Perceived Threat of a Heart Attack among Mexican Americans with Cardiovascular Disease Risk

BY

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THESIS

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This thesis is dedicated to my husband, family, and friends who have motivated, supported, and helped me accomplish one of my most cherished life goals. To my husband—thank you for your unwavering love and patience. I appreciate all that you have done to support me along the way. To my father—thank you for instilling in me the value of education and making sure that I always had everything I needed to be successful in school. To my mother—thank you for always being so proud of me and being my biggest cheerleader.
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<tr>
<td>AMI</td>
<td>Acute Myocardial Infarction</td>
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<td>BMI</td>
<td>Body Mass Index</td>
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<td>CHD</td>
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<td>SASH</td>
<td>Short Acculturation Scale for Hispanics</td>
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<td>SBP</td>
<td>Systolic Blood Pressure</td>
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SUMMARY

Compared to the general population, Mexican Americans are at greater risk for cardiovascular disease (CVD) events, such as heart attack, due to the high prevalence of risk factors. This qualitative descriptive study explored Mexican Americans with CVD risk factors’ knowledge of heart attack symptoms and risk factors; perceptions of risk, susceptibility, and seriousness; where health information is obtained; and the likelihood of seeking immediate medical assistance for heart attack symptoms. A purposive sample of 19 Mexican American adults with CVD risk factors were interviewed. Overall participants were knowledgeable that chest pain is a heart attack symptom; however, many also reported irrelevant symptoms or confused heart attack with stroke symptoms. Participants were more knowledgeable about heart attack risk factors; however, only ten participants believed they were at risk of having a heart attack in their lifetime. Perceptions of lifetime heart attack risk were ascribed to personal attributes and not taking care of themselves. Healthcare providers had not told more than half of participants about their heart attack risk, despite that all were at either moderate or high risk for a 5-year CVD event. Barriers to seeking immediate medical assistance for suspected heart attack symptoms included not being able to get help or transportation issues. The majority of participants recognized the importance of seeking medical assistance for heart attack symptoms; however, more than half did not identify calling 911 as their first action if they thought they were experiencing heart attack symptoms. As a result of these findings, Mexican Americans with CVD risk factors should receive additional information about heart attack symptoms, individual risk factors, and the actions they should take if they experience heart attack symptoms.
I. INTRODUCTION

A. Background

CVD remains the leading cause of all deaths in the United States (U.S.), accounting for death rates of 22.5% in males and 25.4% in females among Latinos living in the U.S. (Davidson et al., 2007). These rates are a concern because the U.S. Latino population continues to grow at a rapid pace. In fact, Latinos are the fastest-growing minority group living in the U.S. today and are expected to make up an estimated 30% of the total population by 2050 (U.S. Census Bureau, 2008). Mexican Americans are the largest U.S. Latino subgroup, making up 63% of the Latino population in 2010, which means that the prevalence of CVD among this growing population deserves particular consideration (Ennis et al., 2011). Compared to the general population, Mexican Americans are at greater risk for CVD events, such as acute myocardial infarction (AMI) due to the high prevalence of obesity, hypertension (HTN), hyperlipidemia (HLD), and diabetes mellitus (DM). Health education interventions may need to be tailored to address specific needs of Mexican Americans.

The Healthy People 2020 goals include reducing overall death rates from heart disease. The initiative focuses on enabling individuals to recognize the symptoms and signs of a heart attack early and to recognize the need to seek immediate care in order to reduce the morbidity and mortality associated with a cardiac event (HealthyPeople.gov, n.d.). Researchers have found that people are generally knowledgeable about typical heart attack symptoms but are less knowledgeable about atypical symptoms (Tullmann & Dracup, 2005; Zerwic, 1998). Specific to Hispanics, DuBard, Garrett, and Gizlice (2006) found that a lack of heart attack and stroke knowledge was associated with a lack of English proficiency among Spanish-speaking Hispanics. It is less clear how people with CVD risk factors perceive their risk of having a heart
attack and how these perceptions influence their responses to heart attack symptoms. These risk perceptions may have an impact on CVD outcomes and should be examined.

B. **Problem Statement**

With the expected population growth of Latinos and, in particular, Mexican Americans living in the U.S., health promotion and disease prevention will be necessary to ensure that this at-risk population remains healthy. Mexican Americans are at risk for CVD and cardiac events because they have high prevalence rates of DM, HLD, HTN, and overweight/obesity. Further studies are necessary to, first, understand how Mexican Americans with CVD risk factors perceive their risk of having a heart attack, and, second, to identify any factors that may delay their seeking immediate medical assistance for heart attack symptoms.

C. **Significance of Problem**

Despite the fact that early recognition of heart attack symptoms and seeking immediate treatment are essential for better health outcomes, both recognizing symptoms and seeking care remain problematic in the at-risk population, especially among minorities. Heart attack symptom recognition requires that an individual have the knowledge of typical and atypical symptoms and can identify symptoms as cardiac in origin. The most recognized symptom of a heart attack is chest pain (DuBard, Garrett, & Gizlice, 2006; Greenlund et al., 2004); however, not everyone experiencing a heart attack presents with chest pain alone. Symptom expectations and symptom presentation may be very different. Identification of symptoms as cardiac in origin can be confusing; therefore, even if individuals can describe heart attack symptoms, they may still confuse actual symptoms with other health ailments such as heartburn, arthritis, and overexertion (Albarran et al., 2007).
Reasons related to delay in seeking medical assistance for heart attack symptoms have been examined. MacInnes (2006) reported that for European women experiencing a heart attack, a combination of lack of perceived susceptibility, the presence of chronic conditions, and differences in symptom expectation might have contributed to misperception of the illness and therefore delay in seeking medical assistance. Harralson (2007) concluded that minorities tend to delay longer before seeking medical treatment when experiencing symptoms of a heart attack; however, knowledge specifically regarding why Mexican Americans delay seeking medical assistance for heart attack symptoms is limited. Researchers who have investigated recognition of heart attack symptoms (Greenlund et al., 2004; Zerwic, 1998) and predictors for hospital delay when experiencing heart attack symptoms (Khraim & Carey, 2009) indicate that education should be targeted to those patient populations with cardiac risk factors.

D. **Purpose of the Study**

The purpose of this study on Mexican Americans with CVD risk factors was to understand their knowledge of heart attack symptoms and risk factors; perceptions of heart attack risk; perceptions of benefits and barriers to seeking medical assistance; where health information is obtained; and likelihood of seeking emergent care for heart attack symptoms. The Health Belief Model (HBM) was the theoretical framework used to develop this research study and interview questions. The knowledge gained from participants provides important insights for areas where further healthcare provider education efforts should be focused in an effort to enhance awareness about CVD risk.
E. **Research Aims**

The specific aims were:

1. To determine knowledge of heart attack symptoms and risk factors among Mexican Americans with CVD risk factors.
2. To explore perceptions of susceptibility and seriousness of a heart attack among Mexican Americans with CVD risk factors.
3. To explore Mexican Americans’ perceptions of benefits and barriers to seeking immediate medical assistance for suspected heart attack symptoms.
4. To identify where Mexican Americans primarily obtain health information (cues to action).
5. To examine the likelihood of action to seek immediate medical assistance for suspected heart attack symptoms among Mexican Americans with CVD risk factors.

F. **Definition of Terms**

*Acculturation* is “the process of psychological and behavioral change that individuals and groups undergo as a consequence of long-term contact with another culture” (Zea, Asner-Self, & Birman, 2003, p. 108). Level of acculturation was measured in terms of language use, media factors, and social relations using the Short Acculturation Scale for Hispanics (SASH) (Marin et al., 1987).

*CVD* is a chronic disease of the heart and blood vessels related to plaque build up in the walls of arteries eventually causing a block in blood flow resulting in a heart attack or stroke (American Heart Association (AHA), 2011b).
CVD risk factors consist of factors that put an individual at risk of CVD. Factors include HTN, HLD, DM, smoking history (current and past), obesity, and family history of CVD. The more factors an individual has, the higher the risk for CVD.

HBM was developed in the 1950s to help understand and predict health behaviors (Rosenstock, Strecher, & Becker, 1988). The HBM incorporates three factors that influence health-related action: motivation or health concern, perception of susceptibility, and belief in the benefit of a health recommendation taking into account barriers.

Heart attack also known as AMI occurs when blood supplying the muscle of the heart is severely reduced or stopped as a result of plaque buildup in the coronary arteries, causing permanent injury or damage to the heart (AHA, n.d.).
II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

A. Theoretical Framework

The HBM was chosen to guide the literature review and develop the interview guide for the present study. The HBM was developed by social psychologists to help explain health-related behavior based on two variables: a desire to avoid illness and the belief that a specific health action can reduce the illness threat (Janz & Becker, 1984). Four major constructs in this model include perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. According to the model, health-seeking behavior is ultimately influenced by the four major constructs:

1. **Perceived susceptibility:** an individual’s subjective perception of risk for contracting a condition based on feelings of personal vulnerability.

2. **Perceived severity:** an individual’s feelings of illness severity and clinical consequences of the illness.

3. **Perceived benefits:** an individual’s beliefs regarding the effectiveness of a recommended health action to reduce the disease threat.

4. **Perceived barriers:** a cost-benefit analysis of potential negative outcomes as a result of a particular health action (side effects, painful, expensive, time consuming, etc.).

Perceived threat of disease is a central component to the HBM and is a major construct of interest in this study. Perceived susceptibility and perceived severity are based on the individual’s beliefs about risk and gravity of the illness, which will ultimately influence their perceived threat of the disease. Perceived susceptibility is the individual’s perception of her or his own risk of contracting an illness; in the case of this study, it was the participant’s perception
of risk for having a heart attack. Perceived severity is an individual’s perception of the seriousness of a disease, including acknowledgement of consequences of the illness. In this study, perceived severity of a heart attack meant the participant’s understanding of her or his heart attack risk and the serious consequences that can result from a heart attack.

It is important to note that in the HBM modifying factors such as age, sex, ethnicity, personality, socioeconomics, knowledge, culture, and level of acculturation can impact perceived susceptibility and severity of a disease. The modifying factors are characteristics that influence personal perceptions and can modify the four major perception constructs. To account for the modifying factors, demographic data to identify age, sex, ethnicity, and socioeconomic status were collected. Knowledge of heart attack symptoms and cultural beliefs regarding heart attack risk were examined through interview questions. The SASH (Marin et al., 1987) was used to measure level of acculturation.

Cues to action include information that raises awareness of the disease that impacts perceived threat of the disease and influences a change in behavior. It is important to evaluate cues to action in order to help identify where education efforts should be focused to improve disease awareness. Through interview questions, the Principal Investigator (PI) identified where Mexican Americans primarily obtained health information to assess cues to action. Participants’ perceptions of a heart attack threat and likelihood of action in response to heart attack symptoms were examined in relation to cues to action.

Perceptions of benefits and barriers of an action also influence the likelihood of an action such as seeking medical assistance for symptoms of a heart attack. Perceived benefits depend on beliefs about the effectiveness of recommended actions to reduce the illness threat. In the present study, perceived benefits included investigating participants’ views that going to the hospital for
heart attack symptoms would result in a successful outcome. Perceived barriers are the individuals’ determined cost-benefit analysis, where costs are perceived to outweigh the benefits to complying with recommendations. For example, if a participant with HLD was prescribed medication to lower cholesterol but the medication makes the individual tired and costs $75 a month, the participant must consider the cost-to-benefit ratio. Although the participant is aware of the benefits of taking the medication to lower cholesterol, the side effects and cost of the medication are potential barriers to buying and taking the medication. The perceived benefits and barriers of an action can act as a seesaw in which the individual must weigh both sides in determining the most appropriate action.

B. Literature Review

The purpose of this section is to provide a review of relevant literature pertaining to the variables and conceptual framework: Latinos; culture; acculturation; CVD, knowledge of heart attack risk symptoms and risk factors; where health information is obtained; individual perceptions of heart attack threat; and likelihood of action to seek emergent care for heart attack symptoms.

1. Latino

The terms Latino and Hispanic are used interchangeably in the literature and have similar meanings. In this manuscript the term Latino is used unless the term Hispanic was specifically used within a study or the authors distinctly referenced a certain subgroup. Latinos include any persons from origins of Mexico, Puerto Rico, Cuba, Dominican Republic, South or Central American, Spain, or other Spanish-speaking origins. Among Latino subgroups, Mexican Americans represent the largest group of Latinos in Chicago, comprising approximately 74% of the 2011 Chicago Latino population (U.S. Census Bureau, 2011). In 2010 Illinois was ranked
fourth following California, Texas, and Arizona as one of the states with the largest Mexican American population (1,602,403) (Ennis et al., 2011). Chicago ranked number five among cities with the largest Hispanic/Latino populations (778,862) in 2010 (Ennis et al., 2011). In 2010, of the nearly 2.7 million residents living in the City of Chicago, approximately 28.9% were of Hispanic or Latino origin (U.S. Census Bureau, 2012). Within the majority of research literature related to Latinos, subgroups are commonly combined and findings are generalized because of small sample sizes; however, cultural differences among Latino subgroups should be explored because modifying factors such as culture can impact perceptions of risk. This literature review therefore identified specific Latino subgroups analyzed within studies whenever possible.

2. **Modifying Factors**

Modifying factors described in the HBM include characteristics that may impact perceptions of threat of an illness, i.e., demographic variables, culture, knowledge of heart attack symptoms, risk factors, and how health information is obtained. Acculturation was also reviewed because varying levels of acculturation have been shown to impact health and was used as a descriptor variable in this study.

a. **Culture**

   Latino subgroups differ in many ways; however, the following core cultural values are common across subgroups including Mexican Americans: familialism (strong family orientation), personalismo (warm and friendly interaction), simpatica (politeness and positivity), respeto (reciprocal respect), paternalismo (paternalism), fatalismo (acceptance of fate), and machismo (male dominance) (Diaz, 2002). It is also important to note that folk illnesses such as *susto* (fright or scare that causes the loss of soul) have been equated with death by Latinos (Glazer, Baer, Weeler, Garcia de Alba, & Liebowitz, 2004). Strong cultural values
and folk beliefs about illness have the potential to impact health behaviors. With the HBM, culture is identified as a modifying factor that impacts several domains of the model including individual perceptions about disease susceptibility, perceived seriousness, perceptions of disease threat, and, ultimately, likelihood of action based on perceived benefits and barriers.

Although there is inconclusive evidence of the true impact that Latino cultural beliefs such as fatalismo actually have on preventative health such as cancer screenings (Abraido-Lanza et al., 2007), it is worthwhile to further investigate cultural belief responses in relation to CVD. Fatalistic assumptions of heart disease and heart attacks are recurrent themes among Latinos (Arslanian-Engoren, 2007; Christian, Rosamond, White, & Mosca, 2007; Etnyre et al., 2006). An extremely ill person may refuse to seek medical assistance if she or he believes that fate lies solely in God’s hands and nothing can be done medically to help if she or he is fated to be ill. Existing literature does not tell healthcare professions how beliefs such as fatalism may influence health behaviors related to cardiovascular morbidity and mortality. Through the present study the PI examined participant responses to questions that elicited cultural health beliefs and the impact those beliefs may have on health seeking behaviors for heart attack symptoms.

b. **Acculturation**

Another modifying factor is acculturation, defined here as “the process of psychological and behavioral change individuals and groups undergo as a consequence of long-term contact with another culture” (Zea, Asner-Self, & Birman, 2003, p. 108). To assess level of acculturation, typically five dimensions are examined: behavior, cultural identity, knowledge, language, and values. To measure the level of acculturation researchers have used indicators such as birthplace, generation, ethnic identification, cultural awareness, number of years living in host country, language preference/use, social patterns and behaviors, media preferences,
affiliation with one or another culture, and maintenance or loss of traditional culture (Burman, Hough, Telles, & Escobar, 1987; Cuellar, Harris, & Jasso, 1980; Marín, Sabogal, Marín, Otero-Sabogal, & Perez-Stable, 1987).

Researchers have linked level of acculturation to both positive and negative health outcomes for immigrants, and the overall effect of level of acculturation on health is poorly understood (Moran et al., 2007; Vaeth & Willett, 2005). Vaeth and Willett (2005) investigated levels of acculturation and prevalence of HTN among Hispanics using data from the Dallas Heart Study. Acculturation was measured using the SASH (Marin et al., 1987), a 12-item Likert-type scale that included a variety of variables to measure the multi-dimensions of acculturation. More than half of the foreign-born Hispanics lived in the U.S. for more than 10 years and the majority of them reported that they only spoke Spanish or spoke Spanish better than English. The overall prevalence of HTN was low (<10%), which is not surprising due to the young average age of 33 years for the sample. Participants in the high acculturation category were 2.5 times more likely than those in the low acculturation category to be hypertensive ($p < 0.5$). The researchers also found that Hispanics with high acculturation had strong perceptions of discrimination in the medical care system and reported high to extremely high levels of stress in their lives compared to those with low to mid-level acculturation. The researchers also suggested that a higher prevalence of HTN among more acculturated individuals is a result of acculturation stress and intergenerational conflicts resulting from marginalization.

A similar study by Moran et al. (2007) also pointed to a negative impact of higher acculturation level on health outcomes. Moran et al. (2007) investigated the prevalence of HTN associated with acculturation. There were a total of 6,814 subjects with the average age of 63 years, 53% women, 38% white, 28% African American, 22% Hispanic, and 12% Chinese.
Acculturation was measured by three variables: place of birth, language spoken at home, and number of years residing in the U.S. After adjusting for age and gender, the researchers found that speaking a language other than English at home \((p < .001)\) and being born outside of the U.S. \((p < .001)\) were associated with lower prevalence of HTN, while more years residing in the U.S. were associated with a higher prevalence of HTN.

In the present study, the PI examined perceptions of risk for a heart attack among Mexican Americans with CVD risk factors and the potential impact that the level of acculturation may have on beliefs of heart attack threat and symptom response behaviors. The SASH by Marin et al. (1987) was used to measure acculturation in this study. It was selected because it includes items that measure various dimensions of acculturation. A detailed description of this scale is discussed in the method section.

c. **CVD Knowledge**

Knowledge of CVD, including heart attack and stroke symptoms and risk factors, has been examined in prior research and a gap has been identified. Christian et al. (2007) assessed trends in awareness for heart disease and stroke among 1,005 women (71% white, non-Hispanic, 12% black, non-Hispanic, 12% Hispanic, and 6% other ethnicities). Comparing data from 1997, 2000, and 2003, the researchers found that across all groups CVD awareness has increased over time; however, the gap in awareness among racial/ethnic groups remained the same. Awareness of CVD was lowest among Hispanic women. Hispanic women reported being less informed about heart disease, more likely to feel that there is nothing to do to keep from getting heart disease, and less comfortable than other groups talking with their physician. Christian et al.’s (2007) findings suggest that low heart disease awareness, misconceptions about risk, and negative perceptions about seeking medical assistance may have an impact on whether
an individual seeks immediate medical assistance when experiencing heart attack symptoms.

i. **Heart Attack Symptoms**

Accurately identifying early warning signs of a heart attack and seeking immediate medical attention can reduce morbidity and mortality by reducing pre-hospital delay time (Moser et al., 2006; Saczynski et al., 2008). Symptoms of a heart attack include chest discomfort, pain, or pressure; sweating; shortness of breath; nausea; lightheadedness; and upper body pain or discomfort in the arm(s), back, neck, jaw or stomach (AHA, n.d.).

