanations also were given regarding

the negligible possibility of harm or ill effects from participation. This study did not burden the subject with physical or legal risks, but could have induced a nominal risk of psychological distress, due to the nature of the content and format of survey questions. However, following a proper research protocol and systematic coding techniques assured privacy and security for study participants and of data.

Numerical systems were used to code survey forms, strictly for tracking purposes. Numerical identification codes matched participants to consent and survey forms. These forms were collected by the investigator after the interview ended. Study participants were not identifiable by name nor could be traced back to original datasets. Paper documents were kept in locked files in the investigator's locked office.

Computerized data files were maintained on a hard drive with restricted access. All analyses were done and stored on a password-protected computer, and backup files were copied to an external hard drive. Only aggregate characteristics of study participants were used in the final analysis and dissemination of results. Lastly, this investigation was sent to the Institutional Review Board of the University of Pennsylvania for review and approval was granted.

## Chapter 4

### RESULTS

This chapter provides systematic reports of quantitative data. A detailed research plan with appropriate methodology facilitates reporting of aggregate data of study results, while maintaining anonymity of study participants and confidentiality of personal information. The statistical methods of the data analysis plan systematically report univariate descriptive statistics followed by inferential statistics and hypotheses testing that include simple linear regressions and multivariable modeling.

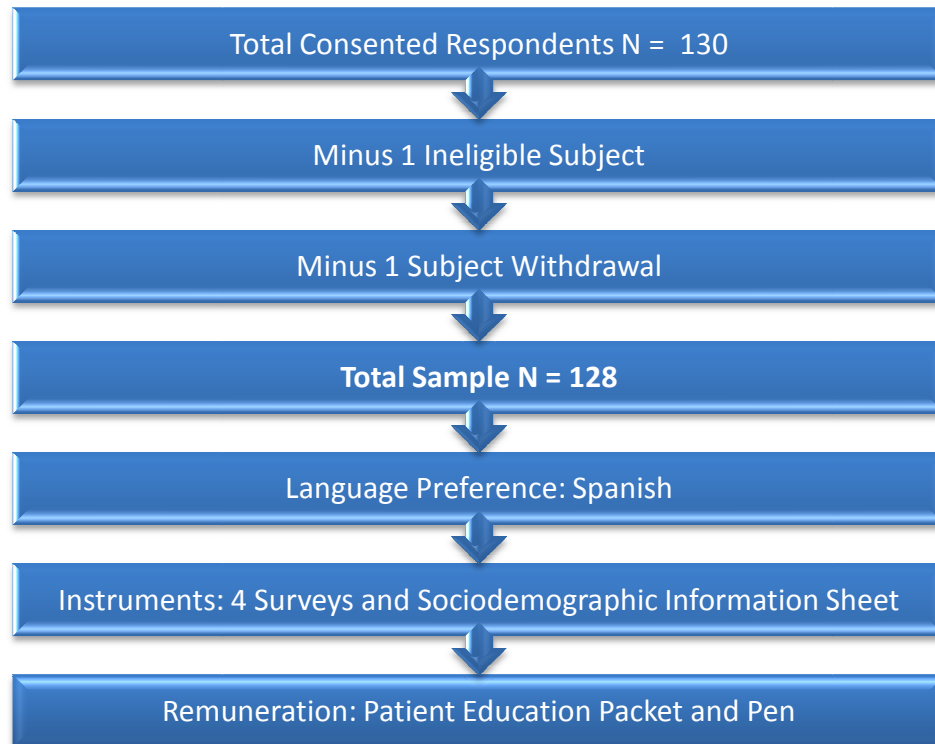
#### **Description of Study Sample**

##### **Subject Enrollment**

Declaring Mexican ancestry qualified an adult female (18 years or older) free of CHD to participate in this study. *Figure 4-1* depicts the 14-month course of enrollment to acquire a total sample of 128 women. Only two subjects were not counted in the sample, after informed consent was obtained. One subject completed all survey questions, but self-identified as *Dominicana* (Dominican) from the Dominican Republic, which made her ineligible. The second subject withdrew from the study, due to perceived time constraints, not completing any surveys.

The remaining subjects all gave consent and voluntarily participated in the study. Turning in four survey questionnaires plus a Sociodemographic Information Sheet (SIS) ended the survey session. Subjects, including those who withdrew or were ineligible, received a patient education packet containing heart-healthy information in Spanish and a colorful personalized pen as remuneration for study participation.

**Figure 4-1. Subject Enrollment Process**

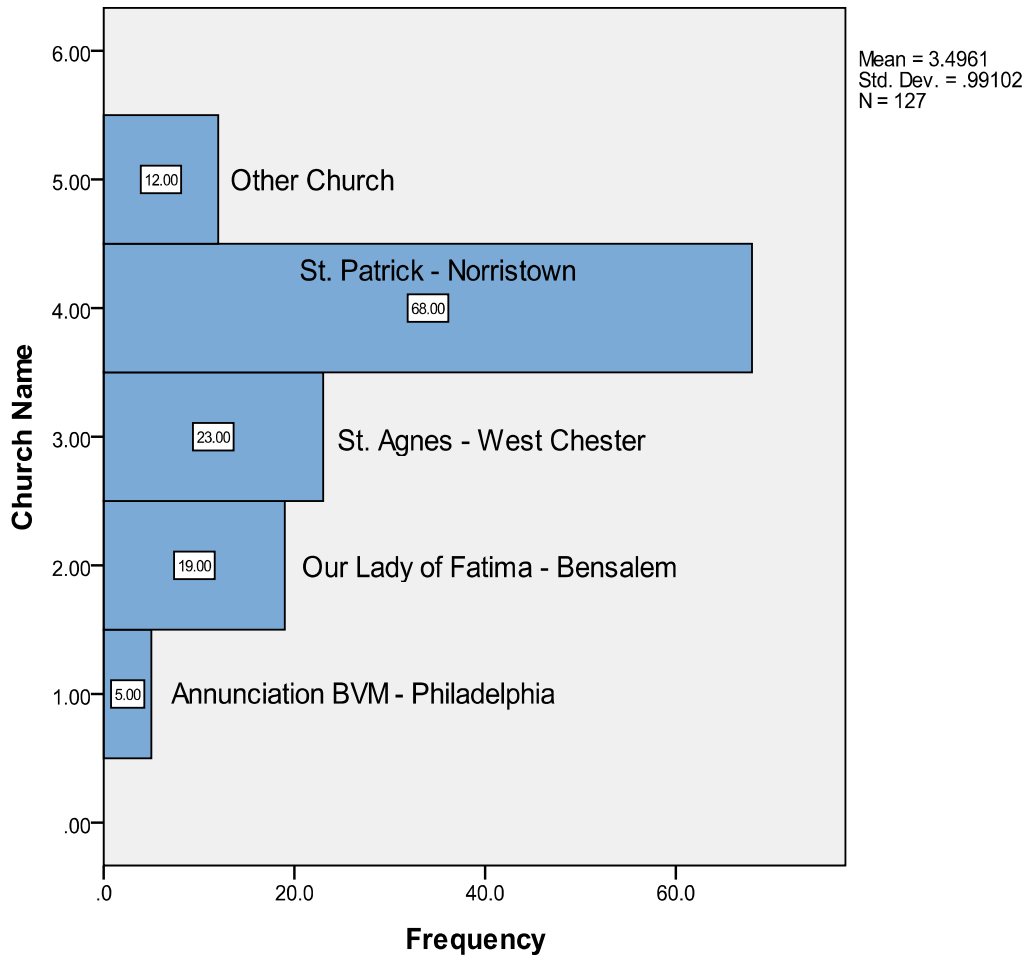


### **Primary Study Sites**

A sample of 128 participants residing in the Northeastern region of the US was recruited from six primary study sites. *Figure 4-2* compares the six different sites where the accessible population was enrolled. Specifically, subjects were recruited from Catholic Church parishes located in the vicinity of Philadelphia, PA, with approximately half of the study sample living in Norristown. Additionally, it is not surprising that the majority of respondents (91.3%) identified themselves as Roman Catholics, while the rest (8.7%) represented Christian, Evangelistic, and Pentecostal faiths (refer to *Table 4-2*).

Although subjects are primarily Catholics, the main criterion question of ethnic self-identification, not religious affiliation, was used to screen subjects for eligibility. Sampling strategies also maintained an adequate number of subjects to detect significance in the variables of interest. Next, quantitative measures in univariate descriptive statistics capture the basic characteristics of this sample and disclose important sociodemographic information about the study participants.

**Figure 4-2 Primary Study Sites**





## Univariate Descriptive Statistics

### Sociodemographic Information

The Spanish-Language Sociodemographic Information Sheet (Sp-SIS) was used to collect data on socioeconomic status (SES) and psychosocial factors of the accessible population enrolled in the study (Appendix A). Socioeconomic status indicators reveal general information about employment, education, housing, and income. Psychosocial factors disclose specific information about intrapersonal preferences, interpersonal relations, and cultural value systems. A summary of findings related to SES indicators is presented in *Table 4-1* and those associated with psychosocial factors are in *Table 4-2*.

The sample consisted exclusively of participants who self-identified as women of Mexican ancestry. The ages ranged from 20 to 72 years (median 31 years). Only 41.1% of women were employed, primarily on a part-time basis (33.1%). Although most of the women in this study were married or partnered (78.2%), suggesting a second income, earnings were not enough to support the household (74.1%). Income was measured by a question that described financial status, rather than a monetary range. The average household size consisted of five people, but extended to a maximum of eleven people.

Approximately two-thirds (68%) of respondents had little to no formal schooling (eight years or less). The remaining 32.1% of the sample had some education past high school, including technical training and college course work, reaching doctoral level. This education was largely attained in Mexican school systems, based on results that show almost 100% of the sample was Mexico-born and more than three-quarters of these adult women (79.4%) had US residencies of less than ten years (refer to *Table 4-4*). Yet,

literacy level ranked at 77.3%, meaning these women possessed adequate cognitive understanding and comprehension skills to complete the questionnaires without any reading assistance. Literacy level was based on whether respondents requested reading assistance.

**Table 4-1. Socioeconomic Status Indicators of Study Participants (n = 128)**

<b>Descriptor Variable</b>		<b>N</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Age (years)</b>		126	31	20	72
<b>Household Size (number of people)</b>		118	5	1	11
		<b>N</b>	<b>Percent (%)</b>	<b>Cumulative %</b>	
<b>Education Level</b>	None/Grade School (0-5 years)	42	32.8	32.8	
	Middle School (6-8 years)	45	35.2	68	
	High School (9-12 years)	28	21.9	89.8	
	Post-High School/College	13	10.2	100	
<b>Employment Status</b>	Unemployed	73	58.9	58.9	
	Employed	51	41.1	100	
	Full-time	10	8.1	66.9	
	Part-time	41	33.1	100	
	Homemaker	82	98.8	98.8	
	Retired	1	1.2	100	
<b>Income</b>	Not enough to support family	83	74.1	74.1	
	Enough to make ends meet	29	25.9	100	
<b>Marital Status</b>	Single/Not Partnered	27	21.8	21.8	
	Married/Partnered	97	78.2	100	

Other important study findings, displayed in *Table 4-2*, recognize the contribution of psychosocial factors. In lieu of the recent popularity of research on complementary alternative medicine and behavioral health, one question on the SIS inquired about the use of *Curanderismo* (folk medicine) (Hsiao et al., 2006; Ortiz, Shields, Clauson, & Clay, 2007). Respondents were asked whether or not they have used the services of a *Curandero/a* (a male or female folk healer). Approximately 87.1% of the sample had not sought folk healers for alternative medical treatments. This outcome conflicts with previous research, but suggests the current trend that Mexican immigrants are adjusting more rapidly to American healthcare systems than before (Reichman, 2006).

**Table 4-2. Psychosocial Factors of Study Participants (n = 128)**

		N	Percent (%)
<b>Curandero/a Use (Folk Healer)</b>	Not used	101	87.1
	Have used	15	12.9
<b>Present Health Status (Self-Rating)</b>	Excellent/Good	35	27.3
	Fair/Poor	93	72.7
<b>Menopausal Status</b>	Pre-menopausal	105	85.4
	Peri- or Post- menopausal	18	14.6
<b>Religion</b>	Catholic	116	91.3
	Non-Catholic	11	8.7
<b>Literacy Level</b>	Self-Report: No Reading Assistance	99	77.3
	Reading Assistance Requested	29	22.7
<b>Language Preference</b>	Spanish	128	100
	English	0	0

Equally important, study findings reveal that the majority of respondents (85.4%) were pre-menopausal. This finding is critical because evaluating the relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors was one of the specific aims of this study, and discussed in detail in the next section. For a relatively young sample of pre-menopausal Mexican-American women, more than two-thirds of respondents (72.7%) considered themselves to be in poor to fair health versus good to excellent health.

Yet, responses from questions inquiring about personal health profiles suggest this study sample appeared to be reasonably healthy. Less than 10% of respondents had high blood pressure, diabetes, high cholesterol, depression, arthritis, or smoked cigarettes, while 19.5% identified themselves as being overweight. *Table 4-3* contains full details of the respondents' health profiles by self report, as well as maternal and paternal family histories. Based on these self reports, respondents seem to have decreased CHD risk.

Personal risk for CHD varies based on conditions that are heritable and transmitted genetically, as ascertained from family histories. High blood pressure (32.8%), diabetes (23.4%), and overweight status (10.9%) were the three conditions most prevalent in maternal medical histories. The remaining health problems for mothers measured at less than 10%.

Paternal medical histories also had a high prevalence of diabetes (12.5%), but the highest was in cigarette smoking (14.5%), suggesting second-hand smoking environments for the non-smokers living in the same household. Three conditions rated third for fathers at 7% each. These conditions were high blood pressure, high cholesterol

levels, and overweight status. The remaining health categories for fathers measured at less than 5%. Parent health data considerably affect respondents' cardiovascular risk. The seemingly decreased subject CHD risk was influenced by positive family histories, signifying a slight incremental risk in this study sample.

**Table 4-3. Prevalence of Cardiovascular Risk for Study Participants (n = 128)**

Condition	Respondent		Maternal Profile		Paternal Profile	
	N	Percent (%)	N	Percent (%)	N	Percent (%)
<b>High Blood Pressure</b>	8	6.3 <sup>a</sup>	42	32.8 <sup>a</sup>	9	7 <sup>a</sup>
<b>Diabetes</b>	9	7	30	23.4 <sup>a</sup>	16	12.5 <sup>a</sup>
<b>High Cholesterol</b>	10	7.8 <sup>a</sup>	11	8.6	9	7 <sup>a</sup>
<b>Depression</b>	4	3.1	11	8.6	1	0.8
<b>Arthritis</b>	9	7	12	9.4	6	4.7
<b>Cigarette Smoker</b>	3	2.3	3	2.3	19	14.8 <sup>a</sup>
<b>Overweight</b>	25	19.5 <sup>a</sup>	14	10.9 <sup>a</sup>	9	7 <sup>a</sup>

Note. <sup>a</sup> Ranked as a top three condition.

Lifestyle changes that increase CHD risk among Hispanics begin as early as three years of US residency (Evenson, et al., 2004; Juarbe, et al., 2003). Therefore, a series of questions regarding birthplace and length of US residency were asked on the SIS to indirectly inquire about immigration status, which can be a sensitive topic. Together, birthplace and length of US residency demarcate immigration status in this study. *Table 4-4* provides a summary of migration information that was used to augment the measurement of acculturation levels. With 99.2% declaring birthplace in Mexico,

respondents preferred the ethnic label of *Mexicanas* (Mexican) (76.5%) over Hispanic (19%) or Latina (8%).

Cumulative length of US residency ranged from as little as two weeks time to 25 years (median 5 years). Almost half (42.9%) of all respondents had been living in the US between five to ten years. According to evidence-based clinical guidelines, this timeframe classifies a moderate to high risk CHD category (Mosca, Appel, et al., 2004). Thus, adding the effects of length of US residency alters cardiovascular health profiles, affecting subjects' CHD risk.

**Table 4-4. Immigration Status of Study Participants (n = 128)**

<b>Descriptor Variable</b>	<b>N</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Years of US Residency</b>	126	5	0.6	25
		<b>N</b>	<b>Percent (%)</b>	<b>Cumulative %</b>
<b>Length of US Residency by Category</b>	0 – 4.9 years	46	36.5	36.5
	5 – 9.9 years	54	42.9	79.4
	10 or more years	26	20.6	100
<b>Country of Birth</b>	Mexico	127	99.2	99.2
	US	1	0.8	100
<b>Ethnic Label</b>	<i>Mexicana</i> (Mexican)	88	76.5	76.5
	Hispanic	19	16.5	93
	Latina	8	7	100

## Survey Questionnaires

Only the Spanish versions of the survey questionnaires were used to collect data because Spanish was the preferred language of women in this study. The Health-Promoting Lifestyle Profile-II (Appendix B) measured cardiovascular health-promoting lifestyles, the outcome variable. The predictor variables were measured by three different surveys. The Heart Disease Fact Questionnaire (Appendix C) measured knowledge of CHD and associated risk factors, also referred to as “health knowledge” in this section. The Health Perceptions Questionnaire (Appendix D) measured health and illness perceptions. Lastly, the Short Acculturation Survey for Hispanics (Appendix E) measured level of acculturation. Findings from these four Spanish questionnaires are systematically reported, beginning with the outcome variable of cardiovascular health promotion.

### **Spanish-Language Health-Promoting Lifestyle Profile II (Sp-HPLP II).**

Cardiovascular health promotion was measured by a 52-item questionnaire, evenly divided into six subscales (Walker & Hill-Polerecky, 1997). For the total health promotion score in the present study, the Cronbach’s coefficient alpha ( $\alpha$ ) = .93, and the subscales ranged from  $\alpha$  = .70 to .86. Specifically, the coefficient alphas for the subscale scores were:  $\alpha$  = .81 for *Health Responsibility*,  $\alpha$  = .74 for *Physical Activity*,  $\alpha$  = .79 for *Nutrition*,  $\alpha$  = .86 for *Spiritual Growth*,  $\alpha$  = .72 for *Interpersonal Relations*, and  $\alpha$  = .70 for *Stress Management*. Table 4-5 shows the coefficient alphas, means and standard deviations (SD) of the Sp-HPLP II subscales, as well as the overall health promotion score.

**Table 4-5. Spanish-Language Health-Promoting Lifestyle Profile II Scores (N = 128)**

<b>Scale</b>	<b>Range</b>	<b>Mean</b>	<b>SD</b>	<b><math>\alpha</math></b>
Overall Health Promotion Score	1.32 – 3.63	2.31	.46	.93
Health Responsibility Subscale	1.13 – 4.00	2.28	.61	.81
Physical Activity Subscale	1.00 – 3.25	1.77	.51	.74
Nutrition Subscale	1.33 – 4.00	2.56	.57	.79
Spiritual Growth Subscale	1.33 – 4.00	2.76	.66	.86
Interpersonal Relations Subscale	1.00 – 3.67	2.37	.56	.72
Stress Management Subscale	1.25 – 4.00	2.10	.52	.70

Higher mean scores indicate a stronger tendency to engage in health-promoting lifestyle behaviors. The overall mean score (mean 2.30, SD .46) of cardiovascular health promotion closely approximates the median (median 2.25) for a relatively normal distribution. This outcome recurs in the mean scores of each subscale, indicating internal consistency was satisfactory.

In the *Health Responsibility Subscale* (mean 2.28, SD 0.61), these women appear to have reduced accountability for personal health and welfare, judged by a lack of conviction to communicate healthy viewpoints in the *Interpersonal Relations Subscale* (mean 2.37, SD 0.56) and by shortened abilities to better control tension in the *Stress Management Subscale* (mean 2.10, SD 0.52). The *Physical Activity Subscale* had the lowest mean score (mean 1.77, SD 0.51), suggesting these women are poorly engaged in standard fitness programs or leisure time behavioral activities for optimal well-being.



However, they seem to perform healthful cooking and engage in wholesome eating behaviors from the scores on the *Nutrition Subscale* (mean 2.56, SD 0.57). Further, the highest mean score (mean 2.76, SD 0.66) was observed in the *Spiritual Growth Subscale*, indicating inner self-awareness and strong beliefs toward health. Consequently, participating in cardiovascular health promotion is based on the six behavioral dimensions of the Spanish-language Health Promoting Lifestyle Profile II (Sp-HPLP II).

Previous studies have consistently found physical activity and health responsibility to have lower scores, while spiritual growth generally held the highest (Bond, et al., 2002; Carlson, 2000; Duffy, et al., 1996; Hulme, et al., 2003; Kerr & Ritchey, 1990; Kuster & Fong, 1993; Walker, et al., 1990). In the current study, rank order of the behavioral dimensions from the lowest to highest is: (1) physical activity, (2) stress management, (3) health responsibility, (4) interpersonal relations, (5) nutrition, and (6) spiritual growth. Stress management had the second lowest score while nutrition, the next highest for the current study.

Additionally, the mean score for an overall health-promoting lifestyle was 2.31. This score is below other studies that have ranged from 2.34 to 3.10 (Bond, et al., 2002; Carlson, 2000; Hulme, et al., 2003). A summary of means and standard deviations (SD) to compare the current study with previous research is provided in *Table 4-6*. Behavioral activities associated with health promotion are reliant on cognitive understanding of one's own health and health status. This perspective was captured in the findings from the second survey questionnaire, the Spanish Heart Disease Fact Questionnaire.

**Table 4-6. Comparison of Means and Standard Deviations of the Spanish-Language Health-Promoting Lifestyle Profile II from Previous Studies**

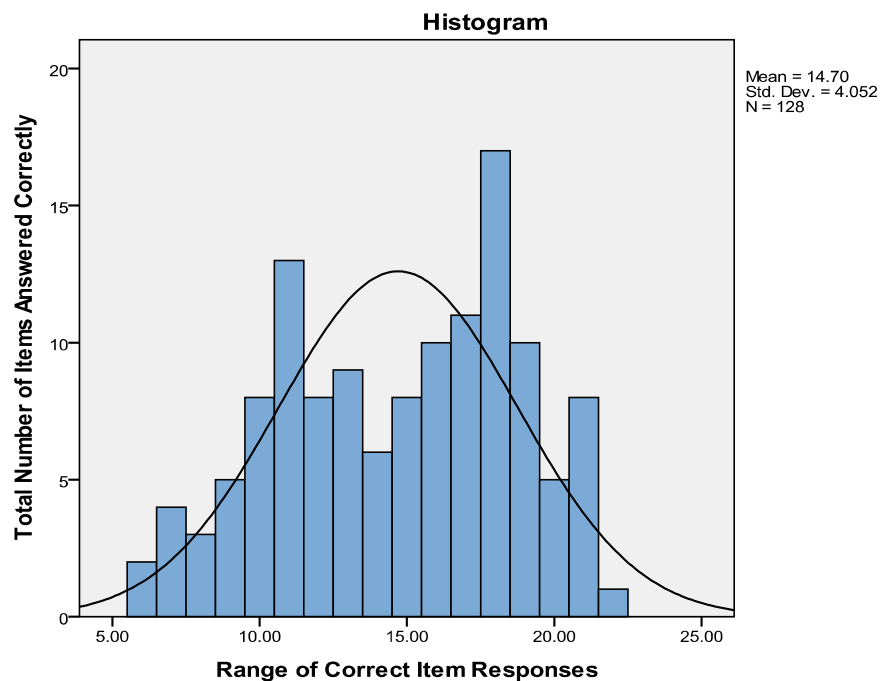
Studies	<u>Behavioral Subscale Dimensions</u>						
	Overall Score Sp-HPLP II	Physical Activity	Stress Management	Health Responsibility	Interpersonal Relations	Nutrition	Spiritual Growth
	M (SD) <sup>a</sup>	M (SD)	M (SD)	M(SD)	M (SD)	M (SD)	M (SD)
Carlson (2000)	3.10 (0.41)	2.62 (0.83)	3.19 (0.54)	3.09 (0.58)	3.13 (0.40)	3.09 (0.60)	3.43 (0.41)
Bond, et al. (2002)	2.44 (0.44)	1.89 (0.55)	2.30 (0.53)	2.32 (0.57)	2.64 (0.68)	2.53 (0.50)	2.87 (0.59)
Hulme, et al. (2003)	2.34 (0.44)	1.98 (0.60)	2.26 (0.50)	2.19 (0.57)	2.44 (0.55)	2.44 (0.53)	2.72 (0.57)
<i>Current Study:</i> Benavente (2010)	2.31 (0.46)	1.77 (0.51)	2.10 (0.52)	2.28 (0.61)	2.37 (0.56)	2.56 (0.57)	2.76 (0.66)

Note. <sup>a</sup> M = Mean; SD = Standard Deviation.

**Spanish-Language Heart Disease Fact Questionnaire (Sp-HDFQ).** A 25-item survey, consisting of true/false questions, revealed the cognitive understanding of CHD and associated risk factors (Wagner, Lacey, et al., 2005). For the present study, Cronbach's alpha coefficient was adequate ( $\alpha = .74$ ). The number of correct item responses ranged from 6 to 22 items (mean 14.70, SD 4.05). Higher scores indicate higher CHD knowledge levels with a perfect score equaling the total of 25 points.

Most of the women were honest about not knowing the correct response and circled the “I don’t know” category. The majority of women (70%) answered approximately 15 to 18 questions correctly (mean 14.7, median 15, mode 18, variance 16.8) out of 25 items, suggesting they possessed an average to below average level of knowledge about CHD and associated risk factors. Using a histogram graph, these data are illustrated in *Figure 4-3*.

**Figure 4-3. Histogram of Scores for Knowledge Level of Coronary Heart Disease and Risk (N = 128)**



To discriminate between CHD knowledge domains, *Table 4-6* displays scoring results and details for each survey question. Health knowledge domains in the Sp-HDFQ spanned from general awareness of the disease process to specific details about risk

factors, as well as self-management of chronic conditions and health-promoting behaviors. Some domains showed high knowledge levels, such as the effects of high blood pressure, weight control, and physical activity on cardiovascular risk. High knowledge levels demonstrate strong cognitive understanding of those domains.

Other domains showed inadequate knowledge levels and subsequently, poorer cognitive understanding. In rank order, those domains lagging behind are the effects of high cholesterol and other lipids, sex-specific differences, and the consequences of diabetes and family histories. Little knowledge of CHD can lead to performing risk-enhancing behaviors, which can seriously affect health status and self-efficacy (Ajzen, 2002). Therefore, current perceptions of health and illness were explored. The third survey questionnaire, the Spanish Health Perceptions Questionnaire, provided yet another dimension toward our understanding of cardiovascular health promotion in these women.

**Table 4-7. Spanish-Language Heart Disease Fact Questionnaire (N = 128)**

<b>Scoring Details: Correct Items</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>SD</b>	<b>Variance</b>	<b>Overall <math>\alpha</math></b>
	128	6	22	14.70	4.05	16.8	.74

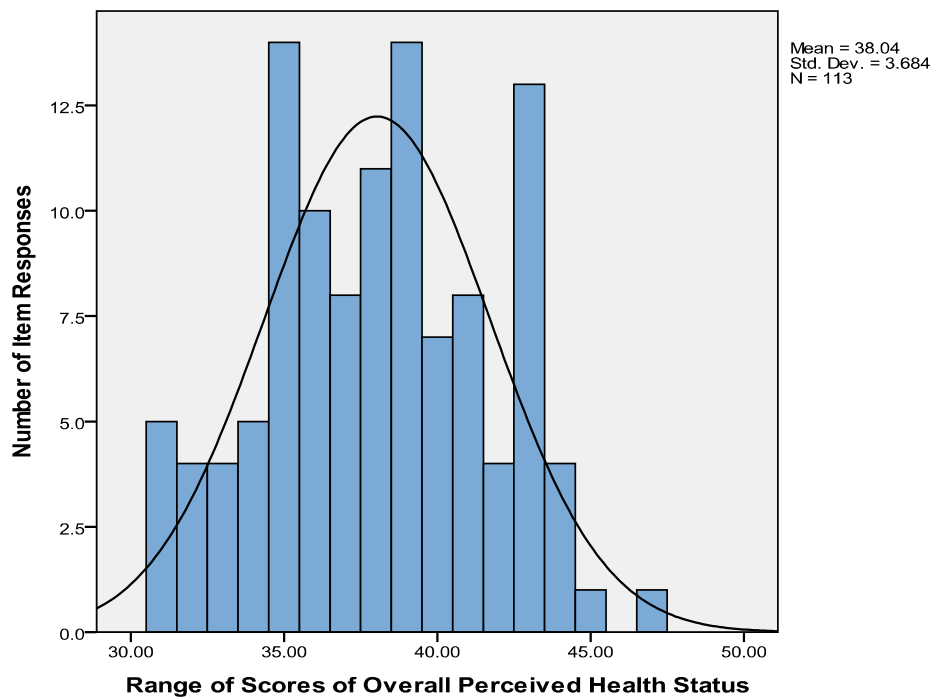
  

<b>English Language Survey Question</b>	<b>Frequency Correct</b>	<b>Percent Correct</b>
1. A person always knows when they have heart disease.	56	44.1
2. If you have a family history of heart disease you are at risk for developing heart disease.	66	51.6
3. The older a person is, the greater their risk of having heart disease.	75	59.1
4. Smoking is a risk factor for heart disease.	97	75.8
5. A person who stops smoking will lower their risk of	82	64.1

developing heart disease.		
6. High blood pressure is a risk factor for heart disease.	114	89.1
7. Keeping blood pressure under control will reduce a person's risk for developing heart disease.	86	67.2
8. High cholesterol is a risk factor for developing heart disease.	108	84.4
9. Eating fatty foods does not affect blood cholesterol levels.	64	50.0
10. If your "good" cholesterol (HDL) is high you are at risk for heart disease.	27	21.3
11. If your "bad" cholesterol (LDL) is high you are at risk factor for heart disease.	91	71.7
12. Being overweight increases a person's risk for heart disease.	123	96.1
13. Regular physical activity will lower a person's chance of getting heart disease.	104	81.3
14. Only exercising at a gym or in exercise class will help lower person's chance of developing heart disease.	72	56.3
15. Walking and gardening are considered exercise that will help lower chance of developing heart disease.	81	63.3
16. Diabetes is a risk factor for developing heart disease.	74	57.8
17. High blood sugar puts a strain on the heart.	100	78.1
18. If blood sugar is high over several months it can cause cholesterol levels to go up and increase risk of heart disease.	96	75.0
19. A person who has diabetes can reduce risk of developing heart disease if they keep blood sugar levels under control.	72	56.3
20. People with diabetes rarely have high cholesterol.	30	23.6
21. If a person has diabetes, keeping cholesterol under control will help to lower chance of developing heart disease.	74	57.8
22. People with diabetes tend to have low HDL (good) cholesterol.	17	13.3
23. A person who has diabetes can reduce risk of developing heart disease if they keep their blood pressure under control.	58	46.0
24. A person who has diabetes can reduce risk of developing heart disease if they keep their weight under control.	84	65.6
25. Men with diabetes have a higher risk of heart disease than women with diabetes.	31	24.2

**Spanish-Language Health Perceptions Questionnaire (Sp-HPQ).** This 24-item questionnaire contains unbalanced subscales of favorably and unfavorably worded items. The 5-point Likert scale was collapsed into two dichotomized categories of “true” or “false” for scoring. The “I don’t know” rating choice was placed in either of the two categories, weighted by whether the question was reversed scored or not. *Figure 4-4* depicts a histogram of the distribution, showing that the mean sum of scores (mean 38.04, SD 3.68) in this sample closely approximated the median (median 38). Three prominent clusters emphasize the highest number (14 and 13) of items answered across subscales, but do not discriminate between questions.