Research on reported symptom differences among racial groups, especially for Latinos, is limited. One study by Meshack and colleagues (1998) examined whether heart attack symptoms differed among Mexican Americans and non-Hispanic Whites in Corpus Christi, Texas. Patients hospitalized for a suspected heart attack, unstable angina, chest pain, and rule out AMI were recruited from seven hospitals. Participants were asked to state if they experienced any of the symptoms the interviewer read from a nonrandomized list of symptoms. The researchers found more reported symptom differences between sex groups than among ethnic groups. Men and women reported chest pain as the most common symptom (men 86.6% and women 76.6%). Mexican American women were more likely to report upper back pain as a symptom \( p < 0.05 \) compared to non-Hispanic white women and men. Although the presence of chest pain was a consistent finding in this study, the researchers emphasized the importance of designing educational intervention strategies that integrate teaching typical and atypical symptoms of a heart attack as both were reported by Mexican Americans.

Researchers have indicated that a mismatch between heart attack symptom expectations and experience has been associated with delay in seeking immediate medical assistance for heart
attack symptoms. A study by King and McGuire (2007) examined gender differences of symptom presentation and time taken to seek care for an AMI. The researchers found that in a sample of 30 women and 30 men (88.3% Caucasian, 10% African American, and 1.7% Hispanic), only eight women and eight men initially interpreted their symptoms as cardiac related. Other common attributions of symptoms experienced were indigestion, pulmonary problems, or muscular aches. Although there were no gender differences in expectations about AMI, 73.3% of women and 66.7% of men reported a mismatch between the symptoms experienced and what they expected. Reasons for a mismatch included less pain than expected and location of symptoms different from expected. Participants whose symptoms matched their expectations were likely to arrive to the emergency department sooner than those without a match ($p = 0.008$).

Although previous studies have investigated the impact of symptom mismatch on hospital delay time, few have included adequate sample sizes of Latinos or specific Latino subgroups to make conclusions regarding those specific populations. Symptom mismatch and treatment delay was not the focus of this study however the PI investigated knowledge of heart attack symptoms and what actions individuals indicated they would take first if they thought they were having heart attack symptoms.

ii. **Heart Attack Risk Factors**

The prevalence of certain risk factors differs among minority populations, with Hispanics having a higher incidence of CVD risk factors such as DM (Colleran, Richards & Shafer, 2007). AHA education literature indicate the risk factors for a heart attack include HTN, smoking, DM, family history of CVD, physical inactivity, HLD, and obesity (AHA, 2011c). The following self-reported CVD risk factors are most commonly found
in Latinos: lack of physical activity (Artinian et al., 2004), obesity (Artinian et al., 2004; Mensah et al., 2005), HLD (Mensah et al., 2005; LaRosa & Brown, 2005), smoke exposure (Artinian et al., 2004), and DM (Colleran, Richards & Shafer, 2007; Hertz, Unger & Ferrario, 2006; LaRosa & Brown, 2005). This population might underreport risk factors of HTN and family history of CVD because awareness and treatment of HTN is much lower in Mexican American adults compared to non-Hispanic whites (Hertz, Unger, & Ferrario, 2006). The above researchers indicate that acknowledging risk factors of CVD may enhance one’s willingness to make lifestyle changes for risk prevention.

The presence of some risk factors for a heart attack is associated with longer pre-hospital delay times. Saczynski et al. (2008) examined data from the Worcester Heart Attack Study (a longitudinal population-based study examining long-term trends of AMI residents in Worcester, MA) and found that patients who delayed two or more hours were older, more likely to be female, and have a history of angina, DM, HTN, and heart failure. Those with delays beyond six hours were more likely to have a history of DM or AMI. Increased pre-hospital delay time for individuals experiencing a heart attack remains a problem. According to the findings of Saczynski et al.’s study, individuals with CVD risk factors continue to have the longest pre-hospital delay times.

In the present research study, knowledge of symptoms and risk factors for a heart attack were assessed in Mexican Americans with risk factors for CVD via interviews. Semi-structured interviews were used to further examine Mexican Americans’ understanding of heart attack symptoms and risk factors in addition to perceptions of susceptibility of a heart attack.

3. **Cues to Action**

Identifying sources where people obtain health information can help determine
accuracy of information and such sources can be targeted for improving education strategies. The AHA has made great efforts to improve awareness regarding heart disease, especially among women. Meischke et al. (2002) explored how sources of information about heart attack affect women’s knowledge, beliefs, and behavioral intentions during a cardiac event. This study was conducted with primarily Caucasian women, with more than half of the sample having an education beyond high school. Mass media (television and radio) was the most-reported source of information, followed by healthcare providers and then friends and family. Information supplied by healthcare providers was perceived to be more believable than information gained from mass media or friends and family. In response to heart attack symptoms, most women reported they would act quickly and appropriately. Acquiring information from multiple sources resulted in greater knowledge of heart attack symptoms and risk perceptions; behavioral intentions to seek immediate help for heart attack symptoms were not significantly related to information sources.

Lange et al. (2009) explored Puerto Rican women’s knowledge of CVD and found that knowledge of symptoms came primarily from what they heard from people other than health professionals, such as friends, family, and the media. These participants did not identify or link hypercholesterolemia, HTN, smoking, and DM as risk factors even though the majority of women were on medication for HTN and HLD. These women were also unaware of some of the atypical signs of heart attacks, were confused about some of the symptoms, and were afraid of seeking help for false alarms. They discussed a preference to self-treat or seek help from friends and family first if unsure of the cause of symptoms, which are factors that have been found to contribute to pre-hospital delay time. Lange et al. (2009) provide important insight into Puerto Rican women’s knowledge and understanding of CVD and how they obtain their health
information. Similarly, the present research study explored the concepts of heart attack knowledge and where information is obtained among Mexican American women and men.

4. **Individual Perceptions**

Perceptions of susceptibility and perceived seriousness will impact likelihood of action. Perceptions of susceptibility are an individual’s belief that she or he is at risk for an illness such as a heart attack. Perceived seriousness indicates how serious or life threatening an individual believes a heart attack can be. Within the HBM the likelihood of seeking emergency care for heart attack symptoms is impacted by perceived susceptibility and seriousness of the threat of attack.

a. **Perceptions of Heart Attack Susceptibility and Seriousness**

Generally, people are likely to underestimate their own risk of developing certain illnesses. There seems to be a disconnect between perception of risk and actual risk of having a heart attack especially among individuals with risk factors for a heart attack. Using semi-structured interviews, MacInnes (2006) explored illness perceptions of 10 women from England following a heart attack. The average time spent before seeking medical assistance was 80 minutes (ranging from less than five minutes to six hours). This average delay time is consistent with U.S. median delay times ranging from 1.5 to 6 hours (Moser et al., 2006). The overall themes that emerged to determine seriousness of symptoms and influence decisions to seek medical assistance were: symptom experience and severity; lack of perceived susceptibility; past experience of illness; comparison with the experience of others; and perceived cause. Only women with a past heart attack experience sought immediate medical assistance. Despite having a number of risk factors including coronary heart disease (CHD), the women in this study did not perceive themselves at risk for a heart attack and therefore their misconceptions may have
contributed to their delay.

In another qualitative study, Albarran et al. (2007) explored the AMI symptoms experienced by 12 newly diagnosed Caucasian women prior to, and during, an AMI. None of these women had a history of an AMI, but all of the women except two had risk factors such as HTN, DM, and smoking or had a family history of CVD. Three themes emerged from examining the women’s experiences: gradual awareness; not having pain in the chest; and reactions to symptoms. After data analysis, the researchers found that beliefs about personal health status influenced the decision-making process for these women. The women with risk factors for AMI never made the connection between risk factors and AMI, making the new medical diagnosis of an AMI difficult to accept. Here is how one woman explained how she had difficulty believing that she was at risk for a heart attack:

Of course, heart attack or something like that happens to other people… Well mostly older people… I was surprised because I’ve been healthy all my life… I did exercising and I’ve been gardening and all sorts… I haven’t smoked now for 25 years… People say that my husband and I are young for our age and we get about and you know I just never thought that (a heart attack) was going to happen to me (p.1297-1298).

Some of these women also described their symptom experience as different from what they expected, which made it difficult for them to interpret their symptoms as cardiac related. Reasons for delay in seeking immediate medical assistance included confusion about what the symptoms actually were and their manifestations.

Arslanian-Engoren (2007) conducted a qualitative study comparing 30 women’s perceptions of heart disease across racial/ethnic groups and identified differences in perceptions of illness, self-risk, and anticipated treatment-seeking behaviors. The researchers found that while both black and white women associated heart attacks with men and older age, Hispanic women associated the phrases “heart attack” and “heart disease” with death. Regardless of race
or ethnicity, the women associated heart attack/heart disease with family history of CHD, being unfit, and eating poorly. With respect to personal risk assessment, six out of 10 Hispanic women reported being at risk for heart disease. The women attributed their risk factors for heart disease to being overweight, family history of heart disease, smoking, and age. The women who did not believe that they were at risk for heart disease gave reasons that included that they were in good health, were not tired, did not have numbness in their hands and fingers, or were trying to lose weight. Although the group of Hispanic women in this study who did believe they were at risk of heart disease were able to acknowledge appropriate risk factors for heart disease, the women who did not believe they were at risk clearly needed more education about heart disease risk factors, early/late signs of heart disease, and heart attack treatments and outcomes.

The women in the Arslanian-Engoren (2007) study were also asked about anticipated behaviors if they thought they were experiencing symptoms of a heart attack. Eight out of 10 Hispanic women said that they would call their doctor first to make an appointment or would see the doctor right away to get checked out. One Hispanic woman mentioned that severity of symptoms would determine the order of calling her doctor or 911 first. One woman that reported she would not call her doctor, said she would try to let the symptoms pass, if the symptoms did not resolve she would call her daughter. Another Hispanic woman stated that depending on the severity of the symptoms she would contact family members in the medical field first. Based on the findings from this study, Hispanic women have misconceptions about heart disease risk and what is the most appropriate action when experiencing symptoms of a heart attack. In addition, Hispanic women have misconceptions about heart attack severity such that some of the women correlate heart attack with death, despite the fact that surviving a heart attack with early intervention is possible.
As discussed above, accurate beliefs and knowledge about personal health status and knowing one’s own risk for a heart attack can help individuals interpret and perceive their symptoms as cardiac in origin and influence the decision-making process in favor of seeking immediate medical help for heart attack symptoms. The PI of the present study focused on the determinants of help seeking behaviors to assist healthcare professionals in understanding Mexican Americans’ perceptions of heart attack risk and how their health beliefs and knowledge are reflected in their health behaviors.

5. **Likelihood of Action**

Many individuals delay seeking immediate medical treatment when experiencing symptoms of a heart attack (Harralson, 2007). According to the HBM, the likelihood of an action such as seeking medical assistance when experiencing heart attack symptoms is influenced by the constructs previously discussed, i.e., modifying factors and individual perceptions. Minimizing patient decision time from heart attack symptom onset to seeking medical assistance is important for improving outcomes for those experiencing a heart attack. As previous researchers have uncovered (Arslanian-Engoren, 2007; Lange et al., 2009; Meischke et al., 2002), pre-hospital delay time has been associated with knowledge of symptoms and risk factors, perceptions of risk, and symptom appraisal. Further investigation of perceived barriers and the impact such barriers may have on one’s decision to seek emergency care for heart attack symptoms is necessary to assist individuals in overcoming such barriers. The role of individuals’ perceptions of the benefits of quickly seeking emergency care for heart attack symptoms should also be assessed to investigate understanding of the outcomes that may result due to immediate emergency care.
a. **Perceived Benefits**

Perceptions of benefits for seeking medical assistance for symptoms of a heart attack have not directly been measured by previous research. In the present research study participants were asked what they think would happen if they went directly to the hospital for symptoms they thought were a heart attack. Probes were used to elicit responses related to perceptions of treatment and outcomes or barriers that would impede any benefit.

b. **Perceived Barriers**

Latinos tend to have longer pre-hospital delays when experiencing heart attack symptoms compared to other racial/ethnic groups (Henderson et al., 2002). The literature does not provide a clear answer as to the barriers that contribute to delay times among Mexican Americans; however, the literature does provide insight into variables that may have an impact on health care seeking behaviors of Latinos. Vaeth and Willett (2005) conducted a study using data from the Dallas Heart Study to examine the prevalence of HTN and acculturation status. They also investigated perceived discrimination and self-rated stress levels related to acculturation. The sample characteristics included: more than half born in Mexico, with more than half of the immigrants living in the U.S. for more than 10 years, and the majority of participants spoke Spanish only or Spanish better than English. The researchers found that Hispanics with high levels of acculturation were more likely to have the strongest perceptions of discrimination in the medical care system ($p < 0.0001$). This finding is particularly important because those individuals who may identify themselves more with the host culture are reporting higher levels of perceived discrimination than those individuals who may identify less with the host culture. There was a significant difference for the prevalence of HTN among the various levels of acculturation ($p = .01$); the prevalence of HTN was greater in the group with the highest
level of acculturation. In the present study the researcher investigated levels of acculturation and
the perceived barriers to seeking medical assistance among Mexican Americans with CVD risk
factors.

Through focus groups, Perilla, Wilson, Wold, and Spencer (1998) explored barriers to
accessing medical services among Mexican immigrant farm workers. The participants reported
concerns of inadequacy of services, fear of immigration officers, transportation, cost of
medications, low socioeconomic status, inability to take time off from work, racism and
prejudice—all seen as barriers. Such barriers can impact one’s sense of control and beliefs about
available support, therefore potentially impacting future health seeking behaviors. If culture-
specific variations in healthcare seeking behaviors for Latinos can be identified in the proposed
study, then culture-specific interventions can be suggested to help improve health outcomes for
this target population.

Larkey et al. (2001) examined factors that contributed to delayed use of medical care
among Hispanics experiencing chronic disease-related symptoms such as CVD, cancer, or DM.
Factors influencing healthcare seeking behavior were first investigated using focus groups with
individuals who experienced symptoms of a chronic disease. The factors that influenced delayed
visits to the doctor included obtaining information from others, remedies, trust issues,
transportation, financial barriers, shame or denial, faith, unpleasant experiences, and perceptions
of symptom severity. A questionnaire was then developed from the focus group data to measure
the factors and their relationship to healthcare seeking behaviors; the questionnaire was
administered to a total of 132 respondents (40% had participated in the parent study).
Seriousness of symptoms was the strongest factor in determining the time taken to visit the
doctor. Although knowledge of symptoms and risk factors of the chronic diseases was not
measured by Larkey et al. (2001), the researchers emphasized the importance of educating Hispanics about the warning signs and relating signs to seriousness of the disease because of the impact perceptions of symptom seriousness has on decisions to go to the doctor.

Together, the above researchers found that perceived barriers weigh on an individual’s decision to seek early medical treatment for heart attack symptoms. The researchers also suggest that education regarding the benefits of early intervention should be emphasized to improve responses to heart attack symptoms.

c. **Heart Attack Symptom Response**

Researchers have attempted to measure heart attack symptom interpretations and healthcare seeking behavior primarily using one of two approaches. One method is to contact patients after their cardiac event and investigate symptoms experienced and their response to symptoms (Albarran et al., 2007; Harralson, 2007; Johansson et al., 2007; Sjöström-Strand & Fridlund, 2008); the other method entails using hypothetical symptom scenarios to investigate potential symptom responses (Lange, 2009).

In a study conducted by Sjöström-Strand and Fridlund (2008), 19 Swedish women who had experienced their first heart attack were interviewed on their second or third day during their hospitalization. The women were asked about their symptoms, interpretations, and actions. Although the researchers did not indicate the number of women, they found that women had difficulty interpreting their AMI symptoms because they did not believe that they were at risk for CHD despite knowing that they had a family history of death from CHD. The women also had difficulty associating their symptoms with an AMI, which led them to convince themselves that the symptoms were related to something other than CHD and would disappear on their own. Self-care and minimizing the symptoms were strategies described by the women to cope with the
symptoms. Family responsibilities that could not be delegated to others were also a concern for the women and prevented them from seeking medical care. Finally, waiting for someone else to make the decision to seek help also contributed to delay for these women. These findings are consistent with other studies that have related delay to: symptom expectation mismatch (Morgan, 2005; Zerwic et al., 2003); putting others needs before their own (Finnegan et al., 2000); self-care treatment responses (Zerwic et al., 2003); minimizing symptoms (Morgan, 2005); and difficulty making the decision to seek medical care (Johansson et al., 2007). All of the above symptom response behaviors contributed to delay in seeking medical assistance.

It is also important to understand how people who have cardiac risk factors but who have never had a heart attack might react if they thought they were having heart attack symptoms. Lange et al. (2009) conducted a focus group of 12 Puerto Rican women without any CHD history to assess knowledge of CHD risk factors and symptoms. In other words, if these women experienced CHD symptoms, would they associate them with CHD and what action would they take? The women were knowledgeable of the classic signs when asked to describe symptoms and reported that their knowledge came primarily from friends, family, and media. The knowledge of risk factors for CHD was limited. When the women were asked how they typically treated symptoms like nausea, pressure, and shortness of breath, the women reported that they preferred to treat symptoms themselves by using home remedies or spiritual remedies. Only one participant reported that she would seek medical attention. Difficulty distinguishing cardiac symptoms from other ailments was also reported. Most participants knew how to access emergency care for believed symptoms of a heart attack but preferred to go to a friend’s house or a walk-in clinic to avoid wasting time, money, or embarrassment if symptoms were not actually due to a heart attack. Similar to other researchers (Morgan, 2005; Zerwic et al., 2003), Lange et
al. (2009) found that delayed responses to heart attack symptoms were complicated by difficulty in distinguishing cardiac symptoms from other ailments and the delay resulted from contacting friends/family or attempting to self-treat symptoms first. The present study explored concepts similar to Lange et al.’s (2009) study (i.e., knowledge of heart attack symptoms and likelihood of action in response to heart attack symptoms), but differed in one important respect: the present study conducted one-on-one interviews with Mexican American men and women with a history of CVD risk factors.

In all of the studies, the likelihood of seeking immediate medical assistance for heart attack symptoms was complicated by several factors that are consistent with components of the HBM. An individual’s perception of threat of a heart attack is influenced by her or his beliefs of disease susceptibility, seriousness, and modifying factors. Ultimately the likelihood of action reflects the perceived threat of a heart attack and the perceived benefits and barriers that a patient may encounter in seeking medical care.

6. **Summary**

Research is limited on how Mexican Americans with existing CVD risk factors perceive their risk of having a heart attack. Making the connection between the presence of CVD risk factors and understanding risk of a heart attack may help individuals decrease pre-hospital delay when experiencing symptoms of a heart attack. The present study explored perceptions of risk of having a heart attack and likelihood of action in response to heart attack symptoms among Mexican American men and women who have CVD risk factors. The findings from the present study may help provide direction for Mexican American public health education regarding cardiovascular health.
III. METHOD

A qualitative descriptive design was utilized to describe Mexican Americans’ knowledge of heart attack symptoms and risk factors, to explore perceptions of heart attack threat, to identify from what primary sources health information was obtained, and to examine the likelihood of action to seek immediate medical assistance for symptoms of a heart attack. This chapter describes the following: a) research design, b) sample, c) setting, d) instruments, e) recruitment procedures, f) data collection, g) data management and analysis, h) trustworthiness of study, i) protection of human subjects, and j) anticipated pitfalls and solutions.

A. Research Design

A descriptive qualitative design was utilized for the present study. A qualitative approach involves emerging data from open-ended questions collected by the researcher (Creswell, 2003). A descriptive qualitative design is less interpretive than other qualitative methods because researchers “stay closer [to] their data and to the surface of words and events” (Sandelowski, 2000, p. 336). This design was chosen because the goal of this study was to describe participants’ heart attack knowledge, perceptions of heart attack risk, and symptom response intentions as participants described them in their own words. A qualitative method was chosen because it can provide a more thorough understanding of perceptions of heart attack threat among an at-risk population. Few instruments have been established to measure risk perceptions and, to the PI’s knowledge, none have been validated with Mexican Americans. Conducting interviews enabled the researcher to clarify or rephrase questions to improve participant understanding, which is particularly helpful with literacy issues and language barriers.
B. Sample

A Chicago-area clinic serving a large Latino population was used to recruit Mexican American men and women via purposive sampling. Purposive sampling allowed for selection of research participants who were able to provide rich information on the study phenomenon (Ulin, Robinson, & Tolley, 2005). Inclusion criteria for this study were as follows: men and women self-identified as Mexican American; 50 years of age or older; English and/or Spanish speaking; at least one CVD risk factor (HTN, HLD, DM, obesity (BMI >30), smoking (past/present), and/or family history of CVD; and living in the Chicago area. The participants had to be patients of the clinic because medical charts were accessed to obtain medical history information. Exclusion criteria were as follows: a history of a stroke, heart attack, or angina. Potential participants with any acute symptoms of any kind were not approached to participate in the study. A target sample of 20 participants was recruited from the clinic. An equal number of men and women were interviewed; however, once the medical record review was completed, one male participant did not fit the age criteria and therefore his interview was not included in the data analysis. As a result, a total of 19 (10 women, 9 men) interviews were included in this study.

C. Setting

Participants were recruited from a Chicago-area bilingual, bicultural clinic that provides healthcare services to the Latino community. Patients are seen for primary medical care and specialty programs. Initially the PI obtained approval to recruit participants from two different Chicago-area clinic sites from the same institution. But the target sample size of 20 participants was achieved at one site. Interviews were conducted in a quiet, private room during clinic hours.
D. **Instruments**

1. **Interview Guide**

The PI used core concepts of the HBM to develop a semi-structured interview guide consisting of 20 open-ended questions (Appendix A). To enhance credibility of the research study, the interview guide was developed using the HBM to ensure that all concepts were fully addressed in the interview guide (Table 1). The questions were also reviewed for content validity by a panel of three expert researchers on CVD and one expert on qualitative research. Changes to the interview guide questions were made according to expert feedback. The questions were aimed at eliciting discussions to understand participants’ perceived threat of a heart attack and their likelihood of seeking medical assistance for symptoms of a heart attack based on: individual perceptions of susceptibility and seriousness; modifiable factors that include knowledge of heart attack symptoms and risk factors and cues to action; and perceived benefits and barriers.

The interview guide and recruitment flyer were originally developed in English and translated into Spanish using a committee of three bilingual (English/Spanish) Mexican American translators. The PI first explained the study purpose to the translators and then had the three bilingual translators independently translate the documents from English to Spanish. The committee along with the PI then convened to review and compare the Spanish versions of each document for conceptual consistency and appropriate grammatical translations in order to create one Spanish version. Any discrepancies were discussed by reviewing line-by-line translations by the committee. Minor grammatical discrepancies were found and changes were made based on consensus. All three translators were of the same native origin as the participants, i.e., self-identified as Mexican American. The interview guide was then pre-tested with three individuals.
who met the inclusion criteria; one interview was conducted using the English version and two
interviews were conducted using the Spanish version. The interview questions were able to elicit
appropriate responses and, according to participant feedback, no further revisions were
necessary. The methods used to translate the interview guide and recruitment flyer are
considered preferred methods for instrument translation (Douglas & Craig, 2007).
TABLE I  
INTERVIEW QUESTION LINKAGES

<table>
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<tr>
<th>STUDY AIM</th>
<th>INTERVIEW QUESTION</th>
<th>HBM CONCEPT</th>
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</thead>
</table>
| 1. To examine knowledge of heart attack symptoms and risk factors among Mexican Americans with CVD risk factors. | • What do you believe are heart attack symptoms?  
• How would you know if you were having a heart attack?  
• What do you believe puts people at risk of having a heart attack?  
• Why do you think some people get heart attacks and some people do not? | Modifying Factors |
| 2. To explore Mexican Americans’ individual perceptions (susceptibility & seriousness) of heart attack threat. | • In general, please tell me about your overall health.  
• How worried are you about your overall health?  
• How did you feel when you were told you had____?  
• Have you ever thought about your own heart attack risk?  
• Do you think you will have a heart attack in your lifetime?  
• What do you believe might put you at risk of having a heart attack and why?  
• Do you believe it is possible to reduce your risk of having a heart attack?  
• Do you believe anyone has control over whether he/she will have a heart attack or not?  
• Is it up to God to decide whether you or someone else will have a heart attack?  
• How serious do you believe a heart attack is?  
• How do you think having a heart attack may change someone’s life? | Perceptions of Susceptibility  
Perceived Seriousness |
### TABLE I (continued)
#### INTERVIEW QUESTION LINKAGES

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<tr>
<th>STUDY AIM</th>
<th>INTERVIEW QUESTION</th>
<th>HBM CONCEPT</th>
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| 3. To explore Mexican Americans’ perceptions of benefits and barriers to seeking immediate medical assistance for suspected heart attack symptoms. | • What might prevent you from going to the hospital if you thought you might be having a heart attack?  
• What do you think would happen if you went directly to the hospital for symptoms that you thought were a heart attack?  
• What do you think would happen if you did not go to the hospital right away for symptoms that you thought were a heart attack? | Perceived Barriers  
Perceived Benefits |
| 4. To identify where Mexican Americans primarily obtain health information. | • How do you learn about general health information?  
• How did you learn about what are heart attack symptoms?  
• How did you learn about what puts people at risk of having a heart attack?  
• Has your healthcare provider told you about your risk of having a heart attack? | Cues to Action |
| 5. To examine the likelihood of action to seek immediate medical assistance for suspected heart attack symptoms among Mexican Americans with CVD risk factors. | • What is the first thing you would do if you thought you were having symptoms of a heart attack? | Likelihood of Action |
2. **Short Acculturation Scale for Hispanics (SASH)**

The 12-item SASH for Hispanics was administered to participants to measure level of acculturation (Marín et al., 1987). Items are scaled in a 5-point Likert format, measuring language use (5 items), media factors (3 items), and social relations (4 items). The coefficient alpha for reliability of the total 12 items was .92; this is an acceptable alpha level and comparable to other well-established acculturation instruments such as Cuellar et al. (1980) with Mexican Americans ($\alpha = .88$) and Szapocznik et al. (1979) with Cubans in Miami ($\alpha = .97$). To establish instrument validity, the total score on the scale was correlated with subject’s generational level ($r = .65, p = .001$); generation level has been used previously as a validation criterion (Marín et al., 1987). Correlations between overall instrument scores and items for each of the three factors included: $r = .69 (p = .001)$ for language, $r = .43 (p = .001)$ for media, and $r = .53 (p = .001)$ for ethnic social relations (Marín et al., 1987). Other criterion measures used to establish instrument validity included correlations with: length of residence in the U.S. ($r =.70, p < .001$); self-evaluation of level of acculturation ($r = .76, p < .001$); acculturative index ($r = .83, p < .001$), and age of arrival in the U.S. ($r = -.69, p < .001$) (Marín et al., 1987). Differences in SASH scores based on generation level were also significant when mean acculturation scores for first ($M = 2.37$) and second ($M = 3.42$) generations were compared ($t (303) = 13.74, p < .001$) (Marín et al., 1987). English and Spanish versions of the scale are available from the instrument developers. An average score of 3.00 or above is indicative of more acculturation and an average score of 2.99 or below is indicative of less acculturation. In the current study, following administration of the acculturation scale, each participant was asked to disclose their country of birth and how long they had lived in the U.S.
3. **Demographics and Medical Record Review**

Demographic and medical history information was collected from each participant’s medical record (Appendix B). Demographic information included: age (years), gender, race/ethnicity, insurance status, and highest level of education. Medical history information included: documented height (inches), weight (pounds), and systolic blood pressure (mmHg); any documented history of HTN (yes/no), HLD (yes/no), DM status (yes/no), smoking status (past or current vs. never), and family history of CVD (yes/no, condition).

4. **CVD Event Risk Assessment**

Based on patient information obtained from the medical record—age (years), DM (yes/no), systolic blood pressure (mmHg), smoking status (past or current vs. never), and calculated body mass index (BMI)—a non-laboratory-based model was used to identify participants’ risk factor profile (low, moderate, and high) to predict a 5-year cardiovascular risk percentage for a fatal event. Typically, laboratory-based models include lipid lab values for assessment of CVD risk, but in situations where laboratory testing or lab values are unavailable, such as in outpatient clinical settings or facilities with limited resources, a non-laboratory-based model for assessments can be useful for CVD prediction. The non-laboratory-based model used in this study was developed and tested by Gaziano, Young, Fitzmaurice, Atwood, and Gaziano (2008) using data from the National Health and Nutrition Examination Survey (NHANES) follow-up study cohort. To predict CVD event risk outcomes (death, AMI, congestive heart failure, and coronary revascularization), a non-laboratory-based model that required medical history (age, DM diagnosis, and smoking history) and physical examination measures (systolic blood pressure and BMI) was tested against a laboratory-based model that required blood testing for total cholesterol levels in addition to all non-laboratory measures with the exception of BMI.
No significant differences were found between the two models for predicting fatal events for both men and women. The Cox proportional hazards regression was used to compare predictions for CVD event outcomes based on the two models. The laboratory-based and non-laboratory-based model, c statistics (predictive discrimination value) were calculated and reported as such: in women, a c statistic (95% CI) for the laboratory-based model was 0.829 and non-laboratory-based model was 0.831, with a $\chi^2$ result of 2.476 ($p = 0.116$) indicating no significant difference in predictions. In men, the c statistic for the laboratory-based model was 0.784 and for the non-laboratory-based model was 0.783 with a $\chi^2$ result of 0.555 ($p = 0.457$) also indicating no significant difference in predictions. Based on Gaziano et al. (2008) findings, the non-laboratory-model is an acceptable method for a five-year CVD event risk assessment.

E. Recruitment Procedures

Once the Institutional Review Board approval was obtained from both the University of Illinois at Chicago and the clinic, the PI contacted the nursing director to discuss the research protocol and schedule days for recruitment. On the first day of recruitment, the PI and the research assistant (RA) were introduced to the clinic healthcare providers (physicians, registered nurses, and medical assistants). The PI explained the inclusion criteria to the clinic healthcare providers and provided them with the screening questionnaire (Appendix C) to help them identify potential participants. The healthcare providers helped identify potential participants who met the study inclusion criteria, informed any patients who fit the criteria about the study, and directed them to the room where the PI and the RA were conducting the interviews. Spanish and English recruitment flyers were placed on the registration desk for patients to take when they checked in for their appointments. The flyers contained study information and instructions on
how to participate in the study. The PI and RA stayed onsite at the clinic to conduct interviews as potential participants were identified.

F. Data Collection

Once eligible participants were identified the PI described the purpose of the study; explained that participation in the one-time interview was voluntary and that there would be no consequences if they refused to participate; protective measures would be taken to ensure confidentiality of the data; the interview would be audio-recorded to help the PI recall the responses; the interview would last approximately 30 minutes; participants could refuse to answer particular questions or stop the interview at any point in time; and a $10 gift card along with an English/Spanish version of the AHA brochure titled “Controlling Your Risk Factors: Our Guide to Reducing Your Risk of Heart Attack and Stroke” would be given as incentive for participation once the interview was completed. The PI read aloud the informed consent to the potential participants as they read it. The potential participants then had an opportunity to ask questions and decide if they would participate in the study by signing the consent form (Appendix D-English/Spanish). Each consented participant was then given a copy of the consent form in his or her preferred language.

Following the consent process, the participants completed a contact information form that included their name, date of birth, and phone number to retrieve medical record information following the interview. Once the contact information was collected, the interview was conducted. Interviews were conducted at the clinic in a quiet and private room on the day of the participants’ clinic visit. The participant had the choice of being interviewed in English or Spanish. The PI conducted the English interviews and the RA (who is bilingual, in Spanish and English) conducted Spanish interviews. It is important that the bilingual RA was fluent in
Spanish spoken by Mexican Americans because some Spanish words and phrases may differ slightly among Spanish-speaking Latino subgroups. The bilingual RA conducting the Spanish interviews underwent human subjects training, the PI discussed the topic and aim of the research study in full detail prior to beginning the study, and practice interviews were performed between the PI and RA to strengthen interview skills. The PI was in the room during the Spanish interviews conducted by the RA to verify consistency of the interviews and ask additional questions if necessary. The PI is able to speak, understand, and read Spanish, however, the level of fluency was not considered sufficient for the purpose of this study.

A semi-structured interview guide was used to guide the interview questions; probes were incorporated to elicit further details and thoughts from the participants. Based on participant responses, the interviewer asked additional questions throughout the interview to further explore answers. Any strong emotions or notable non-verbal cues from the participants throughout the interview were noted and recorded by the PI. The entire interview process beginning with consent took approximately 30 minutes. Each interview was audio-recorded.

Following the interview questions, the interviewer had the participant respond to questions from the SASH (Marin et al., 1987), which were read aloud to them, and two additional questions about where they were born and how long they had lived in the U.S. were also asked. Because the SASH uses a Likert response scale, each participant had a copy of the SASH to review as they listened to the PI ask the questions.

The PI collected demographic and medical history data by providing the clinic’s medical record staff with a list of names and dates of birth of the study participants gathered from the participants. The medical record review was completed a week after the interviews to allow the medical record staff to gather the records. The PI completed a medical record review form
(Appendix B) for each participant to record medical history and demographic information from each participant’s medical chart.

G. **Data Management and Analysis**

Confidential identification numbers and pseudonyms were assigned to each participant’s data to protect confidentiality. Since medical records were reviewed to collect medical history data, a tracking form containing confidential identification numbers, participants’ names, and date of birth was used. To maintain confidentiality, the tracking form was stored in a password protected electronic file separate from any electronically stored data and one hard-copy tracking form was stored in a locked file cabinet separate from any hard-copy data.

Descriptive statistics of demographic information, level of acculturation, and cardiovascular event risk were computed to describe the sample. The English translation before analysis technique described by Suh, Kagan, and Strumpf (2009) as a primary method for translation was used for the interview data. All interviews were transcribed verbatim without grammatical editing, in the language that the interview was conducted. The transcripts were double-checked for accuracy. Then the PI and RA translated the Spanish transcripts line by line into English while playing back the audio-recordings to confirm the accuracy of content translated. Each transcript took approximately four hours to translate to ensure accuracy of content. The PI then added to the transcripts any notes written down regarding participant behaviors during the interviews before conducting data analysis.

Directed content analysis of the data was performed. This method is appropriate when a theoretical framework exists about a phenomenon but would benefit from further description to validate or conceptually extend a theoretical framework (Hsieh & Shannon, 2005). Directed content analysis is a more structured and deductive approach to analysis because key concepts
from the theoretical framework are identified as the initial coding categories (Potter & Levine-Donnerstein, 1999). Through the process of coding, emerging themes and patterns may also be identified. The PI began by reading and re-reading the transcripts to become familiar with the content and ensure a thorough understanding of the information provided by the participant. An electronic document containing all of the codes developed with their definitions and examples of how it was used was created. Response similarities and differences among the participants were analyzed with an emphasis on general health, cues to action, knowledge of heart attack symptoms and risk factors, perceptions of susceptibility/seriousness, sources of health information, perceptions of benefits/barriers to seeking treatment, and likelihood of action. Trends according to level of acculturation, CVD event risk, and demographic variables were evaluated.

H. Trustworthiness of Study

Demonstrating trustworthiness in qualitative research requires careful techniques to enhance credibility, transferability, dependability, and confirmability of data (Lincoln & Guba, 1985). Several measures were taken throughout the study to ensure trustworthiness of the qualitative methods.

The PI is a critical care nurse who is knowledgeable in the subject matter and has had training in qualitative methods to conduct interviews; this enhances trustworthiness of data collection procedures. The PI is also Mexican American with knowledge of unique cultural characteristics of the study group, which assisted with data interpretation. Another advantage of the PI being from the same ethnic background as the participants is the ability to build trust, rapport, and comfort with the participants to maximize truth-value from the subjects’ experiences. Although the PI has grammatical Spanish language competence (able to speak and
write simple sentences), she lacks sufficient Spanish discourse competence to conduct a more complex level of conversation suitable for conducting interviews that would elicit unprompted rich data responses. Therefore, a bilingual Mexican American RA was employed to conduct the Spanish interviews. It was important to have an RA of Mexican decent because the Spanish language is slightly different among Latinos subgroups due to accents and slang words. The RA was also similar in age to the subjects.

Credibility, often referred to as validity, was enhanced through the use of quotations to help support the findings; in addition, medical records were used to verify diagnosed medical conditions and health status of participants. Both verbal and non-verbal (nodding or body gestures) cues were used during the interview process to try to elicit full responses from participants. Any unclear or vague participant responses were clarified; respondents were asked to elaborate throughout the interview. To avoid any potential researcher biases, the PI shared and discussed findings with an experienced qualitative researcher for peer examination.

 Dependability, which is similar to reliability in quantitative research, is concerned with the consistency of the study. An audit trail was used to outline each step and to clearly document decisions and activities throughout the research process so as to enhance study dependability.

 Transferability, which is similar to external validity in quantitative research, attempts to apply findings outside of the study sample. Although generalizing is not a focus of qualitative research, inclusion of descriptions of the sample and thick descriptions of findings may help identify applicability of the findings to others.