**Figure 4-4. Histogram of Scores for Overall Perceived Health Status (N = 113)**



An overall health perceptions score provides a measure of the respondents’ perceptions of health status. Higher overall scores reflect balanced perceptual states for

healthier lifestyles, empirically measuring present and future health viewpoints and circumstances surrounding illness. Additionally, higher scores are directly related to the subject perceiving the health state, as reflected by the name of the subscale, with a higher degree of intensity. Interpretations of cumulative subscale scores were based on the respondents' perceptions of present health states (*Current Health Subscale*), future health prospects (*Healthy Outlook Subscale*), maintaining health or resisting illness (*Health Worry/Concern Subscale*), and dealing with illness (*Sickness Orientation Subscale*). Results of overall health perception scores and the four perceptual subscales are assembled in *Table 4-7*.

**Table 4-8. Spanish Health Perceptions Questionnaire Scores (N = 128)**

Scale	Maximum Range of Sums	Mean Sums $\pm$ SD	Range of Mean Scores	Mean Scores $\pm$ SD	$\alpha$
Overall Health Perceptions Score	45 – 110	84.48 $\pm$ 10.76	31 – 47	38.04 $\pm$ 3.68	.60
Current Health Subscale	23 – 69	52.38 $\pm$ 8.3	18 – 29	23.43 $\pm$ 2.75	.43
Sickness Orientation Subscale	2 – 10	7.40 $\pm$ 1.99	2 – 4	3.36 $\pm$ 0.64	.09
Health Outlook Subscale	3 – 15	11.26 $\pm$ 2.44	3 – 6	4.75 $\pm$ 0.84	.17
Health Worry/Concern Subscale	6 – 20	13.52 $\pm$ 0.75	4 – 8	6.19 $\pm$ 0.95	.12

For the overall score of perceived health status in the present study, the Cronbach's coefficient alpha ( $\alpha = .60$ ) was slightly low, and even lower for the subscales, ranging from  $\alpha = .43$  for *Current Health*,  $\alpha = .19$  for *Healthy Outlook*,  $\alpha = .12$  for *Health*

*Worry/Concern*, to  $\alpha = .09$  for *Sickness Orientation*. Such low coefficients imply wide subject-variability evidenced by varied item-responses. In other words, respondents did not answer questions in a similar manner.

Overall perceived health status for this group of women appeared to be somewhat more positive (mean 84.14, SD 10.76) than negative for healthier lifestyles.

Interestingly, this finding contraindicates the high percentage (93%) of respondents who self-rated as having fair to poor health status (*Table 4-2*). Statistical scores of the health perceptions questionnaire suggest that perceptions of health and illness are fairly balanced, representing a mild to moderate advantage for good health whether in the presence or absence of disease. Assessment of the respondents' perceptions of health status based on subscale scores indicate that the more favorable health perceptions are likely to occur in the absence of disease, except for future health conditions.

Neutral health perceptions regarding future expectations materialized for this sample of women, according to the *Healthy Outlook Subscale* (mean 4.75, SD 0.84). Yet, these women were inclined to have more health worries and illness concerns, as evidenced by the mean scores of the *Health Worry/Concern Subscale* (mean 6.19, SD 0.95) and the *Sickness Orientation Subscale* (mean 2.76, SD 0.66). For the *Current Health Subscale* (mean 23.43, SD 2.75), this group of women had a tendency for better perceptions of present health states, including a seemingly greater resistance to illness. Other factors, such as personal health beliefs and cultural value systems, also may influence present health states and plausibly explain contradictory findings described above (Padilla & Villalobos, 2007). Additionally, these factors also can facilitate better



English proficiency during the acculturative process to augment healthcare communication and access to preventive services.

**Spanish-Language Short Acculturation Survey for Hispanics (Sp-SASH).**

The fourth survey questionnaire, a 12-item scale consisting of language-based and media-related questions, measured social acculturation levels of this study sample. Considering its adequacy in previous research, Cronbach’s alpha coefficient in the present study was unusually low ( $\alpha = .44$ ). Scoring details for acculturation are delineated in *Table 4-8*.

Based on overall acculturation scores, this group of Spanish-speaking women was poorly acculturated to American society. Low acculturation scores indicate strong cultural ties to ethnic origins. When only one-quarter of the sample (25.8%) claimed bilingual ability for both Spanish and English languages, the preference for the Mexican culture, or way of life, was plainly evident in the present study.

**Table 4-9. Spanish-Language Short Acculturation Survey  
for Hispanics Scores (N = 128)**

		<b>Range</b>	<b>Mean</b>	<b>SD</b>	<b><math>\alpha</math></b>
Overall Acculturation Score		1.00 - 3.00	1.46	.41	.44
			<b>N</b>	<b>Percent (%)</b>	<b>Cumulative %</b>
Bilingual Ability	Yes: Spoke Spanish & English		33	25.8	25.8
	No: Spoke Spanish Only		95	74.2	100

Socially, these women preferred to interact and celebrate important events with other Latinos/as, primarily of Mexican ancestry. They also favored viewing Spanish

television and listening to Spanish music. Therefore, it is plausible that a low acculturation level does support a Mexican cultural context toward health and illness. Thus, providing additional statistical analyses of the associations between and among study variables in this group of younger and predominantly first-generation Mexican women can broaden our understanding about health promotion and lifestyle behaviors.

### **Statistical Analyses of Study Aims**

Bivariate statistical techniques were first used to assess the relationships in the specific aims. Pearson or Spearman correlation coefficients were applied to assess the strength of the associations. When working with rating scales, such as those used in this study, correlations provide general indications. *Table 4-9* depicts a correlation matrix of the four study variables.

Linear regression models were then used to determine if the associations were still significant having adjusted for important demographic and other predictor variables. Key demographic variables applied were age, employment status, education level, income, and marital status, as well as present health status, use of folk healer, length of US residency, and literacy level. The final results for each specific aim are presented below.

**Table 4-10. Correlation Matrix of Study Variables**

	Cardiovascular Health Promotion: Sp-HPLP II	Knowledge of CHD and Risk: Sp-HDFQ	Perceived Health Status: Sp-HPQ	Acculturation Level: Sp-SASH	Menopausal Status: Sp-SIS
Cardiovascular Health Promotion: Sp-HPLP II	1				
Knowledge of CHD and Risk: Sp-HDFQ	.298 <sup>a**</sup>	1			
Perceived Health Status: Sp-HPQ	.495 <sup>a**</sup>	.305 <sup>a**</sup>	1		
Acculturation Level: Sp-SASH	.105 <sup>b</sup>	.019 <sup>b</sup>	.146 <sup>b</sup>	1	
Menopausal Status: Sp-SIS	.043 <sup>b</sup>	-.188 <sup>b*</sup>	.103	-.002	1

Note. <sup>a</sup> Pearson product-moment correlation; <sup>b</sup> Spearman rank order correlation.

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Specific Aim 1: The Relationship between Knowledge of Coronary Heart Disease and Risk Factors and Cardiovascular Health Promotion**

Specific Aim 1 refers to determining the relationship between knowledge of CHD and risk (measured by the Sp-HDFQ) and cardiovascular health-promoting lifestyle behaviors (measured by the Sp-HPLP II). A statistically significant mild positive correlation was found between knowledge of CHD and associated risk factors and cardiovascular health-promoting lifestyles (*Table 4-9:  $r = .298, p = .001$* ).

After adjusting for demographic variables, a significant relationship no longer existed between CHD knowledge and cardiovascular health promotion (*Table 4-10*:  $p = .277$ ). *Table 4-10* displays a linear regression model for Specific Aim 1 by demographics. Two key demographic variables significantly associated with knowledge levels were: (a) health literacy category ( $p = .002$ ), defined as not requiring any reading assistance; and (b) educational level ( $p = .035$ ), referring to less than five years of formal schooling. However, for both of these key demographic variables, the change in Sp-HDFQ scores was less than half a point on average, indicating a lack of clinical significance. Length of US residency of more than five years ( $p = .078$ ) and excellent or good health status ( $p = .097$ ) approached significance. In general, these women were monolingual and poorly educated, yet they had sufficient cognitive understanding to demonstrate average scores on the Sp-HDFQ. This critical finding demonstrates that health literacy is not necessarily contingent on higher levels of education, provided the approach considers language preferences.

**Table 4-11. Linear Regression Model 1 for Cardiovascular Health Promotion: Knowledge Levels of Coronary Heart Disease and Key Demographic Variables**

Variable	b	95% CI	p-value*
<b>CHD KnowledgeLevels (SP-HDFQ)</b>	.013	[-.011,.037]	.277
<b>Age: Years</b>	.009	[-.002,.019]	.106
<b>Employment Status: Unemployed</b>	-.069	[-.243, .105]	.434
<b>Education level: None/Grade School (0-5 years)</b>	-.362	[-.698, -.026]	.035*
<b>Middle School (6-8 years)</b>	-.133	[-.446, .181]	.402
<b>High School (9-12 years)</b>	-.041	[-.351, .269]	.792
<b>Post-High School/College</b>	(ref)		
<b>Income level: Not enough to support family</b>	.137	[-.079, .353]	.212
<b>Marital status: Single/Not partnered</b>	-.025	[-.241, .190]	.815
<b>Present health status: Self-Rated Excellent/Good</b>	.169	[-.031, .370]	.097
<b>Curandero/a (Folk healer) use: Yes</b>	-.071	[-.318, .176]	.567
<b>Length of US residency: 0 – 4.9 years</b>	-.148	[-.587, .292]	-.148
<b>5 – 9.9 years</b>	-.078	[-.399, .243]	-.078
<b>≥10 years</b>	(ref)		
<b>Literacy level: No reading assistance needed</b>	-.417	[-.670, -.164]	.002*

Note. \*  $p < .05$ ; b = Regression Coefficient; CI = Confidence Interval.

**Specific Aim 2: The Relationship between Perceived Health Status and Cardiovascular Health-Promotion**

Specific Aim 2 refers to determining the relationship between perceived health status (measured by the Sp-HPQ) and cardiovascular health-promoting lifestyle behaviors (measured by the Sp-HPLP-II). Table 4-11 shows two linear regression models for

Specific Aim 2. *Model 2a* adjusts for demographic variables, and *Model 2b* is a reduced model that controls for CHD knowledge and risk.

A statistically significant mild positive correlation was found between perceived health status and cardiovascular health-promoting lifestyles (*Table 4-9*:  $r = .495$ ,  $p = .001$ ), and also with knowledge levels of CHD and risk (*Table 4-9*:  $r = .305$ ,  $p = .001$ ). After adjusting for key demographic variables, *Model 2a* (*Table 4-11*) shows that the relationship between perceived health status and cardiovascular health promotion continues to be statistically significant ( $b = .112$ , 95% CI = .058 - .165,  $p < .001$ ). Statistically significant demographic variables that also supported heart-healthy lifestyles were: increased age ( $b = .009$ ,  $p = .050$ ); post college versus less than five years of formal schooling ( $b = -.327$ ,  $p = .038$ ); and needing reading assistance ( $b = -.373$ ,  $p = 0.002$ ).

After removing non-significant demographic variables and controlling for knowledge of CHD and risk, *Model 2b* (*Table 4-11*) indicates a statistically significant relationship persists between perceived health status and cardiovascular health promotion ( $p < .001$ ). For optimal scoring on the Sp-HPQ, the Sp-HPLP II favorably reflects health-promoting lifestyle behaviors ( $b = .086$ , 95% CI = .039 - .133,  $p < .001$ ). In other words, reading comprehension ability influences interpretation, positively altering health status perceptions and lifestyles. Additionally, literacy level ( $b = -.273$ ,  $p = .010$ ) was the only key demographic variable that maintained a significant association with cardiovascular health promotion in both models. This outcome suggests that those women who did not need reading assistance were less likely to have positive perceptions of health status.

**Table 4-12. Linear Regression Model 2 for Cardiovascular Health Promotion:  
Perceived Health Status and Key Demographic Variables**

Variable	Model 2a			Model 2b		
	b	95% CI	p-value*	b	95% CI	p-value*
<b>Perceived Health States (Sp-HPQ)</b>	.112	[.058, .165]	<i>p</i> < .001*	.086	[.039, .133]	<i>p</i> < .001*
<b>CHD Knowledge Levels (Sp-HDFQ)</b>	-			.021	[.002, .041]	.033*
<b>Age: Years</b>	.009	[.000, .019]	.050*	.005	[-.003, .013]	.229
<b>Employment Status: Unemployed</b>	-.098	[-.259, .063]	.229	-		
<b>Education level: None/Grade School (0-5 years)</b>	-.327	[-.636, -.019]	.038*	-.167	[-.441, .106]	.228
<b>Middle School (6-8 years)</b>	-.129	[-.419, .162]	.381	-.003	[-.266, .261]	.984
<b>High School (9-12 years)</b>	-.015	[-.301, .271]	.916	.079	[-.200, .357]	.577
<b>Post-High School/College</b>	(ref)			(ref)		
<b>Income level: Not enough to support family</b>	.120	[-.084, .325]	.244	-		
<b>Marital status: Single/Not partnered</b>	-.045	[-.244, .153]	.652	-		
<b>Present health status: Self-Rated Excellent/Good</b>	.134	[-.053, .322]	.157	-		
<b>Curandero/a (Folk healer) use: Yes</b>	-.002	[-.232, .229]	.987	-		
<b>Length of US residency: 0 – 4.9 years</b>	-.005	[-.427, .417]	.981	-		
<b>5 – 9.9 years</b>	-.011	[-.315, .294]	.944	-		
<b>≥10 years</b>	(ref)					
<b>Literacy level: No reading assistance needed</b>	-.373	[-.602, -.143]	.002*	-.273	[-.479, -.066]	.010*

Note. \* *p* < .05; b = Regression Coefficient; CI = Confidence Interval.

### **Specific Aim 3: The Relationship between Acculturation Level and Cardiovascular Health Promotion**

Specific Aim 3 refers to the relationship between acculturation level (measured by the Sp-SASH) and cardiovascular health-promoting lifestyle behaviors (measured by the Sp-HPLP-II). Negligible correlations exist for acculturation level with either outcome or predictor variables. According to the correlation coefficients in *Table 4-9*, statistically significant associations are not evident between acculturation and cardiovascular health promotion ( $r = .105$ ), perceived health status ( $r = .146$ ), and CHD knowledge ( $r = .019$ ).

The association between acculturation level and cardiovascular health promotion (*Table 4-12, Model 3a*:  $b = .167$ , 95% CI =  $-0.58 - 0.392$ ,  $p = .143$ ) did not improve after adjustments were made (*Table 4-12, Model 3b*:  $b = .182$ , 95% CI =  $-0.30 - 0.393$ ,  $p = .091$ ), remaining non-significant. These results are illustrated in *Table 4-12* as linear regression models for Specific Aim 3. *Model 3a (Table 4-12)* designates two key demographic variables were significantly associated with acculturation level: age ( $p = .024$ ) and literacy level ( $p = .001$ ). Excellent or good self-ratings of health did not reach significance ( $p = .081$ ), but may have clinical relevance.