 Confirmability is the assessment of research neutrality. An audit trail was used to enhance confirmability by documenting contextual data for the interviews and rationale for analytical decisions during the study. Another researcher knowledgeable in qualitative methods
and CVD research was consulted throughout the research process and asked to code two complete transcripts to check for inter-rater reliability (consistency) of coding. The initial inter-rate reliability score for each transcript was 81%. The PI and researcher who coded the two transcripts met to discuss the codes and coding until a 100% inter-rater reliability score between the two coders was achieved. The PI allowed responses to have multiple codes and therefore missing codes for a response is where most of the discrepancies arose and therefore were easily recoded to achieve a higher inter-rater reliability score. A higher inter-rater reliability score supports that the information was collected in a consistent manner; in other words, similar answers were collected by more than chance (Keyton et al., 2004). Quotes directly from the data were included in the findings to help support identified themes. A reflective journal was also kept to document the PI’s evolving perceptions starting prior to data collection. The PI kept a day-to-day log of procedures and decisions with rationale and a log of developing insights and hypotheses as suggested by Lincoln and Guba (1985).

I. Protection of Human Subjects

Prior to beginning the present study, approval to conduct this study was obtained from the clinic and the Institutional Review Board at the University of Illinois at Chicago. The PI read the consent form to participants and explained to them the purpose of the study, data collection procedures, the voluntary nature of participation, that there would be no consequences for refusing to participate; protective measures would be taken to ensure confidentiality of the data; and that the interview would be audio-recorded to help the PI recall the interview. Participants were also informed that they could choose to not answer questions they felt uncomfortable answering and the PI reinforced that participation was voluntary and the interview could be
stopped at any time. Once any participants’ questions were answered, the PI obtained signed informed consent. The PI and participant each kept a copy of the consent form.

To ensure patient confidentiality, participants were assigned confidential identification numbers that were included on any documents with information pertaining to the specific participant. No subject identifiers were maintained with the data; therefore consent forms with participant signatures and the tracking forms were separated from the data in a locked file cabinet at the University of Illinois at Chicago, College of Nursing. Audio-recordings were erased from the recorder once they were downloaded to a password protected computer file. Electronic data files were stored on a password-protected desktop computer. Only the PI and committee members had access to the data. The electronic data will be deleted via a digital file shredder program and any hard-copy transcripts/consent forms will be shredded six years after study completion.

J. **Anticipated Pitfalls and Solutions**

One anticipated pitfall was the uncertainty of what would be the literacy level of the patient population, therefore face-to-face interviews were conducted to allow this population to express their thoughts and experiences without the constraints of written survey instruments, including the ability to ask the PI questions for clarity. The readability level of the interview guide and consent form was also checked and was modified until a fourth grade readability score was reached.

Another anticipated pitfall was the recruitment of potential subjects on the same day of a medical appointment; it was not certain what participants’ schedules would be for the day and if they would be able to stay additional time for an interview. To address this issue, some interviews were conducted before the doctor appointment for those subjects who arrived early to
their appointment; however, many participants stayed after their appointments to complete the interview. The length of the interviews was kept to a minimum to respect the patients’ and the doctors’ time and to not disrupt the flow of appointments. Participants had the option of completing the interviews at another day/time; but all of the interviews were completed on the same day of their appointment.

The final anticipated pitfall was that patients seen at the clinic could have been there because of an acute illness that would limit their ability to participate in the study. The PI did not enroll any patients in the study if they had any acute symptoms that may indicate an inability to participate in the study. Because the PI is an experienced critical care nurse, she was able to monitor the study participants for signs of fatigue or distress during the interviews. None of the participants experienced fatigue or distress during the interviews and all participants were able to complete their interview.
IV. RESULTS

This chapter summarizes the results of this study. First a description of the sample including demographics, 5-year cardiovascular event risk assessment, and level of acculturation are described. Then the results are discussed in relation to the research aims using direct quotations from participants to support themes and interpretations of each participant’s responses.

All of the interviews were conducted on-site at one Chicago-area clinic. Participants had the option of being interviewed in English or Spanish; 18 of the 19 interviews were conducted in Spanish. The PI then read through all of the transcripts to become familiar with the responses and then began coding the data and identifying themes. Pseudonyms were assigned to all participants.

A. Sample Profile

All participants self-identified as Mexican American and medical record information confirmed ethnicity. The sample included ten women and nine men. The participants ranged in age from 50 to 80 years, a mean age of 63 (SD = 8.3). Eleven of the nineteen participants had some form of health insurance (private and Medicaid/Medicare) documented in their medical record. Education level was not well documented in the medical record and therefore is not reported. All but one participant was born in Mexico and immigrated to the U.S. Documented CVD risk factors in the medical records for all participants are as follows: 89.5% (n=17) obese/overweight; 68.4% (n=13) HTN; 63.2% (n=12) HLD; 52.6% (n=10) DM; 21.1% (n=4) smoked/history of smoking; 15.8% (n=3) family history of CVD.
1. **5-year CVD Event Risk**

Gaziano et al.’s (2008) non-laboratory based model was used to predict 5-year cardiovascular event risk. The non-laboratory measures included: gender, DM diagnosis, age, BMI, systolic blood pressure (SBP), and smoking history. The results of the cardiovascular event risk prediction for each participant are shown in Table II. All 19 participants were at moderate to high risk indicating that the likelihood of those participants having a cardiac event within the next 5 years was greater than 10%, with the majority having a greater than 20-30% risk.

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<tr>
<th>Participant</th>
<th>High CVD Risk &gt;30%</th>
<th>High CVD Risk &gt;20-30%</th>
<th>Moderate CVD Risk &gt;10-20%</th>
<th>Low CVD Risk &lt;10%</th>
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<td>Antonio</td>
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2. **Level of Acculturation**

Level of acculturation was assessed using the SASH (Marin et al., 1987). Mean scores were calculated for each participant and scored as more or less acculturated based on a midpoint score of 2.99. Acculturation scores ranged from 1 to 3.83, scores ≥ 2.99 are considered more acculturated. The majority, ten women and eight men, scored less than 2.99 and therefore are considered less acculturated; only one participant (Diego) was considered more acculturated, with a score of 3.83.

**B. Research Aims and Themes**

The results for each research aim are presented and demonstrate Mexican Americans’ knowledge of heart attack symptoms and risk factors, perceptions of heart attack susceptibility and seriousness, information sources, perceptions of benefits and barriers to seeking medical assistance, and likelihood of action in response to heart attack symptoms.

1. **Aim One**

The first research aim was to examine knowledge of heart attack symptoms and risk factors among Mexican Americans with CVD risk factors. Heart attack knowledge was obtained by asking participants: a) “What do you believe are heart attack symptoms?”, b) “How would you know if you were having a heart attack?”, c) “What do you believe are risk factors for a heart attack?”, and d) “Why do you think some people get heart attacks and some people do not?”

a. **Heart Attack Symptoms**

Participants were asked, “What do you believe are heart attack symptoms?” and “How would you know if you were having a heart attack?” Only one woman, Lorena, clearly stated pain in the chest as a heart attack symptom. The remaining eighteen
participants either stated they did not know what were heart attack symptoms or identified what they thought were heart attack symptoms; however, there were variations in understanding what are actual heart attack symptoms. Themes that emerged included: lack of understanding and confusion.

1) **Lack of Understanding**

Four participants stated they did not know what were heart attack symptoms [3 women (Janet, Ana, & Carolina), 1 man (Ignacio)]. Four other participants [1 woman (Louisa), 3 men (Francisco, Enrique, & Antonio)] identified what they believed were heart attack symptoms; however, their responses indicated they did not have a clear understanding of what are traditionally identified as heart attack symptoms. Most of these participants indicated they that they were not sure what heart attack symptoms were but named symptoms they thought could possibly be heart attack symptoms. Responses included:

- If I feel that my heart jumps and all of that but I haven’t felt that yet. (Louisa)
- I think that it’s an ailment of something or in the hands, I imagine, I don’t know. I don’t have an idea. (Francisco)
- Well no, I don’t know what are the symptoms. I’m a little ignorant in that aspect. They have told me that the, the symptoms are a lack of breath. Anxiety or something like that. (Enrique)
- I don’t know, really strong palpitations that could be one of the symptoms. (Antonio)

All four participants were considered less acculturated according to the SASH. Antonio was at moderate risk for a 5-year CVD event (>10-30%) while the other three participants were at high risk for a 5-year CVD event (>20-30% or >30%).

2) **Confusion**

Ten participants [5 women (Maria, Monica, Gloria, Laura, & Guadalupe), 5 men (Luis, Diego, Raul, Ricardo, & Jose)] identified more than one symptom that
they felt were heart attack symptoms. Although all identified at least one traditional heart attack symptom and most commonly identified chest pain as a symptom (n=9), their descriptions of additional symptoms were not consistent with symptoms that are typically reported by people that have experienced a heart attack. Many of the additional symptoms reported were actually symptoms specific to other illnesses rather than heart attack. Stroke symptoms were often confused for heart attack symptoms. For example, Ricardo stated:

Well they have told me that they (symptoms) are numbness of the arms and pain here in the chest, real strong pain in the head, the vision that is, that is not the same and then also there are symptoms in the legs. I don’t know. That part of the neck here is numb and hurt and of the head and vision.

Although Ricardo was able to identify chest pain as a symptom he was confusing heart attack symptoms with symptoms that are commonly associated with stroke. Similarly, other participants reported variations in traditional heart attack symptoms. Other responses included:

Well with what I’ve heard is chest pain, you feel heaviness in the arm, that’s what I think. (Monica)

I have a sister-in-law who recently died and she had a very strong pain here (chest) and she fell…She felt her arms heavy and head, that she had a lot (pain) here in the head. She had clots or who knows what. (Laura)

Chest pain I think. They present like tingling in the heart, like a kind of cardiac arrhythmia. (Guadalupe)

Well from the symptoms I’ve been told, that it starts with dizziness, then start losing their breath, they can’t breathe. (Luis)

Chest pain and when I feel nauseated bad. And then when my left side gets numb and everything, that’s how I know. (Diego)

They say it’s like, pressure or pain in the chest, something like that, the hand falls asleep and the foot…and I can’t move myself much. I think that it’s that (heart attack) and I hurt up to my brain. (Raul)
All of the participants were considered less acculturated based on the SASH except Diego. Also all of the participants were at high risk for a 5-year CVD event (>20-30% or >30%) except Monica who was at moderate risk (>10-20%).

b. **Heart Attack Risk Factors**

Participants were asked two questions about their heart attack risk factor knowledge: “What do you believe are risk factors for a heart attack?” and “Why do you think some people get heart attacks and some people do not?” Four themes emerged as participants discussed their knowledge of heart attack risk factors: lack of understanding; personal attributes; hereditary and personal attributes; and a *susto* and personal attributes.

1) **Lack of Understanding**

Three participants’ responses regarding knowledge of heart attack risk factors indicated a lack of understanding on what are actual heart attack risk factors. Louisa was a 58 year-old woman with a moderate risk of a 5-year CVD event (>10-20%); obesity is her CVD risk factor. Louisa stated:

> Well a lot I think the symptoms are when a person has diabetes, has cholesterol, and high blood pressure because when they have the three things because when one has high blood pressure, the weight and the diabetes…My husband, he has had (heart) attacks but now its been three and a half years since he had one but in actuality we didn’t know if the (heart) attack was from stress…Because one weighs too much from eating certain foods with fat and all that, but too an ulcer can cause it too. I think that my father had a really strong heart attack. I didn’t see him die. When I came it was two months later but I think it was putting the blood because I personally I don’t accept it (blood transfusions) because when they put blood and then other infections develop because one doesn’t know if the person who gave the blood is in good health for the other person.

Although she acknowledged that DM, cholesterol, high blood pressure and weight are heart attack risk factors, she also stated that she thought an ulcer and or blood transfusion were also risk factors. Carolina was a 56 year-old woman with a high risk of a 5-year CVD event (>20-30%); her CVD risk factors were being overweight, HTN, and smoking. Carolina said she didn’t
know what are heart attack risk factors. Antonio was a 61 year-old man with a moderate risk of a 5-year CVD event (>10-20%), and had a history of being overweight, HTN, and HLD. He stated: “the person that doesn’t have that problem (heart attack) is a healthy person…he that already has heart attack problems…have deficiencies of every organ.” It is unclear what exactly Antonio meant by deficiencies of every organ; however, just because a person doesn’t have a heart attack does not mean they are a healthy person.

2) **Personal Attributes**

Personal attributes are the individual behaviors that participants believe put one at risk for having a heart attack such as smoking, drinking, being overweight, lack of exercise, not taking care of oneself, eating a lot of fat, etc. This theme emerged from eight participants [5 women (Lorena, Guadalupe, Janet, Gloria, & Monica), 3 men (Ricardo, Enrique, & Francisco)]. Eating habits such as eating fatty foods was most commonly identified as a risk factor, followed by not exercising, and then not going to the doctor. Responses included:

Well they say overweight, not doing exercise…they never go to the doctor, they never get checked. (Ricardo)

Not exercising and not taking the medication, and the food one eats. From their lifestyle, because they use drugs, because they smoke. (Guadalupe)

Lack of exercise and I think the diet too, the cholesterol, the (blood) pressure...or the obesity, I think. (Gloria)

Well I don’t know, having high blood pressure, cholesterol, but mostly high blood pressure that causes one to get sick. I don’t know if by, by, by not caring for oneself. For not going to the doctor (pause) because now it’s the same (risk) for a person who is obese as a person who is not obese. It can be for not attending to ourselves in time…failure of going to the doctor to get checked because it’s failure of going to the doctor to get checked, because I don’t know, at a certain age one has to be checking more. (Monica)
All participants except Monica were at high risk for a 5-year CVD event (>20-30% or >30%). Monica was at moderate risk (>10-20%). All of those participants are considered less acculturated based on the SASH.

3) **Hereditary and Personal Attributes**

Six participants [2 women (Ana & Laura), 4 men (Jose, Raul, Diego, & Luis)] discussed heart risk factors in terms of heredity or because of illnesses that run in the family in addition to personal attributes such as obesity, bad eating habits, drinking, and smoking. Some responses include:

- Well they speak of, of mainly the obesity, of, of the forms of food…it can be from illness that the family has. (Ana)
- Well the cigarette, the alcohol. Well a lot of times they say it’s hereditary, others because they don’t take care of themselves. (Luis)
- Maybe from smoking a lot. W-w-what they eat. Well, it runs in the family. Or, either be too fat. (Diego)
- Well I imagine that in the first place that it’s like heredity that comes already, in second place is that, a lot of work, a lot of wine in excess and smoking too much…and bad nourishment. (Jose)

All of those participants were at high risk for a 5-year CVD event (>20-30% or >30%). Only Ana had a reported family history of CVD and mentioned it as a risk factor. Diego was the only participant that was considered more acculturated based on the SASH.

4) **A Susto and Personal Attributes**

Two participants, Maria and Ignacio, described what they thought were heart attack risk factors as a scare or *susto* as well as personal attributes such as not obeying the doctors orders, having high cholesterol, allowing blood sugar to rise, not taking care of themselves, not exercising, fatty diet, drinking alcohol, and smoking. Responses included:

50
Well um, well not, not obeying what the doctor indicates for you to do and (not) taking your treatment like you should…Well it depends on how the surprise is. (Maria)

Well for having very high cholesterol or because the sugar rises too much or also because of a scare…because they don’t do exercise or don’t take care of themselves and eat everything in excess, with alcohol and cigarettes. Well living a life they themselves are causing, so much, so much fat that they’re eating and then that’s what causes the cholesterol and causes also the (heart) attack right away. (Ignacio)

Maria was a 67-year-old woman who has lived in the U.S. for 24 years and was considered less acculturated based on the SASH. She was at high risk of a 5-year CVD event (>30%) with risk factors of obesity, DM, HTN, and HLD. Ignacio was a 50-year-old man who has lived in the U.S. for 20 years and was also considered less acculturated based on the SASH. He was at moderate risk of a 5-year CVD event (>10-20%) with risk factors of HLD, obesity, and family history of CVD.

2. **Aim Two**

The second research aim was to explore perceptions (susceptibility & seriousness) of heart attack threat among Mexican Americans with CVD risk factors. To explore Mexican Americans’ perceptions of heart attack threat, questions inquired about: their perception of their overall health, how worried they are about their overall health, and how they felt when they were told about their diagnosed medical conditions. Specific questions related to perceptions of susceptibility of a heart attack and perceived heart attack seriousness were included.

a. **Perceptions of Overall Health**

Before inquiring about perceptions of susceptibility and seriousness of a heart attack, participants’ perceptions of their overall health were first explored. Participants were asked: 1) “In general, please tell me about your overall health.”; 2) “How worried are you
about your overall health?”; 3) “How did you feel when you were told you had (medical condition)?”

1) **General Health**

All participants discussed their general health in terms of their medical conditions. Eighteen participants (9 women, 9 men) reported having at least one CVD risk factor: HTN, HLD, DM, and/or overweight/obesity. Although 17 of the 19 participants are considered overweight or obese based on their BMI, only one female participant (Louisa) spoke of her overall health in terms of her weight. Louisa’s only CVD risk factor was obesity and she was at moderate risk of a 5-year CVD event. Nine of eleven participants with DM discussed their DM in terms of their overall health. Eleven of thirteen participants diagnosed with HTN mentioned their high blood pressure while discussing their general health. Eleven of the thirteen participants with HLD also discussed it when describing their overall general health. No participants discussed their smoking history when discussing their health; however, four participants do have a history of smoking. Although all participants discussed their specific medical conditions, three themes emerged: minimizing medical conditions, treatment for medical conditions, and symptoms experiencing.

i. **Minimizing Medical Conditions**

Three participants [1 woman (Louisa), 2 man (Francisco & Jose)] described their medical conditions when talking about their overall health; however, they also made comments like “only” or “little problems.” Responses included:

Well medical conditions…I don’t have anything only high blood pressure and headaches and weight. There is a possibility for that reason I have problems. (Louisa)

The only thing that I have the beginning of diabetes but other than that everything else is…I’m constantly going to the doctor so I don’t let anything happen. (Francisco)
Well up till now I’m well, I finished coming from Dr. XXX and that everything came out fine, with the little problems that I have, small. Yes, the blood pressure, hemorrhoids, a little varicose veins, cholesterol a little high—not too exaggerated that they haven’t given me medication for this neither. (Jose)

Five-year CVD event risk factors for those participants were as follows: Louisa at moderate risk (>10-20%), Francisco at high risk (>20-30%), and Jose at high risk (>30%). None of their providers had told them about their heart attack risk and only Jose believed he had a lifetime risk of having a heart attack. According to medical records, Louisa only had a CVD risk factor of obesity; however, she mentioned she had high blood pressure that was not documented in her medical record. Francisco’s CVD risk factors recorded in his medical record include obesity and DM. Jose’s CVD risk factor recorded in his medical record was HTN.

ii. **Treatment for Medical Conditions**

Seven participants [5 women (Monica, Gloria, Guadalupe, Ana, & Lorena), 2 men (Luis & Raul)] described their medical conditions when talking about their overall health; however, they focused on their treatments for their medical conditions. Treatments included tests and medication they were taking. Responses included:

Well I have the sugar (diabetes), cholesterol. I take pills for the (blood) pressure. (Luis)

The diabetes, I inject myself with insulin in the stomach, I inject 66 (units) in the morning and 66 (units) in the afternoon and apart from that a pill of a thousand milligrams, also in the morning and in the afternoon. That is my concern for my health. (Gloria)

Well yes, I’m sick. I have a little cholesterol and I’m taking medicine for other things. Yes, well to sleep, I can’t sleep well, for the heart I’m taking pills precisely for that is why I come (to the clinic)…the doctor took an electrocardiogram and told me that I needed pills. (Raul)

All participants were at high risk for a 5-year CVD event (>20-30% or >30%). Only two participants (Maria & Luis) were not told about their heart attack risk by their healthcare provider. Lorena was the only participant who did not think she had a lifetime risk of a heart
attack and Luis didn’t know if he had a lifetime risk. The majority of these participants confused heart attack symptoms (Monica, Gloria, Laura, Guadalupe, & Luis). Ana did not know what were heart attack symptoms and Lorena reported chest pain as a symptom. All participants acknowledged personal attributes as heart attack risk factors and additionally three participants (Ana, Raul, & Luis) reported heredity and personal attributes as risk factors.

iii. Symptoms Experienced

Three participants [2 women (Laura & Carolina), 1 man (Ignacio)] discussed their medical conditions when talking about their overall health; however, they also described symptoms they were currently experiencing related to their illnesses.

Responses included:

Well the illnesses—well only cholesterol. That’s all I have right now, oh and pain in my knees only—arthritis. (Ignacio)

I’m coming here to this clinic so they check my (blood) pressure, the cholesterol. I was sick; they sent me over there to another clinic, for the center of my eyes because I see bad too. (Laura)

Well I’m sick from my spinal column, the doctors told me I have osteoporosis and that’s because I had polio when I was little, like 7 years (old). And from there my parents ignored me and left me, left me. And I came to discover at like age 26 and from there I started to treat my illness. Up till now I have it because right now I’m having pain that I can’t bare. (Carolina)

Ignacio was at moderate risk for a 5-year CVD event, had CVD risk factors of obesity, HLD, and family history of CVD. He was also told by his healthcare provider about his heart attack risk and believed he would have a heart attack in his lifetime. Laura was at high risk for a 5-year CVD event (>20-30%) and had CVD risk factors of HTN and hyperlipidemia. She wasn’t told about her heart attack risk by her healthcare provider but did think she had a lifetime risk of having a heart attack. Carolina was a high risk for a CVD event (>20-30%) and had CVD risk factors of HTN and smoking history. Ignacio and Carolina did not know what heart attack
symptoms were and Laura was confused about heart attack symptoms. Ignacio described heart attack risk factors as the result of a susto and personal attributes. Laura described hereditary and personal attributes as heart attack risk factors. Carolina demonstrated a lack of understanding of what were heart attack risk factors.

2) Worry About Health

Participants were asked, “How worried are you about your overall health?” The majority of participants had some degree of worry (n=18: 10 women, 8 men). Only one male participant, Francisco, stated he was “absolutely not at all” worried about his health. Francisco was a 55-year-old man who has lived in the U.S. for 38 years although he was considered less acculturated based on the SASH, has a medical history of obesity and DM, and was at high risk of a 5-year CVD event (>20-30%). In his description of his overall health he only discussed DM and did not regard it as a significant concern: “The only thing that I have (is) the beginning of diabete but other than that…I’m constantly going to the doctor, so I don’t let anything happen.” His absence of worry was also reflected in his perceptions of a heart attack threat in which he indicted he did not think he would have a heart attack in his lifetime because he “felt good.” Other participants responded by indicating that they were just worried or had varying degrees of worry that impacted their behaviors, perceptions of illness, and the result of the illness. Three themes emerged as participants discussed their worry to varying degrees: worry that impacts behavior change, worried but accepting, and worried about death.

i. Worry that Impacts Behavior Change

Two participants (Ignacio & Diego) worried enough to make behavior changes. Ignacio made eating behavior changes but still worried: “A lot, because for that reason I wanted to, I quit everything that I was overeating.” Ignacio was a 50-year-old
man with CVD risk factors that included obesity, HLD, and family history of CVD. He was at moderate risk of a 5-year CVD event (>10-20%). Diego, a 54-year-old man, discussed his worry in terms of being somewhat worried but also remained positive that he will be okay as long as he continues to make lifestyle modifications:

> It worries me, but then, it doesn’t. Er, long as I don’t smoke or drink. So, I’ll be okay. Cuz I think I can b-b-beat this soon, but I got to lose more weight.

Diego’s CVD risk factors included: obesity, DM, and smoking. He was at high risk of a 5-year CVD event (>30%). Diego was also the one participant considered more acculturated.

### ii. Worried but Accepting

Three participants [1 woman (Janet), 2 men (Raul & Ricardo)] discussed their worry in terms of some worry but eventual acceptance of their illness. Janet indicated she was worried about her overall health but became used to it and did not feel that she could do anything about it, “Well a lot, a lot. But now I am accustomed to it, what am I going to do.” Janet was a 78-year-old woman with CVD risk factors that included DM, HTN, and HLD. Janet’s 5-year CVD event risk was high (>30%). Raul was a 66-year-old man who was at high risk of a 5-year CVD event (>20-30%) with a medical history of obesity, HLD, and smoking. When he was asked about how much he worried about his overall health he stated, “Not much, I’m finished already (laughter).” Although he did not elaborate on what he meant about being “finished already,” it is assumed that he was referring to his age and comorbidities that he has accepted as a part of his life that will eventually lead to his passing. Raul’s attitude when his healthcare provider told him about his risk of having a heart attack was fatalistic as he stated, “Well at times I resign to whatever comes to me, well if I’m going to have it well no, nobody can take it away from me.” Ricardo, a 66-year-old man with a high risk for a 5-year CVD event (>20-30%) with several CVD risk factors (obesity, DM, HTN, HLD, and family
history said, “Well not much, it didn’t interfere with anything.” Ricardo had also mentioned that he had not thought about his own heart attack risk and his healthcare provider had not told him that he was at risk of a heart attack.

iii. **Worried About Death**

Ana was worried about her overall health because she was worried that death would be the result of her illness because her mother had died of a heart attack:

Well always a lot because like my mom died. She also had diabetes and she had the (high blood) pressure, and she had this (pause) stoppage…and she was left really hurt with the heart attack that she had. And at like, at the 24 hours or the 42 hours that passed from the first infarct, she died. And because of that I’m afraid of the illness, I worry.

Ana’s CVD risk factors included: obesity, DM, HTN, and family history of CVD. Her 5-year CVD event risk was high (>20-30%). Similar to her mother, Ana had DM and HTN, which concerned Ana especially because she witnessed the result of her mother’s heart attack and had similar risk factors.

3) **Feeling after Medical Diagnosis**

Participants were asked, “How did you feel when you were told you had (medical condition)?” Major themes elicited by participants regarding their feelings after diagnosis included: emotional response and positive outlook.

i. **Emotional Response**

Most participants [n=14: 9 women (Monica, Louisa, Laura, Maria, Lorena, Guadalupe, Janet, Ana, & Carolina), 5 men (Luis, Ignacio, Diego, Enrique, & Antonio)] indicated they had an emotional response such as worry, sadness, scared, shocked, upset, bad, or depressed. Janet described her sadness after finding out she had DM, HTN, and HLD as, “Well I began to cry and scream aloud. I went to my house and screamed until my eyes
were red from crying so much and I said well, my song arrived.” Ana described her feelings after finding out about her DM and HTN as becoming depressed but also scared of her illnesses, “Well, I got depressed a lot because it scares one of what they tell you so much about the illness.” Guadalupe said she felt shocked when she found about her diagnoses of DM and HTN, “Like they had thrown a bucket of cold water on me.” Enrique, described his feelings after finding out about his medical diagnoses of DM, HTN, and HLD as feeling bad and even depressed to the point he became sicker, “Well, one feels bad because one wants to feel well right away. But because that, I got a depression and it took me to the stage of getting the problem of DM.” Maria, discussed her feelings after finding out about her medical diagnoses of DM, HTN, and HLD as feeling worried and concerned for what would happen to her daughter if something happened to her, “Oh well, I’m worried, I’m worried very much because imagine I’m alone with my daughter. If God wills if something happens to me what will happen with my daughter?”

ii. **Positive Outlook**

Four male participants indicated that they felt fine (Francisco & Ricardo) or good (Raul & Jose) even after being told about their medical diagnoses. Francisco who was diagnosed with DM stated, “Oh, well in reality I didn’t feel anything, because I didn’t feel, like with, with nothing, like I feel, I feel fine.” Francisco didn’t feel any symptoms and therefore felt fine even though he was diagnosed with DM. Similarly, Ricardo stated, “I didn’t feel anything bad, no because that was already in the family I didn’t feel anything.” Ricardo was diagnosed with DM, HTN, and HLD but felt fine about the diagnosis because he knew those medical conditions ran in his family. Another man, Jose, felt ‘good’ because he wasn’t diagnosed with DM; however, he had HTN, he said he felt: “Well really good,
because after all it didn’t come out too bad, I don’t have diabetes either, the glucose is really good.” Whereas Raul who was diagnosed with HLD said he felt good because he was able to buy the medication his doctor ordered to treat the illness, “Well good, I bought the medicine and that’s it.”

b. Perceptions of Heart Attack Susceptibility

To explore perceptions of heart attack susceptibility participants were asked: 1) “Have you ever thought about your own heart attack risk?”; 2) “Do you think you will have a heart attack in your lifetime?”; 3) “What do you believe might put you at risk of having a heart attack?”; 4) “Do you believe it is possible to reduce your risk of having a heart attack?”; 5) “Do you believe anyone has control over whether he/she will have a heart attack or not?”; and 6) “Is it up to God to decide whether you or someone else will have a heart attack?”

1) Perceptions of Heart Attack Risk

Participants were asked, “Have you ever thought about your own heart attack risk?” More than half of the participants [n=14: 7 women (Maria, Monica, Gloria, Laura, Guadalupe, Carolina, & Lorena), 7 men (Luis, Ignacio, Diego, Raul, Enrique, Jose, & Antonio)] had thought about their risk of a heart attack. Although all participants had risk factors for CVD, five of the participants [3 women (Louisa, Janet, & Ana), 2 men (Francisco & Ricardo)] responded that they had not ever thought about their risk of having a heart attack. Ana, a 56-year-old woman with a high risk for a 5-year CVD event and risk factors of obesity, DM, HTN, and family history of CVD said, “Well no, I never put myself to think that much (about having a heart attack).” Ricardo, a 64-year-old man with high risk for a 5-year CVD event and CVD risk factors of obesity, DM, HTN, HLD, and family history said, “Well no, I never sat down to think about that (about having a heart attack).” The other participants included: Louisa
who had a risk factor of obesity; Janet who had risk factors of DM, HTN, and cholesterol; and Francisco who had risk factors of obesity, DM, and smoking history. Overall in relation to 5-year CVD event risk, all participants with high risk >30% reported that they had thought about their own heart attack risk. Three of the five at high risk of a 5-year CVD event (>20-30%) had thought about their heart attack risk. Two of the three at moderate risk of a 5-year CVD event (>10-20%) had thought about their heart attack risk. The one more acculturated participant, Diego, also said he had thought about his heart attack risk.

2) **Perceptions of Lifetime Heart Attack Risk**

Participants were asked, “Do you think you will have a heart attack in your lifetime?” Ten participants [6 women (Guadalupe, Ana, Gloria, Maria, Laura, & Carolina), 4 men (Ricardo, Raul, Jose, & Ignacio)] responded yes they thought they would have a heart attack in their lifetime. Nine of the participants were at high risk for a 5-year CVD event (>20-30% or >30%) and one participant (Ignacio) was at moderate risk. All but two of the participants said they had thought about their heart attack risk in the past. Five participants [3 women (Monica, Lorena, & Janet), 2 men (Francisco & Enrique)] said they did not think they would have a heart attack in their lifetime. All of those participants stated that their healthcare provider never told them that they were at risk of a heart attack and were at a high risk for a 5-year CVD event (>20-30% or >30%), except Monica who was at moderate risk (>10-20%). All but one participant was overweight or obese; however, only one participant (Francisco) who was obese said obesity was a risk factor. Four participants [1 woman (Louisa), 3 men (Diego, Luis, & Antonio)] did not know if they would have a heart attack in their lifetime although half had thought about their own heart attack risk before. Only Antonio had been told by his healthcare provider that he was at risk for a heart attack although Antonio and Louisa were at moderate risk,
while Diego and Luis were at high risk for a 5-year CVD event (>30%). Diego and Luis confused heart attack symptoms with other conditions while Louisa and Antonio had a lack of understanding heart attack symptoms. Themes emerged through explanations of their lifetime heart attack risk perceptions: personal attributes, not taking care of oneself, and uncertainty about the future.

i. Personal Attributes

Seven participants [5 women (Maria, Laura, Guadalupe, Carolina, & Ana), 2 men (Raul & Ricardo)] explained their perceptions of being at risk for a heart attack in their lifetime by discussing personal attributes putting them at risk. Personal attributes included: age, high blood pressure, symptoms, and family history of heart attack. Three participants (Raul, Guadalupe, & Ana) had been told by their healthcare provider that they were at risk of having a heart attack, those participants were also at high risk for a 5-year CVD event (>20-30% or >30%). There were not any major differences in participants’ risk factor profiles between those who had been told about their risk and those that had not been told about risk. Ana and Ricardo both described their personal heart attack risk as a result of heart attacks in their family. Ricardo said, “Well if my father had it, I believe that it can also happen to me.”

Examples of identifying personal attributes contributing to their lifetime risk included:

Well from the illness that I suffer from, the high (blood) pressure…and because I think that also it comes from the family, various persons from my family have had this (heart attack) happen to them. (Ana)

Possibly yes because of the illnesses I have, the high (blood) pressure, the high (blood) pressure produces a heart attack. (Guadalupe)
ii. **Taking Care of Oneself**

Taking care of oneself emerged in two ways, either the participants believed they were at risk of a heart attack in their lifetime if they did not take care of themselves [1 woman (Gloria), 2 men (Ignacio & Jose)] or they did not think they were at risk because they took care of themselves [(2 women (Janet & Lorena), 2 men (Enrique & Francisco)]. Those participants who believed they had a lifetime risk of a heart attack said it was because they did not take care of themselves or indicated that by not taking care of oneself a heart attack could result:

- Well if I don’t take care of myself, yes. (Ignacio)
- Possibly if I don’t take care of myself. (Jose)
- Well if the doctor says if we don’t pay attention to taking care of ourselves we are prone to suddenly have a rise in sugar, it can cause this, an (heart) attack. (Gloria)

Ignacio and Gloria had been told they were at risk of a heart attack by their healthcare provider; however, Jose had not been told about his risk. The 5-year CVD event risks for those participants were as follows: Ignacio was at moderate risk (>.10-.20%), Jose was at high risk (>.30%), and Gloria was at high risk (>.20-.30%).

Four participants who believed they did not have a lifetime risk of a heart attack because they took care of themselves indicated that they took care of themselves through diet, going to the doctor, taking their medication, or felt good:

- I don’t think so, because I take care of myself well. Sometimes I eat a little peccadillo with bread and nuts or peanuts. (Janet)
- Oh no…For that (reason), for that (reason) I will go to them to do me a check up, (if) they (healthcare providers) tell me that my heart is fine and that I have no clogged veins I will conform more…(Lorena)
- No. Because I’m controlled in my, in my food and I’m controlled in my medications. (Enrique)
I don’t think so, I hope not. I feel good. (Francisco)

All four participants were considered at high risk for a 5-year CVD event (>20-30% or >30%) and none of their healthcare providers told them they were at risk of having a heart attack. Also, none of those participants except Francisco had identified their own CVD risk factors as heart attack risk factors; Francisco recognized obesity as a risk factor.

iii. Uncertainty About the Future

Four participants [1 woman (Louisa), 3 men (Luis, Diego, & Antonio)] stated that they did not know or were unsure about their lifetime risk of having a heart attack. All of those participants except Antonio indicated that their healthcare provider had not told them about their risk of having a heart attack. Although Louisa was a 58-year-old woman at moderate risk of a 5-year CVD event with a CVD risk factor of obesity, she responded that she did not know what could happen to her. She felt that she was not at risk for a heart attack because she did not have high cholesterol (her only risk factor was obesity) but she felt a susto or scare could cause a heart attack:

Well only God knows that. Because, because I don’t know what can happen the next day or (something) can happen when I leave (the house) and don’t have symptoms for that, right. Because like I say I don’t have cholesterol or anything but with a scare one can have one (heart attack)...right now the famous Halloween is coming and the people don’t know that sometimes going around weak people or something and give them an (heart) attack by scaring them, you just don’t know.

Antonio, a 61-year-old man with a moderate risk of a 5-year CVD event and risk factors of HTN, HLD, and was overweight stated:

Well no one can say that. Who is not at risk of having all that? The whole world is at risk. A lot of people say they are healthy but in reality no, they don’t know and a lot of people die not knowing that they had a bad heart or something like that.

Although Antonio stated his healthcare provider told him he was at risk of having a heart attack, he was unable to identify specific risk factors other than “organ deficiency.” Diego and Luis also
said they did not know if they would have a heart attack in their lifetime, both were at high risk of a 5-year CVD event (>30%) and their healthcare providers had not told them about their risk.

3) **Perceptions of Factors Related to Own Heart Attack Risk**

Participants were asked, “What do you believe might put you at risk of having a heart attack and why?” Seventeen were able to provide factors they felt put themselves at risk (9 women, 8 men), but there were two participants (Carolina & Antonio) who did not know what put them at risk. Actual versus perceived heart attack risk factors are presented in Table III. Three themes arose from participant responses: emotional contributors; modifiable risk factors; and not taking care of oneself.

i. **Emotional Contributors**

Emotional contributors that participants [4 women (Maria, Laura, Guadalupe, & Monica), 2 men (Luis & Raul)] thought put themselves at risk of having a heart attack included: problems (family or non-specific), stress, anger, and the result of a *susto* (scare). Two women, Maria and Laura, discussed their risk in terms of problems; neither women mentioned their multiple CVD risk factors. Maria said, “Well like I tell you, with the problems that I have, the problems I have with my family.” Maria was at high risk for a 5-year CVD event (>30%) and had CVD risk factors of DM, HTN, HLD, and obesity. Laura was non-specific when she responded that “a lot of problems” could put someone at risk of having a heart attack. Laura’s 5-year CVD event risk was high (>20-30%); her CVD risk factors included HTN and HLD. Two men (Luis and Raul) identified having a *susto* and anger as something that could cause them to have a heart attack. Luis was at high risk of a 5-year CVD event (>30%) and had a history of DM, HTN, HLD, obesity, and smoking. Raul’s 5-year CVD risk was high (>20-30%) and had a history of HLD, obesity, and smoking. One woman, Guadalupe, also mentioned anger
as a contributor to heart attack risk but additionally mentioned, “the worries and the lifestyle.”