After adjusting for CHD knowledge, perceived health status, and demographic variables, *Model 3b (Table 4-12)* clearly demonstrates acculturation level was not a predictor of cardiovascular health promotion, but perceived health status continues to be statistically significant ( $p = .002$ ), exerting a strong influence. Furthermore, age ( $b = .010$ ,  $p = .041$ ) and literacy level ( $b = -.299$ ,  $p = .001$ ) retain statistical significance in the reduced *Model 3b*, while income level approached significance ( $p = .086$ ). This



particular income category reflected living at or near poverty level. Although the *p*-value was not statistically significant, this category suggests clinical meaningfulness and requires further investigation to properly understand its full potential. The lack of associations with acculturation level implies sociocultural factors did not influence decisions about health behaviors. Considering that lower acculturation scores support a Mexican cultural context and orientation, and this group of women was poorly acculturated to American society, this finding implies other underlying factors motivate behavioral performance. Alternatively, perceptions of health status and age seem to alter performance of specific behaviors.

**Table 4-13. Linear Regression Model 3 for Cardiovascular Health Promotion:  
Acculturation Level and Key Demographic Variables**

Variable	Model 3a			Model 3b		
	b	95% CI	p-value*	b	95% CI	p-value*
<b>Acculturation Level (Sp-SASH)</b>	.167	[-.058, .392]	.143	.182	[-.030, .393]	.091
<b>Perceived Health States (Sp-HPQ)</b>	-			.079	[.029, .129]	.002*
<b>CHD Knowledge Levels (Sp-HDFQ)</b>	-			.015	[-.006, .037]	.156
<b>Age: Years</b>	.012	[.002, .022]	.024*	.010	[.000, .020]	.041*
<b>Employment Status: Unemployed</b>	-.068	[-.241, .105]	.435	-		
<b>Education level: None/Grade School (0-5 years)</b>	-.281	[-.643, .082]	.127	-.210	[-.542, .121]	.211
<b>Middle School (6-8 years)</b>	-.050	[-.390, .289]	.769	-.008	[-.321, .305]	.961
<b>High School (9-12 years)</b>	.036	[-.294, .365]	.829	.119	[-.185, .423]	.441
<b>Post-High School/College</b>	(ref)			(ref)		
<b>Income level: Not enough to support family</b>	.142	[-.074, .357]	.195	.179	[-.026, .384]	.086
<b>Marital status: Single/Not partnered</b>	-.021	[-.235, .192]	.844	-		
<b>Present health status: Self-Rated Excellent/Good</b>	.177	[-.022, .376]	.081	.154	[-.026, .334]	.093
<b>Curandero/a (Folk healer) use: Yes</b>	-.073	[-.319, .172]	.553	-		
<b>Length of US residency: 0 – 4.9 years</b>	-.149	[-.585, .287]	.499	-		
<b>5 – 9.9 years</b>	-.058	[-.374, .259]	.719	-		
<b>≥10 years</b>	(ref)					
<b>Literacy level: No reading assistance needed</b>	-.444	[-.688, -.200]	.001*	-.299	[-.521, -.077]	.009*

Note. \*  $p < .05$ ; b = Regression Coefficient; CI = Confidence Interval.

#### **Specific Aim 4: The Relationship between Menopausal Status and Cardiovascular Health Promotion**

Specific Aim 4 refers to the relationship between menopausal status (measured by self-report on the SIS) and cardiovascular health-promoting lifestyle behaviors (measured by the Sp-HPLP-II). *Table 4-13* displays linear regression models for Specific Aim 4 representing the effects of key demographic variables and predictor variables. No significant correlations (*Table 4-9*) are evident between menopausal status and cardiovascular health promotion ( $r = .043$ ), perceived health status, ( $r = .103$ ), or with acculturation level ( $r = -.002$ ).

After adjusting for demographics, a non-significant relationship between menopausal status and cardiovascular health promotion remained ( $b = -.213$ , 95% CI =  $-.558 - 0.132$ ,  $p = .222$ ), as delineated in *Model 4a (Table 4-13)*. Key demographic variables were significantly associated with cardiovascular health promotion. These included age ( $p = .022$ ), literacy level ( $p < .001$ ), and having less than five years of education ( $p = .025$ ). Reporting excellent or good self-ratings of health ( $p = .070$ ) approached significance.

A statistically significant mild positive correlation is observed between menopausal status and knowledge of CHD and risk ( $r = -.188$ ,  $p = 0.05$ ). After adjusting for the predictor variables, *Model 4b (Table 4-13)* demonstrated that this relationship does not continue with cardiovascular health promotion ( $b = -.113$ , 95% CI =  $-.418 - .192$ ,  $p = .465$ ). However, perceived health status was still associated with cardiovascular health promotion ( $b = .081$ , 95% CI =  $.032 - .130$ ,  $p = .002$ ). In the reduced *Model 4b*

(*Table 4-13*), literacy level ( $p = .007$ ) maintained statistical significance with cardiovascular health promotion. From the first model to the second one (*Table 4-13*), self-ratings of excellent to good health status ( $p = .056$ ) closely approached significance, but age ( $p = .068$ ) dropped out.

Unexpectedly, income level ( $b=.212, p = .039$ ) became statistically significant in *Model 4b* (*Table 4-13*). This income category represents financial poverty, meaning not having enough money in the household to make ends meet, and suggests clinical meaningfulness. Although income is insufficient to adequately support families and these women were poorly educated, it appeared that they were not deterred from attempting to maintain a healthy outlook on life and benefit from it.

**Table 4-14. Linear Regression Model 4 for Cardiovascular Health Promotion:  
Menopausal Status and Key Demographic Variables**

Variable	Model 4a			Model 4b		
	b	95% CI	p-value*	b	95% CI	p-value*
<b>Menopausal Status (Sp-SIS)</b>	-.213	[-.558, .132]	.222	-.113	[-.418, .192]	.465
<b>Acculturation Level (Sp-SASH)</b>	-			.160	[-.048, .368]	.129
<b>Perceived Health States (Sp-HPQ)</b>	-			.081	[.032, .130]	.002*
<b>CHD Knowledge Levels (Sp-HDFQ)</b>	-			.016	[-.005, .037]	.133
<b>Age: Years</b>	.016	[.002, .030]	.022*	.011	[-.001, .024]	.068
<b>Employment Status: Unemployed</b>	-.088	[-.262, .086]	.318	-		
<b>Education level: None/Grade School (0-5 years)</b>	-.380	[-.712, -.049]	.025*	-.204	[-.535, .126]	.223
<b>Middle School (6-8 years)</b>	-.145	[-.456, .165]	.355	.006	[-.306, .317]	.971
<b>High School (9-12 years)</b>	-.031	[-.342, .280]	.842	.212	[-.165, .440]	.370
<b>Post-High School/College</b>	(ref)			(ref)		
<b>Income level: Not enough to support family</b>	.148	[-.069, .366]	.178	.212	[-.535, .126]	.039*
<b>Marital status: Single/Not partnered</b>	-.003	[-.218, .212]	.978	-		
<b>Present health status: Self-Rated Excellent/Good</b>	.185	[-.015, .386]	.070	.174	[.011, .414]	.056
<b>Curandero/a (Folk healer) use: Yes</b>	-.031	[-.289, .226]	.809	-	[-.004, .352]	
<b>Length of US residency: 00 – 4.9 years</b>	-.121	[-.558, .315]	.582	-		
<b>5 – 9.9 years</b>	-.037	[-.356, .282]	.818	-		
<b>≥10 years</b>	(ref)					
<b>Literacy level: No reading assistance needed</b>	-.446	[-.691, -.201]	p<.001*	-.305	[-.523, -.087]	.007*

Note. \*  $p < .05$ ; b = Regression Coefficient; CI = Confidence Interval.

## Summary of Quantitative Study Findings

In summary, study findings reveal a relatively young sample of Mexican-American women who preferred to speak Spanish, regardless of birth country, length of US residency, or acculturation level. Health profiles based on respondents' self-report of family histories demonstrated a slight CHD risk for a majority of these women. Some behaviors supported health promotion for heart-healthy nutrition and spiritual connections for healthier lifestyles, while other behaviors did not. Poor behavioral performance was evident in three domains of health promotion. Little physical exercise, ineffective interpersonal communication, and poor control of life stressors are serious health threats to cardiovascular health.

Alleviating these health threats were increased knowledge levels and positive perceptions of health status. Within a Mexican cultural context, both knowledge of CHD and perception of health status significantly influenced cardiovascular health-promoting lifestyles. Perceived health status exerted the more dominant effect on cardiovascular health promotion and warrants further investigation. Menopausal status and acculturation levels, two psychosocial factors, had negligible influences on cardiovascular health promotion.

However, unexpected correlations occurred when considering key demographic variables. A majority of women had little income and education that negatively affected lifestyle behaviors. Age, another key demographic variable, significantly influenced cardiovascular health promotion across domains until factoring in menopausal status. Clearly, CHD knowledge differences persist between younger and older women, with the

latter possessing higher levels of knowledge. Although younger women may have less knowledge about CHD risk than older women, both groups had fairly favorable health perspectives that could be powerful enough to overcome unanticipated difficulties, as Hispanics in the US are likely to experience.

Considering that perceived health status was a consistent predictor of cardiovascular health promotion, contradictory findings between self-reported ratings of health status and instrument scores that empirically measured perceptions of health status necessitate a deeper exploration of the effects of health perceptions on health promotion, including a comparison to actual cardiovascular risk. Self-reported health ratings conveyed perceptions of fair to poor current states of health, while those ratings of excellent to good health nearly approached significance in several of the linear regression models. Based on instrument scores, these women maintained healthy balanced perceptions of health and illness for positive lifestyles, but remained neutral about future health projections. Collectively, these factors have important clinical implications and set the course for future research endeavors, discussed in Chapter 5.

## Chapter 5

### DISCUSSION

In recent years, uneven assessment, treatment, and evaluation of cardiovascular disease among racial-ethnic groups have received much attention in health disparities research, and subsequently, in policymaking. Cardiovascular health promotion, an essential aspect of self-care management of cardiovascular disease, has complex behavioral determinants. Previous researchers have mostly investigated health behaviors associated with either cardiovascular disease prevention (e.g. performance of physical activity, heart-healthy nutrition, weight loss/management, and cigarette smoking cessation/abstinence) or risk reduction (e.g. treatment of hypertension, diabetes, and dyslipidemia). These studies, however, have conventionally focused on differences between non-Hispanic whites (NHW) and underserved ethnic populations.

Using NHW as the referent group inadvertently neglects the importance of other, perhaps non-dominant, subcultures. In addition, key aspects of sex-specific differences may be overlooked and little insight also may be offered to better understand the sociocultural context of health in science. The present study extends what is known about cardiovascular health promotion in underserved ethnic populations and adds depth to the prevailing health disparity paradigm that affects Hispanic healthcare in the US today. This chapter provides: (a) an overview of significant study findings based on study aims and hypotheses; (b) comparison of key study findings to previous research, including plausible interpretations; (c) study limitations and generalizability of results; (d) directions for future research, and (e) implications for clinical practice.



## Overview of Significant Study Findings

**Specific Aim 1.** Knowledge level of CHD and associated risk factors is a significant predictor of cardiovascular health promotion in Mexican-American women. The relationship between CHD knowledge levels and cardiovascular health promotion was statistically significant, validating study hypothesis (1a) for Specific Aim 1. Knowledge levels were no longer significant when adjustments were made for menopausal status and acculturation levels (*Tables 4-12 and 4-13*). Key demographic variables also significantly associated with cardiovascular health-promoting lifestyle behaviors were education level (less than five years) and literacy (not requesting reading assistance) (*Table 4-10*).

**Specific Aim 2.** Perceived health status also is a significant predictor of cardiovascular health-promoting lifestyle behaviors. The relationship between perceived health status and cardiovascular health promotion remained statistically significant in all models, confirming both study hypotheses (2a and 2b) for Specific Aim 2. Key demographic variables significantly associated with cardiovascular health-promoting lifestyle behaviors were age (years), education level (less than five years), and literacy (not requesting reading assistance) (*Table 4-11: Model 2a*). After adjustments, significant associations persisted between CHD knowledge levels, literacy levels, and cardiovascular health promotion (*Table 4-11: Model 2b*).

**Specific Aim 3:** Acculturation level is not a predictor of cardiovascular health promotion. Study hypothesis (3a) for Specific Aim 3 is rejected because the relationship between acculturation level and cardiovascular health-promoting lifestyle behaviors is

not statistically significant. After adjusting for perceived health status and CHD knowledge levels, this relationship remains non-significant, thereby rejecting the second hypothesis (3b). Key demographic variables significantly associated with cardiovascular health-promoting lifestyle behaviors were age (years) and literacy (not requesting reading assistance) (*Table 4-12: Model 3a*). After further adjustments, significant associations persisted between perceived health status, age, literacy, and cardiovascular health promotion (*Table 4-12: Model 3b*).

**Specific Aim 4:** Menopausal status is not a predictor of cardiovascular health promotion. Study hypothesis (4a) for Specific Aim 4 is rejected because the relationship between menopausal status and cardiovascular health-promoting lifestyle behaviors is not statistically significant. The second hypothesis (4b) also is rejected because the relationship remains non-significant after adjusting for perceived health status, CHD knowledge and acculturation levels. Key demographic variables significantly associated with cardiovascular health-promoting lifestyle behaviors were age (years), education level (less than five years) and literacy (not requesting reading assistance) (*Table 4-13: Model 4a*). After further adjustments, significant associations persisted for perceived health status, cardiovascular health promotion, and literacy level, but emerged for income (not enough to support family) (*Table 4-13: Model 4b*).

In summary, the significant predictors of cardiovascular health promotion in Mexican-American women that persisted through all analyses are perceived health status and the demographic variables of income levels, defined as not enough money to support the family, and literacy level with age approaching significance. Knowledge level of

CHD was a significant factor in earlier phases of the analysis and merits consideration in future research. Each of these factors influences Mexican-American women to engage in cardiovascular health-promoting lifestyle behaviors. Therefore, comparing current study findings to previous research increases our understanding of the degree of influence.

### **Comparison of Significant Study Findings to Previous Research**

#### **Major Study Finding: Perceived Health Status on Cardiovascular Health Promotion**

The degree of influence of perceived health status on cardiovascular health promotion in Mexican-American women is strong, based on significant associations that persisted throughout all statistical analyses. To date, the current study is the first to examine perceived health status using a newly translated instrument in a Mexican-American population in the US. Researchers working in the Medical Research Unit on Ageing of the Mexican Social Security Institute in Queretaro, Mexico, tested the Spanish-language Health Perceptions Questionnaire (Sp-HPQ) (Reyes-Frausto, et al., 1998). Further, only one previous study was found in the literature that confirms the use of this questionnaire in an older Mexican population residing in Mexico (Beaman, Reyes-Frausto, & García-Peña, 2003). This lack of research imposes a challenge to compare current study findings to previous research, and emphasizes two important points.

The first important point underscores the paucity of available Spanish-translated instruments that hinders the conduct of culturally sound research. Although a statistically significant mild positive correlation was found between perceived health status and cardiovascular health-promoting lifestyle behaviors ( $r = .305$ ,  $p = .001$ , *Table 4-9*), the correlation may have been stronger had a different tool been used. Furthermore, this

particular questionnaire was originally designed for an older Mexican population, and its use in a younger cohort is not without its limitations. Another factor that should also be considered is the weak measures of internal consistency found for this instrument in the present study. As a result, a plausible justification for the conflicting responses between self-rated present health status and empirical measurement of perceived health status is the lack of suitable instruments to use in non-English-speaking populations.

Self-rated health is usually assessed by a scoring algorithm rated as excellent, good, fair, or poor, as was done in the present study. A majority of women (93%) perceived current health states as being fair to poor. This finding is in direct conflict with the empirical measurement of overall perceived health status. The present study found that although Mexican-American women tended to worry about health and illness, they maintained positive perceptions of current health states. Consistent with existing survey data about heart disease, this finding affirms CHD may not be perceived as a great health threat (Christian, et al., 2007; Mosca, et al., 2000). These assertions warrant urgent attention to further investigate health perceptions associated with preventive action, highlighting the second point of emphasis.