Guadalupe was at high risk for a 5-year CVD event (>30%) with CVD risk factors of DM, HTN, and obesity. Monica mentioned stress as a risk factor, her 5-year CVD event risk was moderate (>10-20%) and her CVD risk factors included being overweight and HLD.

ii. Modifiable Risk Factors

Discussions of modifiable risk factors for heart attack risk were prevalent in twelve participant responses. Their responses regarding CVD risk factors were DM, HTN, HLD, weight, diet, and lifestyle behaviors including physical activity and drinking.

One participant, Janet, discussed drinking as a risk factor. Only five participants [2 women (Gloria & Louisa), 3 men (Enrique, Diego, & Ignacio)] discussed their disease related CVD risk factors. Gloria described the impact of DM on her risk, “Yes, because I’m diabetic and so it (heart attack) can happen.” Gloria only discussed DM as a risk factor even though she had other CVD risk factors such as HTN, HLD, obesity, and she was also at high risk for a 5-year CVD event (>20-30%). Enrique discussed his heart attack risk as, “Well like I said a while ago, I have...the cholesterol and the (blood) pressure.” Enrique’s other CVD risk factors included obesity and DM contributing to his high risk for a 5-year CVD event (>30%); however, he did not mention those factors. Louisa discussed weight as a factor affecting her heart attack risk, along with “cholesterol, diabetes, and what one eats because there are a lot of things like flour, soda, pork, fat, all that provokes it.” Louisa did have a medical history of obesity; however, she did not have HLD or DM documented in her medical record, therefore she may have been referring to what she believes are general risk factors and not necessarily attributing those factors to her own risk. Louisa’s 5-year CVD event risk was moderate (>10-20%). Diego discussed his heart attack risk as not taking his medication, drinking alcohol, and his DM:
If I party all night for a week [laughter] and I don’t take anything—My my, um, medicines. And if I, [makes whooshing sound] I, I drink yeah. Th-th-that’ll have it happen. Then, my sugar goes way up, yeah.

Diego was diagnosed with DM, but he did not mention his other CVD risk factors, which included obesity and smoking, which contributed to his high 5-year CVD event risk (>30%).

Ignacio mentioned HLD as a risk factor in addition to other factors such as not taking care of oneself, not following the doctor’s orders, and diet:

…by not protecting oneself, for not following the advice of the doctors, because many times they say if you want to live longer, if you don’t want a heart attack you have to have a balanced diet and that way you can live longer. Well, I found out about that if also (I) have really high cholesterol, really high, because of the fat, a lot of fat.

Ignacio does have HLD; however, his other risk factor included obesity. He was at moderate risk for a 5-year CVD event (>10-20%).

Diet was a major risk factor identified by six participants [3 women (Monica, Louisa, & Lorena), 3 men (Ignacio, Francisco, & Ricardo)], but was typically mentioned along with other risk factors such as disease related CVD factors, lifestyle habits, and not taking care of oneself. Lorena who was at high risk for a 5-year CVD event (>20-30%) with medical factors of HTN, HLD, and obesity was mostly concerned about the impact of diet as a heart attack risk factor:

Well because one doesn’t take care of themselves or that, because you aren’t careful about eating things that harm you, the vegetables, the vegetables—I buy vegetables and they even ruin in my house because I don’t even eat them (laughter).

Francisco and Ricardo discussed heart attack risk factors in terms of diet and physical inactivity. Francisco said, “Not doing nothing, not walking, eating things you shouldn’t, other than that, well it has been a long time that I don’t do much exercise.” Francisco was at high risk of a 5-year CVD event (>20-30%) and has risk factors of obesity and DM, which were not mentioned. Ricardo stated, “Well possibly if, if, like the food means a lot, also if I don’t do exercise, all that
counts.” Ricardo was also at high risk of a 5-year CVD event (>20-30%) and his other non-mentioned CVD risk factors included obesity, DM, HTN, HLD, and family history.

iii. **Not Taking Care of Oneself**

Four participants [1 woman (Ana), 3 men (Diego, Jose, & Ignacio)] referenced not taking care of themselves as heart attack risk factors by way of not following medical advice, not taking medication, neglecting their health, and allowing their life to get out of control. Ignacio mentioned HLD, diet, and “not following the advice of the doctors” as contributors of his heart attack risk. Ana responded, “well, I don’t take care of me, neglect my health, no, not doing the things that the doctor told me.” Ana’s 5-year CVD event risk was high (>20-30%) and she did not mention her other risk factors: obesity, DM, HTN, and family history of CVD. Diego’s response also fell under this theme in addition to modifiable risk factors because he mentioned not taking his medication and the impact that would have on his sugar after partying and drinking. Lastly, Jose said he was at risk for a heart attack by, “being out of hand, to get out of hand in your normal life.” Although Jose did not elaborate on how one can get “out of hand” it is inferred that if one allows their life to get “out of hand” then they are not taking care of themselves. Jose’s 5-year CVD event risk was high (>30%) and his additional CVD risk factors included being overweight and HTN.
### TABLE III.

**ACTUAL VS. PERCEIVED INDIVIDUAL HEART ATTACK RISK FACTORS**

<table>
<thead>
<tr>
<th>Participant</th>
<th>DM</th>
<th>HTN</th>
<th>HLD</th>
<th>Overwt/Obese</th>
<th>Smoking History</th>
<th>Family History</th>
<th>Self-Identified Risk Factors</th>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td>Not protecting oneself, not following doctor’s advice, diet</td>
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DM=Diabetes, HTN=Hypertension, HLD=Hyperlipidemia, A=Actual risk from medical record, P=Perceived risk
4) **Possibility of Reducing Heart Attack Risk**

Participants were asked, “Do you believe it is possible to reduce your risk of having a heart attack?” Seventeen (8 women, 9 men) of the participants said it was possible to reduce their risk, one female participant (Laura) said no, and one female participant did not know (Carolina). The themes that emerged from elaborated responses included: taking care of oneself, reducing risk with the doctor’s help, and being informed.

i. **Taking Care of Oneself**

Ten participants [5 women (Monica, Guadalupe, Gloria, Lorena, & Janet), 5 men (Luis, Ricardo, Diego, Raul, & Enrique)] described ways of reducing their heart attack risk by taking care of themselves, which included exercising, losing weight, eating good, and controlling medical conditions. Responses included:

- Just taking care of myself. I do exercise. I ride my bike and I take walks. (Diego)

- In, in not eating what I shouldn’t eat and maintaining myself that in case the cholesterol increases I lower it and my (blood) pressure either. That it doesn’t rise, that it is stable. (Enrique)

- Well yes. Well having a healthy life, eating good, doing exercise. (Ricardo)

- Yes, well, to do exercise, to do a lot of exercise. (Raul)

- Yes, yes, it's possible to reduce it if you take care of yourself more. (Guadalupe)

- With the diabetes I think or the obesity or the same—fat. I think if you weigh less. (Gloria).

All of the participants were at high risk of a 5-year CVD event (>20-30% or >30%) except Monica was at moderate risk (>10-20%).
ii. **Reducing Risk with the Doctor’s Help**

Four participants [1 woman (Ana), 3 men (Ignacio, Jose, & Antonio)] described reducing their heart attack risk with the help of their doctor through check-ups, medical advice, or medical supervision. Responses included:

Well with a lot of medical supervision. (Ana)

Yes, of course yes. By just going to the doctor, getting a check up at least once a year and like I said following a diet, a diet and go constantly to the doctor for a, a physical every year to see how your body is doing. (Ignacio)

Yes very much. Taking care of oneself more, going with the doctor constantly to get checked. (Jose)

There should be a possibility, yes. Taking medication. Having more, be more careful, pay attention to what the doctor says. (Antonio)

Jose and Ana had a high risk of a 5-year CVD event (>20-10% or >30%) while Ignacio and Antonio had a moderate risk (>10-20%). Ana, Ignacio, and Antonio had been told by their healthcare provider that they were at risk for a heart attack; however, Jose stated he was not told about his risk, Jose’s CVD risk factor was HTN and the other three participants had two or more CVD risk factors.

iii. **Being Informed**

Two participants (Luisa & Francisco) discussed a way to reduce their risk of having a heart attack as being informed of their illnesses and ways to prevent it. Responses included:

Well I think that when one starts to feel that way, when there is a symptom one can investigate themselves what can help you, with what and how. (Louisa)

Of course yes…Asking (doctor) in what other ways it can be eliminated more the chance that it will come, that’s all. (Francisco)
Louisa is at moderate risk for a 5-year CVD event (>10-20%) and her CVD risk factor is obesity. Francisco is at high risk for a 5-year CVD event (>20-30%) and has CVD risk factors of obesity and DM. Their healthcare provider had not told both participants about their heart attack risk. Francisco did not think he would have a heart attack in his lifetime and Louisa was not sure if she would have a heart attack in her lifetime.

5) **Control Over Heart Attack Risk--Personal and God**

Participants were asked about control over heart attack risk: “Do you believe anyone has control over whether he/she will have a heart attack or not?” and “Is it up to God to decide whether you or someone else will have a heart attack?” No participant attributed control to God alone, Francisco indicated that he believed that only through his doctor could he control his risk of having a heart attack. The other participants indicated that controlling heart attack risk was a result of self-control or a combination of factors (self-control, doctor, and God).

i. **Self-Control**

Five participants [2 women (Ana & Lorena), 3 men (Ignacio, Enrique, & Antonio)] indicated that they believed they were in control of their heart attack risk. Responses included:

Well it might be, being well informed and taking everything how they indicate to me maybe. (Ana)

It depends on me, because I am the one that, because they tell you so much things that harm you, a lot of fat and we don’t pay attention and continue eating. (Lorena)

…it depends on one, of the care that one takes of them self. (Ignacio)

No, no, depends on me. (Enrique)

It could be yes (controlled by the person) but if you didn’t know, no. No, that doesn’t depend on God. (Antonio)
Two participants (Ignacio & Antonio) were at moderate risk for a 5-year CVD event (>10-20%) and the rest of the participants were at high risk for a 5-year CVD event (>20-30% or 30%). All of the participants had been told by their healthcare providers that they were at risk for a heart attack except Enrique.

**ii. Combination of Factors**

Thirteen participants (8 women, 5 men) described a combination of factors that impact their control over their heart attack risk such as self-control and God [n=10: 5 women (Gloria, Laura, Janet, Guadalupe, & Carolina), 5 men (Luis, Diego, Raul, Ricardo, & Jose); self-control, doctor, and God (Maria & Louisa); or the doctor and God (Monica). “God’s will” or “depends on God” were common phrases used by participants; however, they also acknowledged the role that a person has in controlling their heart attack risk. When discussing how they could control their own risk some mentioned controlling emotions (stress, anger, etc.), taking prescribed medication like one should, living a healthy life, controlling illnesses (DM and weight), diet, and being more informed. Some responses included:

Well, yes it can be controlled…While God gives us life and as long as we are taking care of ourselves and we do the right things then that will help. Well God says ‘I’ll help, help yourself and I will help you.’ Well okay, well like I say while there aren’t any surprise of happiness, of sadness or of something and one is with (taking) the treatment like the doctor indicates, that can control your risk. (Maria)

If God wills it will happen, if not, well I think it depends on us if we don’t take care of our diet it will happen because God doesn’t want anyone to sick. (Monica)

Well if God permits, if God permits in the way you eat, in the habits one has, have to take into account what the doctor says, so yes I think so. (Louisa)

Well depends on God and the manner one takes care of themselves. (Guadalupe)

Well yes it depends on the life or nature, or God. (Janet)

Well take care of oneself, living a healthy life…also I think so, God, God knows. (Luis)
All but two participants (Monica & Louisa) were at high risk of a 5-year CVD event (>20-30% or >30%).

c. **Perceptions of Heart Attack Seriousness**

To explore perceptions of heart attack seriousness, participants were asked 1) “How serious do you believe a heart attack is?” and 2) “How do you think having a heart attack may change someone’s life?”

1) **Heart Attack Seriousness**

To address participants perceptions of heart attack seriousness they were asked, “How serious do you believe a heart attack is?” All participants recognized a heart attack as a serious event. Four participants explicitly said it was serious without further elaboration; however, ten participants (4 women, 6 men) discussed seriousness in terms of fatality and three participants (2 women, 1 man) as a heart attack causing a form of debilitation to the person with the attack. Two other responses included very serious but depends on the strength of the attack (Luis) and serious enough to make someone go to the hospital (Janet). The themes that emerged were fatal and debilitation.

i. **Fatal**

Ten participants [4 women (Maria, Guadalupe, Ana, & Lorena), 6 men (Ignacio, Francisco, Raul, Enrique, Jose, & Antonio)] responded that heart attacks are serious because they can end the person’s life, is death, cause life to end, and can lead to death. Some of the responses from the participants included:

Well very serious because it is the end of the person. (Maria)

Uh well, it’s (heart attack) really ugly because it’s death, almost death, it is the worst, yes, a heart attack is the worst. (Ignacio)
I imagine that real serious, it’s (heart attack) something that ends a person’s life or can end the life of the person. (Ana)

Well I believe that it’s (heart attack) a very serious thing because I believe that, that can end one’s life, right? That’s what I understand that can happen. (Enrique)

It’s fatal. (Antonio)

Of those participants that indicated a heart attack was fatal, eight stated that they had thought about their heart attack risk and five indicated that they believed they would have a heart attack in their lifetime. Two participants (Ignacio & Antonio) were at moderate risk of a 5-year CVD event and the remaining were at high risk of a 5-year CVD event (>20-30% or >30%).

ii. **Debilitation**

Three participants [2 women (Louisa & Gloria), 1 man (Ricardo)] discussed heart attack seriousness in terms of how it can leave someone weak, incapacitated, and unable to recover. The responses included:

- Well very serious because like I said that happened to my dad and he was left incapacitated…(Louisa)

- Well (pause) bad, a (heart) attack is bad because well you can’t recover like before. (Gloria)

- Well serious because a lot of people remain weak, they can’t walk, they can’t talk, they are crooked in the face, the feet are left badly and sometimes that can’t do anything. (Ricardo)

Gloria and Ricardo perceived that they would have a heart attack in their lifetime whereas Louisa was not sure if they would have a heart attack in their lifetime. Gloria and Ricardo were at high risk of a 5-year CVD event (>20-30%) and Louisa was at moderate risk of a 5-year CVD event.

2) **Life Changing Impact of a Heart Attack**

Participants were asked, “How do you think having a heart attack may change someone’s life?” Five participants [4 women (Laura, Janet, Ana, & Carolina), 1 man
were not sure how or to what extent having a heart attack could change someone’s life. Themes that arose from the other 14 participants (6 women, 8 men) were: life altering for the person, life-altering for the family, and life-altering for the person and family.

i. Life-Altering for the Person

Nine participants [5 women (Lorena, Gloria, Guadalupe, Monica, & Louisa), 4 men (Ignacio, Raul, Ricardo, & Antonio)] discussed the impact of a heart attack as changing the person’s life. Some participants described the change as a change in one’s eating and social behaviors and other described the person’s inability to do things they had done before or becoming a “vegetable”. Some responses included:

- That I will be careful of eating fatty things and all that, things that were hurting me. (Lorena)
- Well if alive you’ll have to be careful, to be careful in taking care of your body, watch what you eat, go on more or less balanced diet. (Ignacio)
- That they will not be the same like before they got the (heart) attack. (Gloria)
- They stay there like a vegetable, right? (Guadalupe)
- Well a lot. Well because you’ll need help and be dependent on your family because it changes, your life changes, 100%. (Monica)

ii. Life-Altering for the Family

Two participants (Maria & Enrique) discussed the impact of a heart attack in terms of the family. Responses included an emptiness or sadness felt after a loved one dies or creating problems for the family. Maria provided one example as she described how she felt when she lost her own loved ones:

- It’s an emptiness that I don’t want to see…a pain from my dad who died, and from my husband and the pain is so big that I don’t wish it to anyone because it is such a pain that one feels.

Enrique talked about the concern he had for his daughters if he had a heart attack:
I believe that well it’s very hard, very hard and I see it from my point of view because I don’t have a wife. I live alone. I have my daughters…I have communication with them but I would not like that they will have one day a surprise and this, I don’t want to give them that problem.

iii. Life-Altering for the Person and Family

Three participants (Luis, Diego, & Jose) described the impact of a heart attack to be life-altering for the person and family such as the person’s inability to do things and therefore as a result could impact the family. Responses included:

Well a lot, it changes the whole life of a person, their family. (Luis)

They, like act d-different, like, they’re, they just c-careful, w-w-what they do, you know. Cuz, like my mom’s 84, and I won’t let her lift up anything. (Diego)

Well it would be a person that would be useless, could not work…even changes with the family, very much. (Jose)

3. Aim Three

The third research aim was to explore Mexican Americans’ perceptions of barriers and benefits to seeking immediate medical assistance for suspected heart attack symptoms. To address this aim, participants were asked about barriers that would prevent them from going to the hospital if they thought they were having a heart attack and about perceived benefits to going to the hospital which included: 1) “What do you think would happen if you went directly to the hospital for symptoms that you thought were a heart attack?” and 2) “What do you think would happen if you did not go to the hospital right away for symptoms that you thought were a heart attack?”

a. Perceived Barriers to Going to the Hospital

To assess perceived barriers, participants were asked: “What might prevent you from going to the hospital if you thought you might be having a heart attack?” One participant, Janet, said she did not know what would prevent her from going to the hospital. Janet
did have health insurance and was at high risk for a 5-year CVD event (>30%). Diego said “If I feel okay” he would not go to the hospital. Diego was the most acculturated participant who was born in the U.S., had health insurance, and was at high risk of a 5-year CVD event (>30%). He did not know if he would have a heart attack in his lifetime, although he was knowledgeable on heart attack symptoms and risk factors. He did know to call 911 first when experiencing symptoms of a heart attack. Laura mentioned the lack of money as a barrier. She was 80 years old, had lived in the U.S. for 15 years and did not have health insurance. She was at high risk for a 5-year CVD event (>20-30%). She did perceive she would have a heart attack in her lifetime due to her age and she said the first thing she would do if she thought she was having heart attack symptoms is go to the doctor. Themes that emerged from the remaining 16 participants included: determination to seek help, not able to get help, and transportation.