The second important point associated with the challenge of comparing research findings delves into the empirical measurement of the four perceptual subscales. This group of women had neutral health perceptions regarding future expectations. The belief in *fatalismo* (fatalism) is a plausible explanation for this neutral outlook. Exhibited more by Mexican-origin adults than other Hispanic subgroups, the cultural meaning of *fatalismo* (fatalism) translates into having the strength to maintain an adaptive and

positive response to uncontrollable life events, in spite of being stricken with chronic illnesses or disabilities (Glover & Blankenship, 2007; Lujan & Campbell, 2006). Previous research in this area reinforces that Mexican-Americans' value the existence of a higher power in the face of illness, including CHD (Applewhite, 1995; Mosca et al., 2006). The *Spiritual Growth Subscale* of the health promotion questionnaire attests to the strong religious ties and trust in God found in this group of women, directly associated with lack of perceptual concerns of future health conditions. Based on current study findings, these women perceive they can influence present health states and perhaps resist illness, but usually do not attempt to control health outcomes that may occur in the future, affirming the concept of *fatalismo* (fatalism).

In previous research, Latinas viewed health as integrated within the social construct of "the good life" and strong interpersonal relationships, extending to family and friends (Hartweg & Isabelli-García, 2007; McCarthy, et al., 2004; Mosca, et al., 2006). Study participants appeared to hold a similar perspective of current health states that aligns with this social construct. However, based on the lower scores of the *Interpersonal Relations Subscale* of the health promotion questionnaire, a contrasting stance is taken regarding interpersonal relationships. In this subscale, communication was the key factor underlying interpersonal relationships, and was evidently insufficient to maintain healthy expectations.

The present study was not designed to assess the cause of weak interpersonal relationships, but a plausible explanation reinforces the lack of suitable instruments for Spanish-speaking populations. The lower scores possibly relate to how the questions

were interpreted from a translated scale that was very literal and misused gender pronouns. Specifically, this explanation refers to the semantics of item writing and achieving cultural equivalency during the translation process of instruments from English into second languages (DeVellis, 2003; Streiner & Norman, 2008). For example, one sample question from this subscale misuses the plural form of the word *amigos*. This term generally means “friends” in English, but the Spanish translation can mean either male friends or lovers. Female friends are *amigas*. The proper form of the word that targets both male and female friends is “*amigos/as*.” The Spanish questions on the cardiovascular health promotion questionnaire (Sp-HPLP II) were not written in this manner, facilitating misinterpretation and lower subscale scores.

In light of the lower subscale scores for interpersonal relations in the present study and the lack of available instruments for use in Spanish-speaking populations, future research investigating cultural equivalency of translated instruments and psychometric assessment is needed. Interpretation of current study findings supports that cardiovascular health and well-being in Mexican-American women are primarily based on perceptions of health and illness, but also are prompted by CHD knowledge levels.

### **Major Study Finding: Knowledge Levels of Coronary Heart Disease and Risk on Cardiovascular Health Promotion**

Existing data over the last decade have established that Mexican-American women, 25 years and older, are less informed about CHD than other women (Christian, et al., 2007). Approximately 70% of the sample in the current study had a mean score of 14.7, well below the mean score of 20.4 when the knowledge questionnaire was

psychometrically tested (Wagner, Lacey, Abbott, de Groot, & Chyun, 2006). Similar to this previous study, fewer than half of the respondents correctly answered questions about gender differences and high cholesterol and other lipids, particularly high-density lipoproteins (HDL) (Wagner, et al., 2006). In contrast, questions about family history and the consequences of diabetes were incorrectly answered by more than half of the respondents in the current study. Based on these results, the Spanish-language Heart Disease Fact Questionnaire (SP-HDFQ) was an appropriate tool to assess CHD knowledge in Mexican-American women, even though it was specifically designed for people with diabetes (Wagner, Lacey, et al., 2005).

Further comparison between studies emphasizes that although Wagner, et al. (2006) also drew their sample from the northeastern region of the US, differences exist in sample size and composition. Their study enrolled 678 people with diabetes, representing only 7.2% Latino women (n = 28) and men (n = 21). Effects of generalizing findings from studies comprised of small numbers of Hispanics can be potentially misleading and should be interpreted with caution. The present study extended Wagner's et al. (2006) work, enrolling 128 Mexican-American women.

Current study findings indicate gaps in knowledge about CHD and associated risk factors in this group of women. These gaps affirm that Latinas, in general, consistently lag behind Whites, Asians, and Blacks in knowledge and awareness of heart disease (Christian, et al., 2007; Wagner, et al., 2006). A plausible explanation for knowledge deficits among Latinas is that effective patient education is not being done in a manner conducive to learning. Perhaps, it is neither gender-specific nor age-appropriate for this

subpopulation of women (Allen & Szanton, 2005; Zarate-Abbott et al., 2008). This explanation has important implications for clinical practice and is directly linked to age, a key demographic variable that had a significant relationship to cardiovascular health promotion in Mexican-American women. Therefore, exploring the degree of influence of key demographic variables can increase our understanding of gender-specific behaviors associated with cardiovascular health promotion.

### **Key Demographic Variables**

#### **Major Study Finding: Age and Cardiovascular Health Promotion**

Age exerts a considerable effect on risk, diagnoses, and treatment of CHD in women (Gierach, et al., 2006; Mosca, et al., 2007). Similar to previous research, current study findings demonstrate that age is associated with higher CHD knowledge levels, but do not distinguish between age categories (Christian, et al., 2007; Etnyre et al., 2006; Masel, et al., 2006). In the present study, the predominantly young sample failed to provide the perspective that a more varied age distribution would have yielded. This perspective warrants further investigation, so study replication with a sample of older post-menopausal Mexican-American women would be most advantageous and yield informative results about health-promoting lifestyles.

According to current study findings, the effects of aging in younger women are perceived as distant outcomes of the future and they are not wholly concerned about it in the present. This outcome reflects previous findings that support little use of preventive healthcare services among Hispanics (IOM, 2009). Little use of preventive care, including limited access, are affected by language differences (Viruell-Fuentes, 2007;



Wallace, Gutiérrez, & Castañeda, 2008). The pressing consequences of language differences may handicap either the clinician from teaching appropriately or the patient from understanding clearly.

Education is essential to lessen language deficits and broaden the knowledge base. Less than five years of formal schooling negatively influenced performing cardiovascular health-promoting lifestyle behaviors in the present study. The tools used for survey analyses were written at an eighth grade level, and would be hard to read for respondents with little to no formal schooling. Survey questions may not have been fully understood, suggested by the significance of health literacy, a closely related concept (Zambrana & Carter-Pokras, 2001). For non-English-speaking populations, third grade reading levels are recommended (Marín & Van Oss Marín, 1991; Streiner & Norman, 2008). Although the demographic variable of education lost its significant association with cardiovascular health promotion after adjustments, health literacy maintained its significance throughout the analyses.

### **Key Finding: Literacy Levels and Cardiovascular Health Promotion**

Health literacy, another key demographic variable, was measured using a single question on the sociodemographic information sheet. Therefore, study findings need to be interpreted with caution. Literacy level distinguished those respondents who did not ask for reading assistance from those who requested it. Current study findings indicate that women who requested reading assistance were more likely to engage in health-promoting lifestyle behaviors. It is possible that reading assistance encouraged better understanding of the survey questions, resulting in more accurate responses.

For future research, reading assistance should be automatically provided to respondents who are educationally disadvantaged. Performing this action also would prevent embarrassing situations that would expose respondents who are illiterate or have poor reading ability and comprehension. Notwithstanding the importance of health literacy, replicating the study with different and perhaps more precise measures of health literacy would be informative.

Another plausible explanation for the significant association between health literacy and cardiovascular health promotion is linked to fact that the sample was obtained from church study sites. These women are active church parishioners who benefit from donations made from many patrons. They had more favorable circumstances and resources, compared to other Latinas in the general population. Free educational classes and English-as-a-second-language (ESL) instruction also are offered on a regular basis. These programs may have enhanced English-speaking ability and reading skills. The high *Nutrition Subscale* scores of the health promotion questionnaire in the current study demonstrates an ability to read nutrition labels and buy healthier food products (Ayala, et al., 2005). On the other hand, these particular behaviors could be curtailed by limited financial resources. Specifically, income level emerged as another key demographic variable significantly associated with cardiovascular health promotion in this study sample.

### **Key Finding: Income Levels and Cardiovascular Health Promotion**

The income category that carried significance was not a monetary value, but rather a summative statement claiming “not enough [income] to support the family.”

Consequently, current study findings suggest that living in poverty does not necessarily impede health-promoting lifestyles in Western society. Recent research reveals conflicting results regarding the effects of income, indicating that higher income levels promote healthier lifestyles among Hispanics in the US (Jurkowski & Johnson, 2005; Steffen, et al., 2006; Wagner, et al., 2006).

On close examination, the environ also could affect financial situations and income levels, altering lifestyle behaviors and health risks (Mobley, et al., 2006). People who emigrate to the US and do not speak English have language deficits and may be unable to find employment. Moreover, social role behaviors and expectations of women can add unnecessary stress, possibly inducing unforeseen health problems. According to the *Stress Management Subscale* of the health promotion questionnaire, this group of women scored relatively low compared to other studies, implying that undue stress was evident (Bond, et al., 2002; Carlson, 2000; Hulme, et al., 2003). Lower scores also could have resulted from having fewer available resources and less assistance to reduce life stressors that can cause excess tension and unexpected health problems.

In summary, it appears that socioeconomically-mediated factors, such as income and educational level, exert a stronger influence on CHD risk than culturally-mediated factors, such as acculturation level, and may explain the significant effects of demographic variables. Further, norms and practices of the dominant group strongly influence social behaviors of Latinas, as exposure to American culture lengthens. Therefore, it becomes urgent to improve culturally appropriate healthcare services that are gender-specific and address awareness, access, follow-up, and safety issues to reduce

morbidity and mortality of health problems, including CHD. Conducting culturally sound research is one approach to alleviate the burden of cardiovascular health disparities.

### **Study Limitations and Generalizability of Results**

Research limitations evident in this study are associated with (a) group homogeneity, (b) causal inferences, and (3) survey instruments. The sample size was adequate for a descriptive cross-sectional study, and efforts were made to obtain a diverse group based on demographics and health profiles. However, the final sample was predominantly comprised of younger women who were Spanish-speaking from disadvantaged Hispanic communities. These communities offered little educational opportunities or worthwhile employment prospects. As a result, these women relied heavily on social support services provided by Roman Catholic Churches.

The sample was recruited from large parishes in urban and suburban communities, even though study participants lived in a wide geographic region within a tri-state area. These churches provided ample support to the people in these communities. Support included the distribution of food, clothing, personal care products, medicines, school supplies, infant care items, as well as class offerings to learn English, socialization skills for their pre-school children, and job-related assistance. Therefore, the sample may have had better resources and care management than the broader population that is not as active within church parishes. More research that investigates the effects of parish nursing on health behaviors is indicated.

Given the fact that most Mexican-Americans are known to be Catholics (Dolan & Hinojosa, 1994), religious homogeneity would be expected, but a lack of variability also was observed for age and educational level. Invariably, homogeneity in a group is considered a handicap for generalizing study findings. However, these findings could be specifically generalizable to a subset of women in the Northeastern region of the US, such as Mexican-American women who are younger (median age 31 years) with little formal schooling (less than five years) and limited English proficiency (mostly Spanish-speaking). These findings also may extend to those women with these attributes who are Roman Catholics. The larger limitation is age. Overall results were still cautiously interpreted due to little variation within the study sample.

In cross-sectional studies, self-report is a quick and relatively economical method to collect primary data at a single point in time. A number of significant associations to cardiovascular health promotion were made in present study. However, showing significant associations between two variables does not translate into causal effects, a second study limitation. Future research needs to explore underlying causal mechanisms associated with engaging in cardiovascular health-promoting lifestyles. Considering that both gender and culture are known to influence attitudes, beliefs, and behaviors, replicating this study in a more diverse group would yield interesting results (Anders, Balcazar, & Paez, 2006). Research outcomes can augment understanding of the influences of socioeconomically-mediated factors within a specific cultural context.

Psychometric evaluation of translated instruments from English into Spanish highlighted a third study limitation. Although internal consistency was adequate,

respondents encountered difficulty with certain questions in the Spanish-language version of the health promotion questionnaire, and sought clarification. Bias was potentially introduced based on the investigator's understanding of the question, but efforts were instituted to guard against it. Respondents also had trouble understanding some of the words and concepts in the translated instrument. Concepts do not necessarily translate the same, even among Spanish-speaking people. Conducting focus groups that consist of people from different Spanish-speaking countries could enhance the translation process. This is but one protocol step of the translation-back translation process applied to psychometrically evaluate translated instruments (Streiner & Norman, 2008).

Another protocol step of the translation process is achieving equivalence between versions. Asymmetrical instruments, such as the Spanish-language health perceptions questionnaire, alert investigators of potential difficulty with survey analyses. The *Sickness Orientation*, *Health Outlook*, and *Health Worry/Concern Subscales* consisted of only two, three, and four questions, respectively. Alarming, this unevenness meant that scores could not be calculated when data were missing. This limitation, however, was anticipated and resolved with oversampling. The paucity of tested instruments in Latino populations is a serious problem, especially when researchers are beginning to investigate underserved populations.

### **Directions for Future Research**

The overarching result of the present study finds the matrix of preventive care for CHD to be complex and multifaceted. Cardiovascular health promotion in Mexican-American women seems to be not only based on the perceived importance of health and

health status, but also on CHD knowledge levels. Awareness of underlying assumptions facilitates identifying future avenues of research, many of which have been discussed at length throughout this chapter. These critical areas for future research are concisely summarized in *Table 5-1*. Equally, future research endeavors have important implications for clinical practice.

***Table 5-1. Summary of Future Research Directions***

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Current study findings attest to the need for future research to generate:

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- (1) In-depth knowledge of the nuances and subtleties linked to translating instruments from English into second languages, e.g., Spanish;
- (2) Individually-tailored patient education models that consider personal beliefs about health and preventive care behaviors;
- (3) Innovative and/or refined culturally appropriate interventions that motivate attitudinal and behavioral changes for symptom recognition and treatment response for risk reduction and improved self-care management;
- (4) More precise understanding of similarities and variations of racial-ethnic subcultural groups to dispel misconceptions and reinforce desirable health-promoting behaviors;
- (5) Increased understanding of underlying causal mechanisms that deter health promotion and minimize vigilance;
- (6) Study replication design to test the full Theory of Planned Behavior, including the Control Dimension, to yield new information particularly about the influence of perceived control.

## **Implications for Clinical Practice**

Although various implications for practice have already been mentioned in each principal section of this chapter, the main clinical implication of the present study can be summarized in the following statement, “the best strategy in practice is customized cultural tailoring.” Cultural tailoring, a motivational intervention used in substance abuse prevention, ensures that cultural themes are reflected in the deep structure of any innovative clinical intervention or education model (Rensnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000 ). The deep structure of this type of clinical program targets attitudes and behaviors of particular groups, including values, attitudes, norms, and skill-building tools. This inner level often determines the degree of success of these programs.

Furthermore, cultural tailoring of clinical interventions or education models reflects how social, psychological, environmental, and historical factors influence a person’s health behaviors. Awareness of sociocultural differences on causal mechanisms of disease is noticed and integrated. Acculturative effects, including biculturalism, among different populations and current knowledge trends are not disregarded. Determinants of cultural, social, and political factors that influence health and healthcare access are not overlooked. Clinicians become more aware of how biases, prejudices and stereotypes can undermine solidarity and collective efforts. Therefore, an effective clinical program is multileveled and takes into consideration personal, community-related, provider-related, and system-related factors.

Clinical programs that are effective carriers of health education, messages and strategies for health promotion should reflect the cultural themes that have been identified



across racial-ethnic populations after conducting focus groups (Rensnicow, et al., 2000 ). Predominant Latino values include *confianza* (trust), *simpatía* (empathy/understanding), *personalismo* (formal friendliness), *respeto* (respect), *familismo* (familism), *fatalism* (fatalism), and *espiritismo* (spirituality) (National Alliance for Hispanic Health, 2001). A clinical program that does not embrace these perspectives may be ineffective when used with Hispanics, denying potential opportunities for healthcare and interventions to ethnic subgroups. Conversely, if the clinical program reflects recognition of a group's cultural values, then receptivity to its underlying prevention and/or intervention messages could increase, motivate and reinforce newly learned health behaviors. Hence, customized cultural tailoring is a type of clinical strategy that acknowledges the right of people to be different and encourages a new appreciation for diversity.

### **Conclusions**

Clinicians and researchers alike are mystified by the underlying reasons distinguishing those Latinas who learn to navigate healthcare systems and successfully practice health-promoting behaviors from others who do not, when receiving evidence-based state of the science healthcare. Solidarity can exert powerful effects to decrease CHD mortality and morbidity observed in this subpopulation, and in others. However, health promotion research is scarce in most racial-ethnic populations or just recently emerging, implying an overt gap in knowledge, practice, and science. This study is one of few that have investigated health behaviors associated with cardiovascular health promotion, addressing both disease prevention and risk reduction, in a vulnerable

subpopulation of women. New knowledge has now been added to health disparity research, reconciling the importance of healthcare for people from diverse backgrounds.

Quantitative findings support perceived health status as a significant predictor of cardiovascular health in Mexican-American women, warranting future research to explore the health beliefs that Mexican-American women ascribe to performing certain behaviors. Other pertinent findings emphasized knowledge deficits, relational stresses, and cultural misconceptions. To this end, Latinas are continually at risk for health disparities and marginalizing conditions because of poverty, language deficits, discrimination, and to some extent, cultural norms. Testing the full Theory of Planned Behavior, the organizing framework of this study, would provide greater insight into effective health promotion and disease prevention. Therefore, nursing research is essential to facilitate positive attitudes, sustain desirable health behaviors, and help individuals reduce overall cardiovascular risk for better quality of life.

## APPENDICES

### **APPENDIX A**

SOCIODEMOGRAPHIC INFORMATION SHEET

HOJA DE INFORMACIÓN DEMOGRÁFICO Y PERSONAL

### **APPENDIX B**

HEALTH-PROMOTING LIFESTYLE PROFILE-II

CUESTIONARIO DEL ESTILOS DE VIDA II

### **APPENDIX C**

HEART DISEASE FACT QUESTIONNAIRE

CUESTIONARIO SOBRE ENFERMEDADES DEL CORAZÓN

### **APPENDIX D**

HEALTH PERCEPTION QUESTIONNAIRE FORM II

CUESTIONARIO SOBRE SU PERCEPCIONES DE SALUD

### **APPENDIX E**

SHORT ACCULTURATION SURVEY FOR HISPANICS

CUESTIONARIO DE LA ACULTURACIÓN DE LATINOS/HISPANOS

### **APPENDIX F**

UNIVERSITY OF PENNSYLVANIA INFORMED CONSENT FORM

UNIVERSIDAD DE PENSILVANIA PARTICIPACIÓN EN LA INVESTIGACIÓN FORMULARIO DE  
INFORMACIÓN

# **Appendix A:**

## **Demographic Forms**

1. SOCIODEMOGRAPHIC INFORMATION SHEET
2. HOJA DE INFORMACIÓN DEMOGRÁFICA Y PERSONAL



- 10. Menopausal Status:**  I have not yet reached menopause  
 I am going through menopause now  
 I am past menopause
- 11. Educational Level:** Number of school years completed: \_\_\_\_\_  
 Grade school: 1 to 5 years  
 Middle school: 6 to 8 years  
 High School: 9 to 12 years  
 Technical program: 1 to 2 years  
 College/University: 2 to 4 years  
 Graduate/Doctoral: 4 to 6 years
- 12. Household Income:**  Comfortable  
 Have enough to make ends meet  
 Don't have enough to make ends meet
- 13. Marital Status:**  Single  Married  
 Divorced  Widowed  
 Separated  
 Living with Significant Other
- 14. Number of People Living in your Home:** \_\_\_\_\_
- 15. Are you working:**  Yes  Full-time  Part-time  
 No—Go to #16  
 Refuse to state
- 16. If you answered NO to #15, then which best describes you:**  Homemaker  Retired  
 Disabled  Student
- 17. Do you or your mother or father have any of the following conditions?**
- |                     |                               |                                 |                                 |
|---------------------|-------------------------------|---------------------------------|---------------------------------|
| High blood pressure | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| Diabetes-high sugar | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| High cholesterol    | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| Overweight          | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| Cigarette smoker    | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| Depression          | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |
| Arthritis           | <input type="checkbox"/> Self | <input type="checkbox"/> Mother | <input type="checkbox"/> Father |

## HOJA DE INFORMACIÓN DEMOGRÁFICA Y PERSONAL

### Self-Report /Read-Assist

Instrucciones: Por favor responda a las siguientes preguntas sobre usted mismo.

1. **Sexo:**  Mujer  Hombre
2. **Fecha de Nacimiento:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
M M D D Y Y Y Y
3. **Religión:**  
 Católico  Otra religión: \_\_\_\_\_  
 St. Thomas (Philadelphia)  St. Agnes (West Chester)  
 Annunciation BVM (Philadelphia)  St. Patrick (Norristown)  
 Our Lady of Fatima (Bensalem)  La Mision de Santa Maria (Avondale)  
Otra iglesia: \_\_\_\_\_
4. **Origen Étnico:**  
Por favor de marcar todos que aplican  
 Mexicana  Puertorriquena  
 Cubana  Dominicana  
 Centrál Americana: Pais: \_\_\_\_\_  
 Sud Americana: Pais: \_\_\_\_\_  
 Española: Pais: \_\_\_\_\_  
 Otra: \_\_\_\_\_
5. **¿ Qué grupo Étnico te identifica mas mejor? ?** \_\_\_\_\_
6. **Pais de Nacimiento:** \_\_\_\_\_
7. **¿Cuanto tiempo has vivido en los Estados Unidos?** \_\_\_\_\_
8. **Yo considero que mi estado de Salud actual esta:**  
 Excelente  
 Bueno  
 Más-o-menos  
 Malo
9. **¿Usted ha usado los servicios de un Curandero o una Curandera?**  Sí  No

- 10. El cambio de vida:**  
**Menopause**
- No ha llegado al cambio de vida
  - Ahora mismo ha entrado al cambio de vida
  - Ha pasado el cambio de vida
- 11. Nivel de educación:**
- Años escolares que completo: \_\_\_\_\_
- Primaria: 1 – 5 años
  - Secundario: 6 – 8 años
  - Preparatoria: 9 – 12 años
  - Técnico: 1 – 2 años
  - Colegio/Universidad: 2 – 4 años
  - Master/Doctorado: 2 – 4 años
- 12. Ingreso anual:**  
En su casa, vive:
- Comfortable con bastante dinero para supportarte y tu familia
  - Con casi bastante dinero para soportarte y tu familia
  - Pero no tienes bastante dinero para suportarte y tu familia
- 13. Estado civil actual:**
- Soltera
  - Divorciada
  - Separada
  - Viviendo con otro significativo
  - Casada
  - Viuda
- 14. Numero que viven en su casa:** \_\_\_\_\_
- 15. Ahora mismo esta trabanda por pago**
- Sí
  - No—**por favor de contestar pregunta #16**
  - Rehusar a declarar
  - Jornada completa
  - Tiempo parciel
- 16. Si su respuesta era No por #15, cual es más represente:**
- Ama de casa
  - Retirado
  - Discapacitado
  - Estudiante
- 16. Por favor de marcar cada condición que usted mismo tiene or su Madre o Padre:**
- |                      |                             |                                |                                |
|----------------------|-----------------------------|--------------------------------|--------------------------------|
| Alta presión         | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Diabetes/Azucar alta | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Colesterol alto      | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Sobrepeso            | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Fumar de cigarillos  | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Depresión            | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |
| Reuma                | <input type="checkbox"/> Yo | <input type="checkbox"/> Madre | <input type="checkbox"/> Padre |



## **Appendix B:**

### **Health Promotion Questionnaires**

3. HEALTH-PROMOTING LIFESTYLE PROFILE-II
4. CUESTIONARIO DEL ESTILOS DE VIDA II

## HEALTH-PROMOTING LIFESTYLE PROFILE II

**Directions:** This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling: **N for Never, S for Sometimes, O for Often, and R for Routinely.**

<b>Question</b>	<b>Never</b>	<b>Sometimes</b>	<b>Often</b>	<b>Routinely</b>
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and foods containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R

16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life, which I cannot change.	N	S	O	R
18. Look forward to the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. Eat 2-4 servings of fruit each day.	N	S	O	R
21. Get a second opinion when I question my healthcare provider's advice.	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
25. Find it easy to show concern, love and warmth to others.	N	S	O	R
26. Eat 3-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times a week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work towards long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt, or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)	N	S	O	R
35. Balance time between work and play.	N	S	O	R

36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal healthcare.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

## CUESTIONARIO DEL ESTILOS DE VIDA II

**Instrucciones:** Este cuestionario contiene oraciones acerca de su estilo de vida o hábitos personales al *presente*. Por favor, responda a cada oración lo más exacto posible y trate de no pasar por alto ninguna oración. Indique la frecuencia con la que usted se dedica a cada conducta o costumbre, haciendo un círculo alrededor de la respuesta correcta: **N = Nunca, A = Algunas veces, M = Frecuentemente, o R = Rutinariamente**

<b>Question</b>	<b>Nunca</b>	<b>Algunas Veces</b>	<b>Frecuentemente</b>	<b>Rutinariamente</b>
1. Discuto mis problemas y preocupaciones con personas allegadas.	N	A	M	R
2. Escojo una dieta baja en grasas, grasas saturadas, y en colesterol.	N	A	M	R
3. Informo a un doctor(a) o a otros profesionales de la salud cualquier señal inusual o síntoma extraño.	N	A	M	R
4. Sigo un programa de ejercicios planificados.	N	A	M	R
5. Duermo lo suficiente.	N	A	M	R
6. Siento que estoy creciendo y cambiando en una forma positiva.	N	A	M	R
7. Elogio fácilmente a otras personas por sus éxitos.	N	A	M	R
8. Limito el uso de azúcares y alimentos que contienen azúcar (dulces).	N	A	M	R
9. Leo o veo programas de televisión acerca del	N	A	M	R

mejoramiento de la salud.				
10. Hago ejercicios vigorosos por 20 o más minutos, por lo menos 3 veces a la semana (tales y como caminar rápidamente, andar en bicicleta, baile aeróbico, usar la maquina escaladora).	N	A	M	R
11. Tomo algún tiempo para relajarme todos los días.	N	A	M	R
12. Creo que mi vida tiene proposito.	N	A	M	R
13. Mantengo relaciones significativas y enriquecedoras.	N	A	M	R
14. Como de 6-11 porciones de pan, cereales, arroz, o pasta (fideos) todos los días.	N	A	M	R
15. Hago preguntas a los profesionales de la salud para poder entender sus instrucciones.	N	A	M	R
16. Tomo parte en actividades físicas livianas a moderadas (tales como caminar continuamente de 30-40 minutos, 5 o más veces a la semana)	N	A	M	R
17. Acepto aquellas cosas en mi vida que yo no puedo cambiar.	N	A	M	R
18. Miro adelante hacia el futuro.	N	A	M	R
19. Paso tiempo con amigos íntimos.	N	A	M	R
20. Como de 2-4 porciones de frutas todos los días.	N	A	M	R
21. Busco una segunda opinión, cuando pongo en	N	A	M	R

duda las recomendaciones de mi proveedor de servicios de salud.				
22. Tomo parte en actividades físicas de recreación (tales como nadar, bailar, andar en bicicleta).	N	A	M	R
23. Me concentro en pensamientos agradables a la hora de acostarme.	N	A	M	R
24. Me siento satisfecho y en paz conmigo mismo(a).	N	A	M	R
25. Se me hace fácil demostrar preocupación, amor y cariño a otros.	N	A	M	R
26. Como de 3-5 porciones de vegetales todos los días.	N	A	M	R
27. Discuto mis cuestiones de salud con profesionales de la salud.	N	A	M	R
28. Hago ejercicios para estirar los músculos por lo menos 3 veces por semana.	N	A	M	R
29. Uso métodos específicos para controlar mi tensión.	N	A	M	R
30. Trabaja hacia metas de largo plazo en mi vida.	N	A	M	R
31. Toco y soy tocado(a) por las personas que me importan.	N	A	M	R
32. Como de 2 a 3 porciones de leche, yogurt, o queso cada día.	N	A	M	R

33. Examino mi cuerpo por lo menos mensualmente, por cambios físicos o señales peligrosas.	N	A	M	R
34. Hago ejercicios durante actividades físicas usuales diariamente (tales como caminar a la hora del almuerzo, utilizar escaleras en vez de elevadores, estacionar el carro lejos del lugar de destino y caminar).	N	A	M	R
35. Mantengo un balance del tiempo entre el trabajo y pasatiempos.	N	A	M	R
36. Encuentro cada día interesante y retador (estimulante).	N	A	M	R
37. Busco maneras de llenar mis necesidades de intimidad.	N	A	M	R
38. Como solamente de 2-3 porciones de carne, aves, pescado, frijoles, huevos, y nueces todos los días.	N	A	M	R
39. Pido información de los profesionales de la salud sobre como tomar buen cuidado de mi misma(o).	N	A	M	R
40. Examino mi pulso cuando estoy haciendo ejercicios.	N	A	M	R
41. Practico relajación o meditación por 15-20 minutos diariamente.	N	A	M	R
42. Estoy consciente de lo que es importante para mí en la vida.	N	A	M	R



43. Busco apoyo de un grupo de personas que se preocupan por mí.	N	A	M	R
44. Leo las etiquetas nutritivas para identificar el contenido de grasas y sodio en los alimentos empacados.	N	A	M	R
45. Asisto a programas educacionales sobre el cuidado de salud personal.	N	A	M	R
46. Alcanzo mi pulso cardíaco objetivo cuando hago ejercicios.	N	A	M	R
47. Mantengo un balance para prevenir el cansancio.	N	A	M	R
48. Me siento unido(a) con una fuerza mas grande que yo.	N	A	M	R
49. Me pongo de acuerdo con otros por medio del diálogo y compromiso.	N	A	M	R
50. Como desayuno.	N	A	M	R
51. Busco orientación o consejo cuando es necesario.	N	A	M	R
52. Espongo mi persona a nuevas experiencias y retos.	N	A	M	R

## **Appendix C:**

### **Knowledge Questionnaires**

1. HEART DISEASE FACT QUESTIONNAIRE
2. CUESTIONARIO SOBRE ENFERMEDADES DEL CORAZÓN

## HEART DISEASE FACT QUESTIONNAIRE

Instructions: These next questions ask about heart disease. Please circle **T** for True or **F** for False; if you are unsure about the correct answer, you may circle **N** for “I Don’t Know.”