1) **Determination to Seek Help**

A sense of determination to overcome barriers to seek help emerged from three participants [1 woman (Lorena), 2 men (Enrique & Jose)], indicating they would not allow any barrier to prevent them from going to the hospital. Two participants indicated they would take an ambulance to get to the hospital and one indicated he would make sure someone knew he needed help even if he had to drag himself. Lorena responded, “I have to go with force, if I wanted to die then I wouldn’t go, right. But like I have a fear of dying, the ambulance will take me in a hurry to go faster.” Enrique said, “I believe that for me I wouldn’t have no reason or obstacle to go in the moment indicated that the ambulance would arrive.” Jose said, “In the form of one acts… so then I would call relatives screaming out loud or going yourself dragging however you can to see the closest (person) to you and from there the other persons will take care of you.” Both Lorena and Enrique had health insurance.
2) **Not Able to Get Help**

Not able to get help was a theme for barriers that would prevent participants from going to the hospital that was a result of being injured, being alone, and/or not able to call for help. This theme emerged from a total of seven participant responses [2 women (Monica & Louisa), 5 men (Luis, Francisco, Ricardo, Ignacio, & Antonio)]. Responses included:

- Not being able to ask for help, like many people, or not being able to reach help can sometimes happen too. (Monica)
- If I was alone and I didn’t have a chance to call the ambulance. (Louisa)
- If I was alone and I couldn’t call anyone, if I didn’t have time to call anyone. (Luis)
- If I couldn’t, I couldn’t call 911 is the only thing that would prevent me to do that. (Francisco)
- If I could not talk, that I could not say anything for them to take me. (Ricardo)
- If I couldn’t walk or if I fall or if I fainted, well then I wouldn’t be able to go, because I think I could faint. I can lose my consciousness and I could stay there, because no one could help me. (Ignacio)
- Well what would prevent me that the pain would be very strong that I couldn’t get up. (Antonio)

3) **Transportation**

Transportation as a barrier to going to the hospital for heart attack symptoms arose from six participants [5 women (Maria, Gloria, Guadalupe, Ana, & Carolina), 1 man (Raul)]. Transportation was discussed in terms of not being able to drive, not having someone to drive them to the hospital, or traveling distance.

- Well what would prevent me is that if I couldn’t drive and if no one was with me. (Raul)
- If I didn’t have a car well how could I go, right? If I didn’t have transportation in that moment I couldn’t go. (Guadalupe)
Well if no one could take me or if I couldn’t go by myself. (Maria)

…because there isn’t anyone who can take me. (Carolina)

The traveling because I live far, (I’d) have to travel in an ambulance. (Gloria)

Well, for the main thing that I don’t have anyone to take me. (Ana)

Ana and Raul both had health insurance; the remaining four participants did not have health insurance.

b. **Perceived Benefits**

To explore perceived benefits to seeking emergency care for heart attack symptoms, participants were asked: 1) “What do you think would happen if you went directly to the hospital for symptoms that you thought were a heart attack?” and 2) “What do you think would happen if you did not go to the hospital right away for symptoms that you thought were a heart attack?”

1) **What Would Happen at the Hospital?**

Participants were asked, “What do you think would happen if you went directly to the hospital for symptoms that you thought were a heart attack?” Eighteen participants described what they thought would happen if they went to the hospital but one participant was not sure what would happen. The themes that emerged from the responses were: help me, tell me what my symptoms are, and a disturbing setting.

i. **Help Me**

Twelve participants [8 women (Maria, Monica, Louisa, Gloria, Ana, Carolina, Laura, & Lorena), 4 men (Diego, Enrique, Jose, & Ricardo)] recognized that going directly to the hospital could help them. Participants felt they would be attended to
and cared for, have tests completed as part of the care, or helped to survive. Some responses include:

Well if I could make it in the ambulance or with a person who was with me, firstly the hand of God is what can help one and there arriving with the ambulance well they will carry the instruments and God is the one who will give the direction, right...you put yourself in their hands, first in God’s and then in theirs (doctors). Because if God gives life to them and us, in any manner they will help us get ahead. (Louisa)

Well that they can attend to me quickly, what else? (Lorena)

First of all go to see the doctor and with that the doctor will take charge of admitting you, to give you the medication. (Jose).

Well simply that my family take me (to the hospital) and they (healthcare providers) take care of me, as best, as they can. I think so, they would do treatments and take x-rays. (Laura)

…they will have to examine me, they will have to take x-rays, I don’t know anything else. (Ricardo)

Th-th-they have all k-kinds of, of things on me. [Laughter] Like, I don’t know what, but I hadda go for a key—KGE—and I told this girl, “When you take it off, be careful.” This girl came in, [makes ripping sound] and I had all holes—cuz I got hair on my chest—and I had holes all over. (Diego)

Two female participants, Ana and Carolina, discussed survival as a result of getting help. Carolina said, “If I arrived on time no. But if it’s delayed, the car delays where they take me, it can happen that I will die there, right. But if I arrive in time it could be that I will survive.”

Carolina also said she wouldn’t know what would be the first thing she would do if she thought she might be experiencing heart attack symptoms. Four participants [1 women (Ana), 3 men (Diego, Enrique, & Jose)] said they would call 911 if they thought they were experiencing heart attack symptoms. Lorena said she would go to the hospital, Laura would go see her doctor at the clinic, while Ricardo and Maria would take medication and then get help.
ii. **Tell Me What My Symptoms Are**

Five participants [2 women (Monica & Guadalupe), 3 men (Ignacio, Raul, & Luis)] acknowledged that by going directly to the hospital a diagnosis could be made regarding the symptom origin, discerning symptoms as heart attack symptoms or some other ailment. Some of the responses included:

Well if I go to the hospital and I go with the mindset that I think that they are symptoms of a heart attack but in the hospital if I arrive in the hospital, there they are going to see me and tell me why I have those symptoms and there I will know what I have. (Monica)

…the doctor can, well quickly say what it is that I have and if it is a heart attack that it will be, so then they will tell the doctor who is attending to me immediately. (Ignacio)

I’d go to the hospital and there they’ll say if they are the symptoms or if they aren’t or if it’s something else, the doctor would tell me. (Raul)

Well if I’m already in the hospital then there they would tell me if I was going to have a heart attack, mild or strong. (Luis)

Well I think the doctor will take away my doubts if it was a heart attack. (Guadalupe)

Monica, Raul, and Luis said they would call 911 if they thought they were having heart attack symptoms. Ignacio said he would call his doctor, and Guadalupe said she would “run” to the hospital.

iii. **Disturbing Setting**

Two participants [1 woman (Janet), 1 man (Antonio)] stated they would get help or treatment by going directly to the hospital; however, they described the actual hospital setting in a negative light. Janet described the smell of alcohol and “feel” of the hospital setting as she recalled going to the hospital once. She stated, “so ugly, so sad, so much sickness, oh my God, smelling all the medicine, alcohol, and tequila.” Antonio described the unfair treatment that Latinos face when going to the emergency room because they are unable to navigate the hospital system like Americans or African Americans:
I’ve seen that there are people that are really sick and have to wait their turn. But there are some people, let’s say in this case, those that, those Americans or African Americans well that are from here (U.S.), they know how to do it and they go directly and they don’t wait, they are attended to much more rapidly than the Latinos. (Antonio)

Antonio said the first thing he would do if he thought he was experiencing heart attack symptoms would be to go to the clinic, and Janet said she didn’t know what to do.

2) **What Would Happen if You Didn’t Go to the Hospital?**

To assess perceived benefits of seeking emergency care for heart attack symptoms, participants were also asked a contrary question, “What do you think would happen if you did not go to the hospital right away for symptoms that you thought were a heart attack?” One male participant, Enrique, described no hesitation in going to the hospital, he said, “I wouldn’t hesitate to go to the hospital. No, no, it could not be, for me I would not keep from going to the hospital.” Three participants [2 women (Janet & Ana), 1 man (Francisco)] were unsure of what would happen if they did not go the hospital; however, the remaining 15 participants (8 women, 7 men) described what they thought might happen as a result of not going to the hospital. Themes that arose from participant responses were: stay there and die; and stay there disabled or injured.

i. **Stay There and Die**

Eleven participants [6 women (Maria, Gloria, Louisa, Laura, Guadalupe, Carolina, & Lorena), 5 men (Luis, Ignacio, Diego, Jose, & Antonio)] responded that death would result if they did not go to the hospital. Responses included:

- If there is no one that can take me, I will stay in my house and maybe I will die. (Maria)

- Well there I can, I can die, I can stay there dead, yes because if I don’t, I don’t receive medical attention I will stay there. (Ignacio)

- It would give you, it would then give you the (heart) attack. It can be serious, deadly. (Gloria)
Wait for death, that’s the truth. (Jose)

Seven of those participants were confused about what were heart attack symptoms [4 women (Maria, Gloria, Laura, & Guadalupe), 3 men (Luis, Diego, & Jose)]. Two of those participants (Luis & Antonio) had a lack of understanding what were heart attack symptoms, and Ignacio did not know what heart attack symptoms were. Of those eleven participants, in response to heart attack symptoms: three said they would call 911 (Luis, Diego, & Jose); two would call their doctor (Louisa & Ignacio); two would go to the hospital (Gloria & Guadalupe); two would go the clinic (Laura & Antonio); and Maria said she would take medication.

ii. Stay There Disabled or Injured

Four participants [2 women (Monica & Louisa), 2 men (Raul & Ricardo)] thought they would remain disabled or injured if they did not go to the hospital. Responses included:

I can have a stroke or something like that, right? (Monica)

I would stay there, I would die there or stay disabled, or one wouldn’t know how one will stay disabled. (Louisa)

Well to have a loss of consciousness, the (heart attack) and stay there unconscious. (Ricardo)

That would depend on a lot of things, stay like a vegetable or if something would happen to me it’s for not attending to myself. (Raul)

Monica and Raul were confused about heart attack symptoms but said they would first call 911 if they thought they were having heart attack symptoms. Louisa had a lack of understanding what are heart attack symptoms and said she would call her doctor first if she thought she was having heart attack symptoms. Ricardo was confused about heart attack symptoms but responded that the first thing he would do if he thought he was experiencing heart attack symptoms is take an aspirin and then drive or have a family member take him to the hospital.
4. **Aim Four**

The fourth aim was to identify where Mexican Americans primarily obtain health information (cues to action). Questions included: a) “How did you learn about what are heart attack symptoms?”; b) “How did you learn about what puts people at risk of having a heart attack?”; and c) “Has your healthcare provider told you about your risk of having a heart attack?”

a. **Learned About Heart Attack Symptoms**

To examine where participants learned about heart attack symptoms they were asked, “How did you learn about what are heart attack symptoms?” Fifteen participants (7 women, 8 men) had identified heart attack symptoms and therefore were asked a follow up question on how they learned what are heart attack symptoms. One participant (Guadalupe) said no one told her what heart attack symptoms were; she only stated what she thought would be symptoms. Only one participant, Raul, said he learned about heart attack symptoms from his doctor but also identified some stroke symptoms as heart attack symptoms. Themes that emerged from where participants learned about heart attack symptoms included: learning through others’ experiences, information advertisements, and multiple sources of information.

1) **Learning Through Others’ Experiences**

Six participants [3 women (Maria, Louisa, & Lorena), 3 men (Luis, Ignacio, & Diego)] said they learned about heart attack symptoms through others’ experiences. Responses included:

Well from my husband who died like that. (Maria)

With my dad and because my husband, he has had (heart) attacks but now it’s been three and a half years since he had one…(Louisa)

I learned because my two brothers, the two got it, and they were told when it hurts here a lot in the chest, then you go to the hospital. (Lorena)
Well from the conversations that I’ve heard…with people who have had an (heart) attack. (Luis)

Well they’ve told me that the symptoms are like that. [Who told you?]…my friend told me that his brothers died like that. He said, no, only said that he was taking a bath, his brother said that he was taking a bath and there in the bathroom he had the heart attack, heart attack. He said that yes because he had really high cholesterol, that’s how I found out about that. (Ignacio)

Friends of mine, th-they t-tell me things you know. I learned it from friends of mine, what they t-tell me, how it—it feels. (Diego)

Of those participants who said they learned about heart attack symptoms through others’ experiences, only one participant (Lorena) stated chest pain as a heart attack symptom; the remaining participants confused symptoms (Maria, Luis, & Diego), lacked understanding of symptoms (Louisa), or did not know what symptoms were (Ignacio). Only two participants (Luis & Diego) said they would call 911 if they thought they were experiencing heart attack symptoms whereas others said they would first call their doctor (Louisa & Ignacio), go to the hospital (Lorena), or take medication (Maria).

2) **Educational Advertisements**

Three participants [2 women (Monica & Gloria), 1 man (Ricardo)] said they learned about heart attack symptoms through educational advertisements such as through the television, reading brochures, or health fairs. Responses included:

In the television, what the doctors says (on the tv show), I don’t remember who is the doctor (on the show). (Monica)

Eh, because I assisted with a health fair and there they said it…(Gloria)

Because they gave me a little card, there it said the symptoms. (Ricardo)

Gloria, Monica, and Ricardo were all confused about heart attack symptoms. Only Monica said she would call 911 first if she thought she was having heart attack symptoms, Gloria said she
would go to the hospital and Ricardo said he would first take an aspirin and then go to the hospital.

3) **Multiple Sources of Information**

Two participants [1 women (Laura), 1 men (Jose)] stated they learned about heart attack symptoms from more than one source. Responses included:

Because a sister who is younger but she is sicker than me, she sometimes talked with me, we listed on the television or she liked to read more than me because my vision doesn’t last too long and I’m lazy to read and then because I have to take care of the little girl so that nothing happens to her because her mom works. (Laura)

Through talking with other persons and through the brochures. (Jose)

Despite both being at high risk for a 5-year CVD event, both Laura and Jose were confused when asked about what were heart attack symptoms and stated their doctor had not told them about their heart attack risk. Laura said she would call the clinic if she thought she was experiencing heart attack symptoms and Jose said he would call 911.

b. **Learned About Heart Attack Risk Factors**

To examine where participants learned about heart attack risk factors they were asked, “How did you learn about what puts people at risk of having a heart attack?”

Participants (n=16: 8 women, 8 men) who were able to identify heart attack risk factors were asked a follow up question to identify where they learned about what puts people at risk of having a heart attack. Two participants (Guadalupe & Francisco) stated that they thought up the risk factors themselves rather than learning from someone or being told about the heart attack risk factors. For the remaining 14 participants, four themes emerged regarding where they learned about heart attack risk factors: healthcare providers, education advertisements, other people, and multiple sources.
1) **Healthcare Providers**

Four participants [1 woman (Louisa), 3 men (Raul, Enrique, & Ricardo)] identified their healthcare provider as an information source. Responses included:

Ah, with the doctor of my children… (Louisa)

Yes, my doctor. (Raul)

I have been, I have been, here in ‘Clinic’ I’ve been oriented to many things. (Enrique)

Through the doctor, he told me that. (Ricardo)

Overall Louisa had a lack of understanding what were really heart attack risk factors when she was asked what she believed were risk factors for a heart attack. She knew DM, HLD, HTN, weight, and high fat diets were contributors to heart attack risk; however, she also mentioned blood transfusions and ulcers were also causes of heart attacks. Raul identified risk factors as smoking, family history, and diet. Enrique and Ricardo stated risk factors were due to personal attributes such as being overweight, not exercising, not going to the doctor, and poor diet.

2) **Educational Advertisements**

Five participants said they learned about heart attack risk factors via the television and/or radio [3 women (Monica, Gloria, & Ana), 2 man (Luis & Ignacio)]. Responses included:

From what I heard on the television, we need to take care of how we eat also no smoking. (Monica)

Well also on the tv…(Gloria)

Through the reports on the television, from the reports on the programs. (Ana)

Through the news, on the television, on the radio. (Luis)

Sometimes there are books when I go see my doctor there are some books and I take them and read them and there it says, it says that excessive fat or for eating a lot of things
that, well like, meat or a lot of excessive fat and when the cholesterol is really high, really high is when the risk comes for an (heart) attack. (Ignacio)

Monica and Gloria related personal attributes to risk factors such as HLD, HTN, obesity, lack of exercise, diet, not taking care of oneself, or going to or obeying the doctor. Ana and Luis related heart attack risk factors to both heredity and personal attributes such as illnesses the family has, obesity, foods on eats, and not taking care of themselves. Ignacio was knowledgeable about HLD as a risk factor; however, he also discussed risk factors like a susto when asked what were heart attack risk factors.

3) **Other People**

Three participants [2 women (Maria & Lorena), 1 man (Diego)] identified other people (family or friends) as their source of information about heart attack risk factors. Responses included:

- From a family member who died. (Maria)
- Because my brothers told (me). (Lorena)
- I learned it from friends of mine. (Diego)

All three participants recognized personal attributes as risk factors such as not obeying the doctor, smoking, family history, being overweight, diet, or not taking care of oneself. However, Maria also mentioned susto as a risk factor.

4) **Multiple Sources of Information**

Two participants, Laura and Jose, identified multiple sources of information for learning about heart attack risk factors. Their responses included:

- I, um there with my sister who I talk to and um and what I hear on the tv. (Laura)
- Through the books, the brochures, the talks with other people and relatives. (Jose)
When asked what were heart attack risk factors, both Laura and Jose identified risk factors related to hereditary and personal attributes. Laura identified risk factors of HLD and heredity, while Jose identified smoking, heredity, diet, alcohol, and a lot of work as risk factors.

c. **Provider Informed About Risk**

Participants were asked: “Has your healthcare provider told you about your risk of having a heart attack? If so, describe how that made you feel.” Despite the fact that all of the participants were at moderate or high risk of a 5-year CVD event and had several co-morbidities that increased their risk, twelve participants (6 women, 6 men) said their provider had not told them they were at risk of a heart attack. Seven participants (4 women, 3 men) said they had been told by their provider about their risk and explained how that made them feel. Themes that emerged from participant responses that had been told they were at risk of a heart attack included: following recommendations, accepting illness, and worried about the doctor said.

1) **Following Recommendations**

Four participants [2 women (Guadalupe & Lorena), 2 men (Ignacio & Antonio)] discussed following recommendations to decrease risk that they have either already started or the doctor had recommended:

I felt bad and at the same time I felt good because he gave me medicine and sent me with a, with (for) an electrocardiogram. (Guadalupe)

The doctor has told me, said to lose 25 pounds and not to eat a lot of fat nor a lot of tortillas because you are getting fatter and you are getting fatter. (Lorena)

Right now I feel fine because I have a balanced diet. (Ignacio)

The doctor here is giving me aspirin to control the heart. (Antonio)
2) **Accepting Illness**

Two participants (Gloria & Raul) indicated their provider told them about their risk and they accept their illness. Responses included:

> Well with the diabetes that’s what he tells me that we have many risks and we need to take care of ourselves…in the end anyhow I’m still sick, anyhow I’m going to eat, at the end anyhow I’m still sick…(Gloria)

> Well at times, I resign to whatever comes to me, well if I’m going to have it well no, nobody can take it away from me. (Raul)

3) **Worried About What the Doctor Said**

Ana was so worried after her doctor told her about her risk that she became depressed from all of the worry. She stated, “Well I got depressed because I am perhaps very cowardly or I was scared…I had depression from that I worried about what the doctor told me.”

5. **Aim Five**

The fifth research aim was to examine the likelihood of action to seek immediate medical assistance for suspected heart attack symptoms among Mexican Americans with CVD risk factors. This was one question: “What is the first thing you would do if you thought you were having symptoms of a heart attack?” Eleven participants said they would go to the hospital (5 women, 6 men), eight participants said they would call 911 first to go to hospital if they thought they were experiencing heart attack symptoms (2 women, 6 men). Two participants said they would take medicine and then go to the hospital or see their doctor (1 woman, 1 man). Two participants said they would call their doctor (1 woman, 1 man), and two said they would go to the clinic (1 woman, 1 man). Two women participants said they did not know what to do. Participants’ likelihood of action is presented in Table IV and likelihood of action presented by
CVD event risk level is presented in Table V. Three themes were identified: uncertainty, medication first, and seek medical assistance.

a. **Uncertainty**

Janet and Carolina stated they would not know what to do first if they thought they were having heart attack symptoms. Both did not know what heart attack symptoms were and said their healthcare provider had not told them about their heart attack risk.