<b>Question</b>	<b>True</b>	<b>False</b>	<b>Don’t Know</b>
1. A person always knows when they have heart disease.	T	F	N
2. If you have a family history of heart disease you are at risk for developing heart disease.	T	F	N
3. The older a person is, the greater their risk of having heart disease.	T	F	N
4. Smoking is a risk factor for heart disease.	T	F	N
5. A person who stops smoking will lower their risk of developing heart disease.	T	F	N
6. High blood pressure is a risk factor for heart disease.	T	F	N
7. Keeping blood pressure under control will reduce a person’s risk for developing heart disease.	T	F	N
8. High cholesterol is a risk factor for developing heart disease.	T	F	N
9. Eating fatty foods does not affect blood cholesterol levels.	T	F	N
10. If your “good” cholesterol (HDL) is high you are at risk for heart disease.	T	F	N
11. If your “bad” cholesterol (LDL) is high you are at risk factor for heart disease.	T	F	N
12. Being overweight increases a person’s risk for heart disease.	T	F	N

13. Regular physical activity will lower a person's chance of getting heart disease.	T	F	N
14. Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease.	T	F	N
15. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease.	T	F	N
16. Diabetes is a risk factor for developing heart disease.	T	F	N
17. High blood sugar puts a strain on the heart.	T	F	N
18. If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease.	T	F	N
19. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control.	T	F	N
20. People with diabetes rarely have high cholesterol.	T	F	N
21. If a person has diabetes, keeping their cholesterol under control will help to lower their chance of developing heart disease.	T	F	N
22. People with diabetes tend to have low HDL (good) cholesterol.	T	F	N
23. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control.	T	F	N
24. A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control.	T	F	N
25. Men with diabetes have a higher risk of heart disease than women with diabetes.	T	F	N

## CUESTIONARIO SOBRE ENFERMEDADES DEL CORAZÓN

Instrucciones: Las preguntas que siguen a continuación son sobre enfermedades del corazón. Por favor haga un círculo alrededor de la letra **T** por Verdadero o **F** por Falso; si no está seguro de la respuesta correcta, haga un círculo sobre la letra **N** por “No Sé.”

<b>Pregunta</b>	<b>Verdadero</b>	<b>Falso</b>	<b>No sé</b>
1. Una persona siempre sabe cuando tiene una enfermedad del corazón.	T	F	N
2. Si ha habido personas con enfermedades del corazón en su familia, usted corre el riesgo de desarrollar enfermedades del corazón.	T	F	N
3. Entre mayor sea la persona, mayor es el riesgo de tener una enfermedad del corazón.	T	F	N
4. El fumar es una factor de riesgo para enfermedades del corazón.	T	F	N
5. Una persona que deja de fumar disminuirá el riesgo de desarrollar enfermedades del corazón.	T	F	N
6. La presión alta de la sangre es un factor de riesgo para las enfermedades del corazón.	T	F	N
7. El mantener la presión sanguínea bajo control reducirá el riesgo que corre una persona de desarrollar enfermedades del corazón.	T	F	N
8. El colesterol alto es un factor de riesgo para desarrollar enfermedades del corazón.	T	F	N
9. El comer alimentos altos en grasa no afecta los niveles de colesterol en la sangre.	T	F	N
10. Si su colesterol “bueno” (LAD) está alto usted corre el riesgo de tener una enfermedad del corazón.	T	F	N
11. Si su colesterol “malo” (LBD) está alto usted corre el riesgo de tener una enfermedad del corazón.	T	F	N
12. El tener sobrepeso incrementa el riesgo que tiene una persona de tener una enfermedad del corazón.	T	F	N

13. El ejercicio físico frecuente disminuye las posibilidades de que una persona desarrolle enfermedades del corazón.	T	F	N
14. Solamente el ejercicio en un gimnasio o en una clase de ejercicio le puede ayudar a una persona a disminuir las posibilidades de desarrollar enfermedades del corazón.	T	F	N
15. Caminar y trabajar en el jardín son considerados como ejercicios que le ayudarán a una persona a disminuir las probabilidades de desarrollar enfermedades del corazón.	T	F	N
16. La diabetes es un factor de riesgo para desarrollar enfermedades del corazón.	T	F	N
17. El alto nivel de azúcar en la sangre le agrega tensión al corazón.	T	F	N
18. Si su nivel de azúcar en la sangre es elevado durante varios meses, esto puede causar que su nivel de colesterol suba e incrementa su riesgo de tener una enfermedad del corazón.	T	F	N
19. Una persona con diabetes puede reducir su riesgo de desarrollar enfermedades del corazón si mantiene bajo control sus niveles de azúcar en la sangre.	T	F	N
20. Las personas con diabetes raramente tienen colesterol alto.	T	F	N
21. Si una persona tiene diabetes, el mantener su colesterol bajo control le ayudará a disminuir sus probabilidades de desarrollar enfermedades del corazón.	T	F	N
22. Las personas con diabetes tienen tendencia a tener LAD (buen) colesterol bajo.	T	F	N
23. Una persona con diabetes puede reducir el riesgo de desarrollar enfermedades del corazón si mantienen su presión sanguínea bajo control.	T	F	N
24. Una persona con diabetes puede reducir el riesgo de desarrollar enfermedades del corazón si mantiene su peso bajo control.	T	F	N
25. Los hombres con diabetes tienen mayor riesgo de tener enfermedades del corazón que las mujeres con diabetes.	T	F	N

## **Appendix D:**

### **Health Perception Questionnaires**

1. HEALTH PERCEPTION QUESTIONNAIRE FORM II
2. CUESTIONARIO SOBRE SU PERCEPCIONES DE SALUD

## HEALTH PERCEPTION QUESTIONNAIRE FORM II

Directions: The following questions ask about your present and past health, and other general concerns about health and illness. Please circle the number with the statement that best describes you.

**5 = Definitely True      4 = Mostly True      3 = Don't Know      2 = Mostly False      1 = Definitely False**

<b>Item</b>	<b>Definitel True</b>	<b>Mostly True</b>	<b>Don't Know</b>	<b>Mostly False</b>	<b>Definitely False</b>
1. According to the doctors I've seen, my health is now excellent	5	4	3	2	1
2. I feel better now than I ever have before	5	4	3	2	1
3. I am somewhat ill	5	4	3	2	1
4. I'm not as healthy now as I used to be	5	4	3	2	1
5. I'm as healthy as anybody I know	5	4	3	2	1
6. My health is excellent	5	4	3	2	1
7. I have been feeling bad lately	5	4	3	2	1
8. Doctors say that I am now in poor health	5	4	3	2	1
9. I feel about as good now as I ever have	5	4	3	2	1
10. I was so sick once I thought I might die	5	4	3	2	1
11. I've never had an illness that lasted a long period of time	5	4	3	2	1
12. I have never been seriously ill	5	4	3	2	1
13. I seem to get sick a little easier than other people	5	4	3	2	1
14. Most people get sick a little easier than I do	5	4	3	2	1



15. My body seems to resist illness very well	5	4	3	2	1
16. When there is something going around I usually catch it	5	4	3	2	1
17. I will probably be sick a lot in the future	5	4	3	2	1
18. In the near future, I expect to have better health than other people I know	5	4	3	2	1
19. I expect to have a very healthy life	5	4	3	2	1
20. I think my health will be worse in the future than it is now	5	4	3	2	1
21. I never worry about my health	5	4	3	2	1
22. I worry about my health more than other people worry about their health	5	4	3	2	1
23. My health is a concern in my life	5	4	3	2	1
24. Others seem more concerned about their health than I am about mine	5	4	3	2	1
25. Getting sick once in a while is a part of my life	5	4	3	2	1
26. I accept that sometimes I'm just going to be sick	5	4	3	2	1
27. I try to avoid letting illness interfere with my life	5	4	3	2	1
28. When I'm sick I try to keep it to myself	5	4	3	2	1
29. When I'm sick I try to just keep going as usual	5	4	3	2	1
30. When I think I am getting sick, I fight it	5	4	3	2	1
31. Attitude toward I don't like to go to the doctor going to the doctor	5	4	3	2	1
32. It doesn't bother me to go to the doctor	5	4	3	2	1

## CUESTIONARIO SOBRE SU PERCEPCIÓN DE SALUD

Instrucciones: Las preguntas que siguen a continuación son sobre sus percepciones de salud y enfermedad. Por favor haga un círculo alrededor del número de la descripción lo más mejor para usted.

**5 = Definitivamente Verdadero    4 = Mas o Menos Verdadero    3 = No Se    2 = Mas o Menos Falso    1 = Definitivamente Falso**

Pregunta	Definitivamente Verdadero	Mas o Menos Verdadero	No Se	Mas o Menos Falso	Definitivamente Falso
1. De acuerdo con los doctores su salud es excelente (item 1)	5	4	3	2	1
2. Cree que se enferma más que otros (item 3)	5	4	3	2	1
3. Se siente mejor ahora que antes (item 4)	5	4	3	2	1
4. Probablemente estará muy enfermo en el futuro (item 5)	5	4	3	2	1
5. Nunca se preocupa por su salud (item 6)	5	4	3	2	1
6. Otras personas se enferman con más facilidad que usted (item 7)	5	4	3	2	1
7. Se siente un poco enfermo (item 9)	5	4	3	2	1
8. En el futuro espera estar en mejores condiciones de salud que otras personas (item 10)	5	4	3	2	1
9. Esta tan enfermo que piensa que se va a morir (item 11)	5	4	3	2	1
10. Esta tan saludable como antes (item 12)	5	4	3	2	1

11. Esta más preocupado por su salud que otros (item 13)	5	4	3	2	1
12. Su cuerpo parece resistir las enfermedades muy bien (item 14)	5	4	3	2	1
13. Enfermarse una vez al año es parte de su vida (item 15)	5	4	3	2	1
14. Esta tan saludable como otro (item 16)	5	4	3	2	1
15. No ha tenido enfermedades que duran mucho tiempo (item 17)	5	4	3	2	1
16. Otros parecen más preocupados por su salud que usted (item 18)	5	4	3	2	1
17. Su salud es excelente (item 20)	5	4	3	2	1
18. Espera tener una vida saludable (item 21)	5	4	3	2	1
19. Se preocupa por su salud (item 22)	5	4	3	2	1
20. Algunas veces siente que se va a enfermar (item 23)	5	4	3	2	1
21. Se ha estado sintiendo mal últimamente (item 24)	5	4	3	2	1
22. Nunca ha estado seriamente enfermo (item 26)	5	4	3	2	1
23. Los doctores dicen que no esta bien de salud (item 27)	5	4	3	2	1
24. Se siente ahora mejor que antes (item 28)	5	4	3	2	1

## **Appendix E:**

### **Acculturation Surveys**

1. SHORT ACCULTURATION SURVEY FOR HISPANICS
2. CUESTIONARIO DE LA ACULTURACIÓN DE LATINOS/HISPANOS

## SHORT ACCULTURATION SURVEY FOR HISPANICS

Are you bilingual in English and Spanish?

Yes: 1<sup>st</sup> Language \_\_\_\_\_ 2<sup>nd</sup> Language \_\_\_\_\_

Questions 1 through 8	Only Spanish	Spanish better than English	Both Equally	English better than Spanish	Only English
1. In general, what language(s) do you read and speak?	1	2	3	4	5
2. What was the language(s) you used as a child?	1	2	3	4	5
3. What language(s) do you usually speak at home?	1	2	3	4	5
4. In which language(s) do you usually think?	1	2	3	4	5
5. What language(s) do you usually speak with your friends?	1	2	3	4	5
6. In what language(s) are T.V. programs you usually watch?	1	2	3	4	5
7. In what language(s) are radio program you usually listen to?	1	2	3	4	5
8. In general, in what language(s) are the movies, T.V., and radio programs you <i>prefer</i> to watch and listen to?	1	2	3	4	5

<b>Questions 9 through 12</b>	<b>All Latinos/ Hispanics</b>	<b>More Latinos than Americans</b>	<b>About half and half</b>	<b>More Americans than Latinos</b>	<b>All Americans</b>
9. Your close friends are:	1	2	3	4	5
10. You prefer going to social gatherings and parties at which the people are:	1	2	3	4	5
11. The persons you visit or who visit you are:	1	2	3	4	5
12. If you could choose your children's friends, you would want them to be:	1	2	3	4	5

## CUESTIONARIO DE LA ACULTURACIÓN DE LATINOS/HISPANOS

Are you bilingual in English and Spanish?

Yes: 1<sup>st</sup> Language \_\_\_\_\_ 2<sup>nd</sup> Language \_\_\_\_\_

<b>Preguntas 1- 8</b>	<b>Sólo español</b>	<b>Español mejor que inglés</b>	<b>Ambos por igual</b>	<b>Inglés mejor que español</b>	<b>Sólo inglés</b>
1. ¿Por lo general, qué idioma lee y habla usted?	1	2	3	4	5
2. ¿Qué idioma habló usted cuando era niño(a)?	1	2	3	4	5
3. ¿Por lo general, qué idioma habla en su casa?	1	2	3	4	5
4. ¿Por lo general, en qué idioma piensa?	1	2	3	4	5
5. ¿Por lo general, en qué idioma habla con sus amigos o amigas?	1	2	3	4	5
6. ¿Qué idioma son los programas de televisión que más miras?	1	2	3	4	5
7. ¿Por lo general, en qué idioma son los programas de la radio que más escuchas?	1	2	3	4	5

8. ¿Por lo general, en qué idioma son las películas y programas de televisión y radio que prefieres mirar o escuchar?	1	2	3	4	5
<b>Preguntas 9 - 12</b>	<b>Todos Latinos/ Hispanos</b>	<b>Más Latinos que Americanos</b>	<b>Ambos por igual</b>	<b>Más Americanos que Latinos</b>	<b>Todos Americanos</b>
9. Tus amigos cerca y especial son:	1	2	3	4	5
10. Tu prefieres participar en celebraciones sociable y fiestas con gente:	1	2	3	4	5
11. Las personas que visitas o que te visitan son:	1	2	3	4	5
12. Si puedes descojer los amigos de tus hijos, prefieres que sean:	1	2	3	4	5



# **Appendix F:**

## **Informed Consent Forms**

1. UNIVERSITY OF PENNSYLVANIA INFORMED CONSENT FORM
2. UNIVERSIDAD DE PENSILVANIA PARTICIPACIÓN EN LA INVESTIGACIÓN  
FORMULARIO DE INFORMACIÓN

## UNIVERSITY OF PENNSYLVANIA INFORMED CONSENT FORM

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**Title of the Research Study:** Predictors of Cardiovascular Health Promotion in Mexican-American Women

**Protocol Number:** 807818

**Principal Investigator:** Viola G. Benavente, PhD(c), RN, CNS  
School of Nursing  
Claire M. Fagin-2L, 418 Curie Boulevard  
Philadelphia, PA 19014 Phone # 484-367-7595  
E-mail: violaben@nursing.upenn.edu

**Emergency Contact: (name, address, phone and email):**  
Kathleen McCauley, PhD, RN, CS, FAAN  
School of Nursing  
Claire M. Fagin-M10, 418 Curie Boulevard  
Philadelphia, PA 19104 Phone # 215-898-8286  
E-mail: kmccaule@nursing.upenn.edu

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You are being asked to take part in a research study. This is not a form of treatment or therapy. It is not supposed to detect a disease or find something wrong. Your participation is voluntary which means you can choose whether or not to participate. If you decide to participate or not, there will be no loss of benefits to which you are otherwise entitled. Before you make a decision you will need to know the purpose of the study, possible risks and benefits of being in the study, and what you will have to do if decide to participate in the study. The research team is going to talk with you about the study and give you this consent document to read. You do not have to make a decision now; you can take the consent document home and share it with friends, family doctor, and family.

If you do not understand what you are reading, do not sign it. Please ask the researcher to explain anything you do not understand, including any language contained in this form. If you decide to participate, you will be asked to sign this form and a copy will be given to you. Keep this form, in it you will find contact information and answers to questions about the study. You may ask to have this form read to you. *(REQUIRED)*

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### **What is the purpose of the study?**

The purpose of the study is to learn more about heart disease and how to prevent heart attacks. I also want to find out what people know about heart

disease and the kinds of things that people can do to keep themselves healthy, even if they already have some health problems, like living with diabetes or high blood sugar, having high blood pressure or hypertension, or being overweight.

This research study is going to help me meet the requirements of a PhD degree in nursing from the University of Pennsylvania.

### **Why was I asked to participate in the study?**

You are being asked to join this study because you do not have heart disease, and because you are a woman with Mexican heritage living in the United States. This study is only going to include women because there is very little information about heart disease in Mexican-American women. There is not very much information either on how Mexican-American women feel about being healthy or getting sick, or even how they can take care of themselves to stay healthy and not get sick. In this study, you can help by telling me how you feel about not getting heart disease, what you know about having a heart attack, and the kinds of things you do to stay healthy and active in your life.

### **How long will I be in the study? How many other people will be in the study?**

The study will take place over a period of 1 year. This means for the next 12 months I will be asking Mexican-American women to participate in this study. Each session will last approximately 1 hour. You will be one of 127 people in the study.

### **Where will the study take place?**

The study will take place at St. Thomas Aquinas Catholic Church, located in Philadelphia, PA and other Roman Catholic churches in the Delaware Valley on different days and times. Please check bulletins and posted flyers for days and times at each church.

### **What will I be asked to do?**

You will be asked to spend less than an hour with a research member to complete five (5) survey forms.

1. The first one is an information sheet that will take 5 to 7 minutes to fill out, asking questions, like where you born, how old you are, where you work, etc, so I can keep track of the type of people in the study. But I will not ask for your name, address, or phone number. So no one, not even me, will be able to tell that it was you who gave this information. It will be kept confidential.
2. The second form is a questionnaire called the Health-Promoting Lifestyle Profile II that will take about 15 to 20 minutes. This is the longest questionnaire with 52 statements about how you live your life right now. It

asks you to rate the frequency—Never, Sometimes, O Often, and Routinely or Regularly—of your personal habits and behaviors.

3. The third questionnaire is called the Heart Disease Fact Questionnaire, and has 25 questions. It will only take you 10 minutes to do because they are true and false statements. Don't worry about being right or wrong, just tell me what you know. If you are not sure, then it's okay to mark "I Don't Know."
4. The fourth form is another questionnaire called the Health Perceptions Questionnaire II, and it will take about 8-10 minutes. You are going to decide how true or how false those 32 statements are about your own attitudes and beliefs about being sick or staying healthy, and about your concerns and worries. Don't worry about being right or wrong, just tell me what you know. If you are not sure, then it's okay to mark "I Don't Know."
5. The last form only has 12 questions and is called the Short Acculturation Survey for Hispanics. It is about being bilingual, and will take you 2 to 3 minutes to do.

### **What are the risks?**

Answering survey questions do not pose any obvious physical or legal risks, but there may be psychological distress. Psychological distress may make you feel afraid, uncomfortable, or angry. Giving personal information about yourself can make you feel afraid. You do not need to feel afraid because this information cannot be linked back to you in any way. It will be anonymous, meaning you are not identified in any way. It also will be kept confidential.

Answering many questions on paper can take a long time and make you feel uncomfortable. If you don't know how to answer the questions, you might get angry. It is not necessary to get angry. I am simply trying to find out how much you know, not whether you are right or wrong. This information will help us find out where to start helping Mexican-American women, like you, be healthy and keep their hearts healthy.

### **How will I benefit from the study?**

There is no direct benefit to you. However, your participation could help us better understand attitudes about health and illness, knowledge about heart disease and personal risk factors, and behaviors that are done or can be done to keep their hearts healthy and their bodies strong and in good condition. This information can benefit you indirectly by talking about it. In the future, this may help other people to understand how to help other Mexican-American women prevent heart disease by knowing better how to talk to them, how to behave toward them, and how to care and treat them.

### **What other choices do I have?**

The only other choice you have is to not be in the study. You do not have to participate in the study, even if you sign this form that says you agree to be in the study.

**What happens if I do not choose to join the research study?**

Your participation is voluntary. There is no penalty if you choose not to join the research study. If you are currently receiving services from any of the healthcare facilities associated with the University of Pennsylvania and you choose not to volunteer in the research study, your services will continue.

**When is the study over? Can I leave the study before it ends?**

The study is expected to end after the number of participants has been reached and all the information has been collected. You can stop answering questions at any point in the conversation and leave the study. You have the right to drop out of the research study at any time. There is no penalty or loss of benefits to which you are otherwise entitled if you decide to do so. The researcher will not be upset with your decision.

**How will confidentiality be maintained and my privacy be protected?**

The research team will make every effort to keep all the information you tell us during the study strictly confidential, as required by law. The Institutional Review Board (IRB) at the University of Pennsylvania is responsible for protecting the rights and welfare of research volunteers, like you. Besides the researcher and faculty sponsor, the IRB has access to study information.

All information is anonymous, meaning you are not identified in any way. Every question will be coded when it goes into the computer, and only the numbers will be reported not the people. The only thing that will be known is that it was a Mexican-American woman giving this information, but no one will be able to tell who it was by name. Any documents you sign, where you can be identified by name will be coded for confidentiality and kept in a locked drawer in the Faculty Sponsor's office at the University of Pennsylvania. When the study is over, all documents will be destroyed.

**What happens if I am injured from being in the study?**

There is no obvious risk of being injured from completing survey forms.

**Will I have to pay for anything?**

No, you do not have to pay to be in the study.

**Will I be compensated for participating in the study?**

You will not be paid in cash to participate in the study. To show our appreciation for your time in completing all the surveys, we will give you a patient education packet with important information about heart disease and staying healthy. If you

decide to withdraw from the study before you complete all the survey forms, then your compensation is nothing.

**Who can I call with questions, complaints or if I'm concerned about my rights as a research subject?**

If you have questions, concerns or complaints regarding your participation in this research study or if you have any questions about your rights as a research subject, you should speak with the Principal Investigator listed on page one of this form. If a member of the research team cannot be reached or you want to talk to someone other than those working on the study, you may contact the Office of Regulatory Affairs with any question, concerns or complaints at the University of Pennsylvania by calling (215) 898-2614.

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When you sign this document, you are agreeing to take part in this research study. If you have any questions or there is something you do not understand, please ask. You will receive a copy of this consent document.

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**Signature of Subject**

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**Signature of Witness**

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**Print Name of Subject**

---

**Print Name of Witness**

---

**Date**

---

**Date**

**UNIVERSIDAD DE PENNSILVANIA**  
**PARTICIPACIÓN EN LA INVESTIGACIÓN FORMULARIO DE INFORMACIÓN**

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**Título Del Protocolo:** Predictors of Cardiovascular Health Promotion in Mexican-American Women (Pronosticadores de Promoción Cardíaco en los Estilos de Vida en Mexicanas)

**Número del Protocolo:** 807818

**Investigadora Principal:** Viola G. Benavente, PhD(c), RN, CNS  
Escuela del Oficio de Enfermería  
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**Contacto de Emergencia:** Kathleen McCauley, PhD, RN, CS, FAAN  
Escuela del Oficio de Enfermería  
Claire M. Fagin Hall-M10, 418 Curie Boulevard  
Philadelphia, PA 19104 Phone # 215-898-8286  
E-mail: kmccaule@nursing.upenn.edu

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Usted ha sido invitado para participar en un estudio de investigación. Antes de aceptar, el investigador debe explicarle algunos puntos. Estos puntos son:

- El propósito del estudio
- El número de personas que participarán en el estudio y la duración del estudio
- Las pruebas, los procedimientos o tratamientos que serán llevados a cabo o experimentales
- Los riesgos del estudio. Puede haber riesgos debido a un dispositivo, un fármaco, una prueba o un procedimiento del estudio
- Si el estudio lo beneficiará de alguna manera
- Cómo se le hará saber si existe nueva información acerca del estudio que pueda afectar su decisión de continuar con el estudio
- Las otras opciones que tiene además de participar en el estudio
- Qué debe hacer si se lesiona o lastima durante el estudio
- Si tiene o no que pagar algún costo por participar
- Si recibirá o no algún pago por participar
- Los motivos por los cuales el investigador pueda cesar su participación en el estudio
- Quién puede tener acceso a nuestra información acerca de usted con relación al estudio
- Cómo protegeremos su información y privacidad

### **¿Qué es esta forma?**

Esta forma pide que usted se ofrezca voluntariamente para un estudio de investigación. Este estudio no es una forma de tratamiento, tampoco es para detectar enfermedades. El objetivo de esta forma es para explicarle los detalles principales sobre el estudio. Así este bien informado del propósito del estudio, si hay ventajas o riesgos, y lo que se debe hacer. Entonces puede dar su consentimiento de participación en este estudio. Antes de que usted se ofrezca voluntariamente y comienza el estudio, lee este formulario y firmalo. Por favor de pedir aclaradas, si tiene alguna, antes de firmar este formulario de aprobación oficial. Usted recibirá una copia personal de este formulario firmado.

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### **¿Qué es el propósito de este estudio?**

El propósito es ha descubrir los pronosticadores de los estilos de vida que mantienen corazones saludables en mujeres Mexicanas. Esta información es muy importante porque necesitamos que aprender más y entender las dolencias de los Hispánicos y prevenir la pena de los ataques del corazón.

### **¿Porque razón es importante que yo pertenezca al estudio?**

Es importante que pertenzca al estudio porque usted es una mujer Mexicana con un corazón saludable. Las enfermedades del corazón son muy graves y caso de muerte en gente. Es de mucha consecuencia que los Hispánicos en los Estados Unidos tengan derecho a los servicios preventivos o de cuidado médico, si los necesitan. No es mandatorio que usted toma parte en el estudio. Inicialmente, puede aceptar ser parte y despues retirarse, o enteramente rehusar sin penalidad.

### **¿Cuanto tiempo estaré en el estudio?**

Estarás en el estudio por acerca de una hora, no más. Un miembro del equipo de investigación hablará con usted sobre su conocimiento y percepciones de su estilo de vida en los Estados Unidos, perteniendo al sistema cardíaco y los riesgos de las enfermedades del corazón, como diabetes/la azucar, alta presión, alto colesterol, y sobrepeso.

### **¿Cuánta gente estará en el estudio?**

Habrá 127 mujeres y todas serán sólomente Mexicanas. El estudio continuará por un año, más o menos siguiera por doce meses, para encontrar 127 Mexicanas sin enfermedades del corazón.

### **¿En dónde es el sitio del estudio?**

El sitio del estudio son iglesias católicas, que pertenecen a la iglesia apostólica romana en la ciudad de Philadelphia y el valle de Delaware. Visitas a las iglesias escogidas serán en diferentes días anunciados por el boletín.



### **¿Qué me están pidiendo que haga?**

Se le pide acerca de una hora para contesta anónimamente las preguntas de cinco cuestionarios cortos. No se preocupe si no sabe o reconoce las respuestas, este estudio es para aprender más y entender del conocimiento y las percepciones de mujeres Mexicanas sobre los estilos de vida que mantienen o no mantienen corazones saludables:

1. El primero no más es una hoja de información demográfica y personal tomando 5-7 minutos a llenar. Las preguntas son de su edad, país de nacimiento, trabajo, educación, etc., para contar las mujeres que toman parte en el estudio. No le vamos a preguntar su nombre, dirección, o número de teléfono para proteger su derecho de privacidad.
2. El segundo cuestionario se llama, Cuestionario Del Estilos De Vida II, tomando 15-20 minutos para completar. Es el cuestionario más largo de todos con 52 preguntas. Indique la frecuencia—Nunca, Algunas veces, Frecuentemente, o Rutinariamente—con la que usted se dedica a cada conducta o costumbre.
3. El tercer cuestionario se llama, Cuestionaria Sobre Enfermedades del Corazón, tomando 10 minutos a completar. Este cuestionario tiene 25 preguntas con tres categorías para marcar, cualquiera de verdad, falso, o no está segura.
4. Este cuestionario se llama, Cuestionario Sobre Su Percepciones De Salud, tomando 8-10 minutos para completar. Indique su modo de actuar en las 32 oraciones en este cuestionario.
5. El último cuestionario se llama, Cuestionario De La Aculturación De Latinos/Hispanos, tomando 2-3 minutos a llenar con sólo 12 preguntas.

### **¿Cuáles son los riesgos, o malestar ligeros, posibles en el estudio?**

No hay riesgos posibles con una encuesta y sus respuestas son confidenciales y anónimas. Usted puede sentir miedo, incómodo, o tal vez, enojado o avergonzado, pero no hay razón.

### **¿Cuáles son las ventajas posibles del estudio?**

No hay ventaja para usted, de por sí. Su información nos ayudará aprender más de las condiciones y entender los pronosticadores de los estilos de vida a las que se enfrentan las Mexicanas al tratar de conseguir servicios preventivos o cuidado médico en los Estados Unidos.

### **¿Qué otras opciones tengo si no deseo ser parte del estudio?**

Tiene derecho a rehusar o retirar del estudio. El retiro no afectará su atención futura de cuidado médico en el hospital de la Universidad de Pensilvania.

### **¿Qué pasa si no ofrezco mi participación en el estudio?**

Nada. Su participación en este estudio de investigación es voluntaria.

**¿Cuándo terminará el estudio? ¿Puedo abandonar el estudio antes de que se termine?**

El estudio terminará después de que las 127 Mexicanas hayan completado todos los cuestionarios. Usted sí puede dejar de contestar las preguntas en cualquier momento. No hay penalidades si abandona el estudio antes de que se termine.

**¿Quién puede ver o utiliza mi información?**

Toda la información es confidencial y anónima, justificando que usted no puede ser identificado de ninguna manera. Protegeremos su información y privacidad continuamente. Asegúrese que toda la información será cerrada con candado en la oficina de la investigadora principal. Sólomente, la investigadora principal, la profesora, y la Oficina de Asuntos Reglamentarios de la Universidad de Pensilvania tendran acceso a la información. Al terminar el estudio, todos los cuestionarios serán destruidos.

**¿Qué debo de hacer si me lesiono o lastimo durante este estudio?**

No hay riesgos posibles con una encuesta para causar daño físico y se lesiona o lastima.

**¿Seré pagado para estar en este estudio?**

No. Cada persona recibirá un paquete conteniendo materiales educativos con guías para tener el control de su vida y mantegan un corazón saludable y reducen sus riesgos. Si no acabas de completar todos los cuestionarios, como quiera recibirás un paquete conteniendo materiales educativos.

**¿Tendré que pagar cualquier cosa?**

No, usted no tiene que pagar para participar en el estudio.

**¿A quién puedo llamar sobre mis derechos de participante en el estudio?**

Si tiene preguntas acerca de su participación en este estudio de investigación o con respecto a sus derechos como participante en la investigación, asegúrese de dirigir las al la enfermera y investigadora principal, Viola Benavente, o su profesora, Dra. Kathleen McCauley, al 215-898-8286. Usted también puede llamar a la Oficina de Asuntos Reglamentarios de la Universidad de Pensilvania al 215-898-2614 para informarse acerca de sus derrechos como participante en la investigación.

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Se le solicitará que firme este formulario para probar que el estudio de investigación y la información proporcionada anteriormente han sido tratados con usted. También, indique que usted acepta participar en el estudio.

Usted recibirá una copia de este formulario firmado y un resumen del estudio que será tratado con usted.

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**Firma del Participante**  
**Signature of Subject**

---

**Firma del Testigo**  
**Signature of Witness**

---

**Nombre Impreso del Participante**  
**Printed Name of Subject**

---

**Nombre Impreso del Testigo**  
**Printed Name of Witness**

---

**Fecha**  
**Date**

---

**Fecha**  
**Date**

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