Janet stated, “Well no, I give also because I don’t know.” Janet was 78 years old, lived in the U.S. for 43 years, had health insurance, had a high 5-year CVD event risk (>30%), and had a medical history of DM, HTN, and HLD. Her healthcare provider had not told her she is at risk for a heart attack. Janet said she obtains her general health information from reading books and the health clinic. When asked how serious a heart attack is she said it is so serious one has to go to the hospital and she thought by going to the hospital she could be treated; however, she did not know what she would do first if she was experiencing heart attack symptoms.

Carolina stated, “Well I don’t know because maybe I could do nothing (nervous laughter).” Carolina was 56 years old, lived in the U.S. for 12 years, did not have health insurance, had a high risk for a 5-year CVD event (>20-30%), and had a medical history of HTN, smoking, and overweight. She said her doctor had not told her about her heart attack risk. The barriers to going to the hospital she identified were not being able to walk or no one to take her to the hospital. When Carolina was asked what was the first thing she would do if she thought she was having heart attack symptoms she said she did not know.

b. **Medication First**

Two participants, Ricardo and Maria, said they would take medication first; then they would go to the hospital after taking the medication. Ricardo said the first thing
he would do if he thought he was having a heart attack was take an aspirin and have a family member or take himself to the hospital. He was 64 years old and has lived in the U.S. for 43 years. He had health insurance, was at high risk for a 5-year CVD event (>20-30%), and had a medical history of obesity, HTN, DM, HLD, and family history of CVD. He did believe it was possible to reduce one’s risk of having a heart attack by taking an aspirin, having a healthy life, eating well, and doing exercise. When asked to describe heart attack symptoms, he identified a mix of both heart attack and stroke symptoms. He identified heart attack risk factors as being overweight, not exercising, and not going to the doctor. He said he learned about heart attack symptoms from a small card that listed the symptoms. Ricardo said that not being able to tell someone to take him to the hospital would be a barrier.

Maria said she would take medicine for the symptoms she was having and then see her doctor.

Well, take my medication that I have for that (symptoms) in that moment but if I just took it (medicine) and I felt like that then I don’t know what I would do because it tells me that I can’t repeat it, I can’t repeat my medicine. Well like I say, if I’m here (clinic) they will take care of me and if I’m there (home) I need to go see a doctor that is what I would do.

She was 67 years old and has lived in the U.S. for 24 years. Maria did not have health insurance, was at high risk for a 5-year CVD event (>30%), and had a medical history of obesity, DM, HTN, and HLD. She identified chest pain and palpitations as heart attack symptoms; and risk factors were not obeying the doctor, susto, and predisposition. She learned about heart attack symptoms and risk factors from her husband and a family member who had heart attacks. She said her healthcare provider did not tell her about her risk of having a heart attack. She believed a barrier to going to the hospital would be if no one could take her.
c. **Seek Medical Assistance**

Fifteen participants said they would seek medical assistance in four different ways: calling 911, going to the hospital, going to the clinic, and calling their doctor. Eight participants [2 women (Monica & Ana), 6 men (Luis, Francisco, Diego, Raul, Enrique, & Jose)] said they would call 911 first. Six of those eight participants had health insurance and seven participants were considered at high risk of a 5-year CVD event (>20-30% or >30%). The most common sources of information about heart attack symptoms and risk factors were from family and friends (n=3), television (n=2), and then doctors (n=2).

Three women participants (Gloria, Guadalupe, & Lorena) said they would go to the hospital. All of those women were at high risk of a 5-year CVD event (>20-30% or >30%), all identified chest pain as a heart attack symptom, and none of them said they learned about heart attack symptoms or risk factors from their healthcare provider. Sources of information included family, television, and a health fair. Only Lorena had health insurance.

Two participants (Laura & Antonio) said they would first go to the clinic to see their doctor if they thought they were having heart attack symptoms. Antonio was considered at moderate risk for a 5-year CVD event, does have health insurance, and had a history of HTN, HLD, and was overweight. Laura was at high risk of a 5-year CVD event (>20-30%), does not have health insurance, and has HTN and HLD.

Two participants (Louisa & Ignacio) said they would first call their doctor if they thought they were experiencing heart attack symptoms. Both of those participants were considered at moderate risk for a 5-year CVD event. Ignacio did not have any health insurance. He said he learned about heart attack symptoms and risk factors from his friends. Louisa could only identify palpitations as a symptom, but identified several heart attack risk factors even though her only
risk factor was obesity. The risk factors she included were DM, HLD, HTN, weight, diet, blood transfusion, ulcer, and susto. She said she learned about heart attack symptoms from family and heart attack risk factors from her doctor. She said the first thing she would do if she thought she was having a heart attack would be to call the doctor but she would call 911 if she felt she had to go to the hospital.
**TABLE IV.**
LIKELIHOOD OF ACTION: WHAT IS THE FIRST THING YOU WOULD DO IF YOU THOUGHT YOU WERE HAVING SYMPTOMS OF A HEART ATTACK?

<table>
<thead>
<tr>
<th>Participant</th>
<th>Call 911</th>
<th>Go to Hospital</th>
<th>Go to Clinic</th>
<th>Call MD</th>
<th>Take Medicine</th>
<th>I Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Monica</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignacio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Louisa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gloria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Laura</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Janet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Francisco</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diego</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raul</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guadalupe</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ana</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carolina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lorena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Enrique</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricardo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Jose</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antonio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Table V.
PARTICIPANTS’ 5-YEAR CVD EVENT RISK AND LIKELIHOOD OF ACTION (N=19)

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Call 911</th>
<th>Go to Hospital</th>
<th>Go to Clinic</th>
<th>Call Doctor</th>
<th>Take Medicine</th>
<th>I Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>&gt;10-20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>✔  ✔  ✔</td>
<td>✔  ✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✓</td>
</tr>
<tr>
<td>&gt;20-30%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>✔  ✔  ✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>&gt;30%</td>
<td></td>
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</tr>
</tbody>
</table>
V. DISCUSSION

This study explored how Mexican Americans with CVD risk factors perceived their own risk of having a heart attack. Also investigated were knowledge of heart attack symptoms, risk factors, perceptions of heart attack susceptibility and seriousness, where heart attack information is obtained, barriers to seeking emergency care, and likelihood of seeking immediate medical assistance for heart attack symptoms. Findings from this study suggest that much more education on heart attack symptoms, risk factors, and what to do when experiencing heart attack symptoms is necessary, especially among those with CVD risk factors and at moderate to high risk of a 5-year CVD event.

Teaching people to understand how to recognize heart attack symptoms can be challenging, as symptom presentation is not the same for everyone and symptoms are commonly confused with other illnesses. Although chest pain or discomfort remains the most commonly reported heart attack symptom, compared to men, women may be more likely to experience additional symptoms such as nausea, back pain, dizziness, palpitations, and jaw and neck discomfort (Berg, Björck, Dudas, Lappas, & Rosengren, 2009; Mackay, Ratner, Johnson, Humphries, & Buller, 2011). Similar to a study with a Lebanese sample by Noureddine (2010), more than half of the participants in this study described chest pain as a heart attack symptom; however, they also reported irrelevant symptoms such as tingling in the heart, leg numbness, and headache. Overall, in this study participants had a lack of understanding what were heart attack symptoms. Some participants did not know what symptoms were or identified non-heart attack symptoms, while others confused heart attack symptoms with stroke symptoms such as vision changes, headaches, and inability to move. Similarly in a study of Hispanic males, Lutfiyya et al. (2009) found that participants also confused stroke and heart attack symptoms.
Participants in this study stated they learned about heart attack symptoms mostly through others’ experience such as family or friends; educational advertisements like the television, radio, or reading brochures; or multiple sources such as family/friends and educational advertisements. A study by Thuresson et al. (2007) found that patients were more likely to interpret symptoms as cardiac in origin if they knew someone who had a heart attack. Hearing someone’s personal story of heart attack experience or from a person who witnessed the attack of a friend or family member may leave a lasting impression that individuals can remember. The AHA has made efforts to highlight personal stories of CVD survivors especially in its Go Red for Women campaign, therefore the importance of sharing survival stories has already been acknowledged as a key element to educating people about CVD. Healthcare providers can also help their patients make sense of, and understand, the cardiac events that their patients may have witnessed. Healthcare providers can also share survival or mortality stories of people who have the same CVD risk factors as their patients to help make the cardiac event risk seem more realistic.

Participants were more knowledgeable about heart attack risk factors, describing personal attributes that put individuals at risk such as smoking, obesity, high fat diets, lack of exercise, family history, etc. Despite the high prevalence of CVD risk factors within this sample, there was a mismatch between describing their own CVD risk factors as heart attack risk factors. Comparing actual versus perceived heart attack risk factors, those participants with a history of smoking were more likely to report smoking as a heart attack risk factor. Whereas participants with HLD, family history of CVD, obesity, HTN, and DM were less likely to report those risk factors as contributing to their heart attack risk. Participants with DM were less likely to identify DM as a heart attack risk factor than any other risk factor. This is a concern because individuals
with DM “have twice the risk of incident myocardial infarction and stroke as the general population” (Buse et al., 2007, p. 162). These findings are similar to study findings by van der Weijden et al. (2007) that found nearly 4 in 5 high-risk patients inappropriately perceived their CVD risk and diabetic patients did not report anxiety about their CVD risk. They also found that participants with a history of smoking, HTN, and obesity were more likely to perceive CVD risk as high. The current study also found that those participants with a smoking history were more likely to report smoking as a heart attack risk factor. Murphy et al. (2005) also found a mismatch between actual and perceived risk factors for women post AMI or coronary artery bypass graft surgery. They found that women smokers and those with a family history of CHD acknowledged those risk factors as contributors to their own CHD and women under-acknowledged risk factors of HTN, high cholesterol, obesity, and high-fat diet. Perkins-Porras, Whitehead, and Steptoe (2006) suggest “the presence of risk factors is a strong determinant of patients’ attributions about the causes of heart disease” (p. 728). It is evident from this study that participants with CVD risk factors require more education on the presence of their own risk factors that put them at risk for a heart attack. Findings of this study and from other researchers demonstrates that the message of the long-term side effects that smoking has on the cardiovascular system is being heard as many smokers acknowledge smoking as a CVD risk factor. However, it is well known that smoking is not the only risk CVD risk factor and more education efforts should be made to help people with other risk factors such as HTN, HLD, obesity, and DM to understand how those other medical conditions increase their risk of a CVD event.

Participants described how they felt after they were diagnosed with their medical conditions in two ways, either an emotional response or a positive outlook. More women than men described emotional responses such as worry, sad, depressed, shocked, and upset. Only men
reported a positive outlook about their condition such as feeling fine or good. Some of the men’s rationalized responses were because they were not symptomatic; were aware of their family history and were fine with the diagnosis; or were okay with their medical condition because they were not diagnosed with DM. The significance of these findings is that patients, especially men, should be reminded that because they may not feel the symptoms of the medical condition, the severity of the illness should not be dismissed. Additionally, both women and men experienced considerable emotional responses after being told about their medical diagnosis. Healthcare providers should consider the impact a diagnosis can have on the patient and provide adequate support, resources, and follow-up to ensure their patients are appropriately coping with their illness.

Helping patients understand their own susceptibility of a heart attack may heighten their awareness and recognition of symptoms as cardiac in origin, which will enable them to seek earlier emergent care. In this study all participants were either at moderate or high risk for a 5-year CVD event; however, only ten participants (6 women, 4 men) believed they were at risk of a heart attack in their lifetime. Participants who believed they would have a heart attack in their lifetime were likely to rationalize their risk because of personal attributes (age, HTN, symptoms, or family history) or if they did not take care of themselves. Those participants who did not think they would have a heart attack in their lifetime believed this because they felt they took care of themselves (felt good, controlled their diet, or took their medication). Those who said they would not have a heart attack in their lifetime were not told by their healthcare provider that they were at risk despite being at moderate to high risk of a 5-year CVD event. The significance of this finding is that healthcare providers have an opportunity to help at-risk patients, especially those
with multiple risk factors, to understand their CVD risk so they can attempt to prevent their risk of CVD and be alert to symptoms related to cardiac events.

More participants discussed ways to reduce their own risk of having a heart attack through taking care of themselves (exercising, losing weight, eating good, and controlling medical conditions), with the help of their doctor, and being more informed about their illnesses. The fact that participants recognized the importance taking care of themselves with behavior modifications such as of changing their diet such as eating less fatty foods and exercising is significant because the majority of the participants were obese or overweight. Only one participant (Enrique) specifically indicated that controlling his high blood pressure and HLD could reduce his heart attack risk. This is a concern because all participants had one or more CVD risk factors. Participants also described the importance of knowledge and the help of their doctor as ways to assist them in controlling their heart attack risk, which supports the need for healthcare providers to be more involved in speaking to their patients about the link between their medical conditions and heart attack risk.

Three themes emerged from participants’ beliefs about barriers that would prevent them from going to the hospital for suspected heart attack symptoms: determination to seek help, not able to get help, and transportation. Three participants indicated nothing would stop them from getting help if they thought they were having heart attack symptoms, while seven participants said they may not be able to get help as a result of not being physically able to call for help or being alone. Six women participants responded that transportation might prevent them from going to the hospital if they could not walk, drive, or if no one could take them to the hospital. Of those six participants only two had health insurance, which may have an influence on this barrier. Transportation barriers have been found to contribute to longer delay times (Smith,
Lisabeth, Bonikowski, & Morgenstern, 2010). Other researchers have found that symptom presentation affects healthcare seeking behavior and therefore may impact hospital delay times (Banks & Dracup, 2006; Horne, James, Petrie, Weinman, & Vincent, 2000). Only one participant in this study identified symptom presentation as a barrier, stating that if he felt okay he would not go to the hospital.

Participants in this study recognized benefits to going to the hospital for suspected heart attack symptoms. The majority of participants said by going to the hospital they could be helped by being examined and treated or told if their symptoms were heart attack symptoms. This finding is important because some researchers have found that symptom uncertainty can lead to reluctance to going to the hospital and therefore delay in accessing emergency care (Leslie, Urie, Hooper, & Morrison, 2000). Instead, the participants in this study saw going to the hospital as an opportunity to find out the source of their symptoms. None of the participants described reperfusion therapies for treatment of a heart attack; rather they expected to have tests like EKGs or x-rays. Tullmann and Dracup (2005) found that 31% of their older adult sample did not know about reperfusion therapies. Explaining to patients what to expect when going to the hospital for heart attacks and the urgency for early intervention therapies is another area for improvement.

Participants recognized the importance of seeking medical assistance for heart attack symptoms; however, more than half of the participants (n=11) did not identify calling 911 as the first thing they would do. Eight participants said they would call 911 first, whereas the rest indicated they would call their doctor, go to the hospital or clinic, or take medication first. Zerwic, Ryan, Devon, and Drell (2003) found that increased delay times for seeking emergency care for heart attack symptoms among a sample of African American and non-Hispanic white patients post AMI was related to contacting a physician, treating symptoms, a mismatch between
expected and actual symptoms experienced, and the absence of sweating as a symptom. One participant in the current study, Ricardo, specifically said he would take an aspirin first and then take himself or have a family member take him to the hospital. Low-dose aspirin can prevent heart attack and stroke, and during a heart attack aspirin can improve the chance of survival (AHA, 2011a). However, the recommendation remains that people experiencing heart attack symptoms should still call 911 first and then take an aspirin if possible. Other actions would only delay the person from obtaining the necessary treatment in order to improve their chance of survival if, in fact, they were having a heart attack. Of those who said they would call 911, the majority had health insurance and more were men. As a result of these findings, it is obvious that Mexican Americans with CVD risk factors require additional information about heart attack symptoms including symptoms other than chest discomfort, risk factors-overall and specific to individual, and what actions they should take if they experience heart attack symptoms.

B. Limitations of the Study

Several limitations for this study are due to the methodology. One limitation was that a bilingual RA instead of the PI conducted the Spanish interviews. Although the PI discussed the research purpose and conducted practice interviews with the RA, the RA did not have any formal training in qualitative methods or interview techniques and had difficulty knowing when to ask participants when to elaborate on responses. However, the PI was able to interject and ask additional questions when necessary since she was present in the room during the interviews. During the momentary interruptions from the PI’s additional questions the flow of the interviews were disrupted. Therefore, recruitment of a bilingual RA knowledgeable in qualitative methods and interviewing experience may have strengthened the interviews and data gathering. In the future the PI plans to take additional Spanish courses to become fluent in Spanish and
independently conduct Spanish interviews. Another limitation is the generalizability of the study due to the method, sample size, and sampling procedures; however, the findings of this study were not meant to be generalizable. Instead, the purpose of the study was to explore the perceptions of heart attack risk along with other study variables among a specific group, to describe findings in the context of the sample, and to inform future education and program planning for the specific population. Additionally, the sample was nearly entirely homogeneous in level of acculturation; varying levels of acculturation may have provided insight into the impact of level of acculturation on study concepts explored. Using the SASH, all but one male participant was considered less acculturated. By using a unidimensional model for acculturation that assumes mutual exclusion of cultural identities, bicultural identities could not be captured. A bidimensional model may have provided better insight into the possible varying levels of acculturation among the study participants that may have been reflected in their responses.

Lastly, many participants solely discussed their medical conditions when asked to describe their overall health; this may be because the interviews took place in the clinic setting. Since the interviews took place within the clinic, participants may have focused on talking about their medical conditions rather than speaking generally about their health. Suggestions for future research include collecting data at an alternative location or rephrasing the question.

C. **Implications for Practice and Research**

The findings from this study have implications for practice with Mexican American patients with CVD risk factors. Explaining CVD risk factors related to heart attack risk is an area that should be strengthened for patients with CVD risk factors. Although most smokers are aware that smoking is a heart attack risk factor, those with risk factors such as obesity, HTN, HLD, DM, and family history are less likely to identify those factors as putting them at risk of a
heart attack. Therefore, healthcare providers should clearly explain to patients what their actual risks are for having a cardiac event and reinforcement of ways to make behavior changes to live a healthier life when living with CVD risk factors. Also healthcare providers should focus on teaching at-risk patients what are heart attack symptoms and what they should do first if they think they may be experiencing heart attack symptoms to avoid delays in seeking emergency care. Future research should examine additional strategies for providing culturally appropriate interventions to help Mexican Americans understand their actual CVD risk and to improve knowledge of heart attack symptoms, risk factors, and the need for immediate medical assistance in response to symptoms.
CITED LITERATURE


American Heart Association. (2011b). What is cardiovascular disease (Heart Disease). Retrieved March 1, 2012 from http://www.heart.org/HEARTORG/Caregiver/Resources/WhatisCardiovascularDisease/What-is-CardiovascularDisease_UCM_301852_Article.jsp#.T1zkWZi6J9k


APPENDICES
Appendix A
Interview Guide
(English Version)

1. In general, please tell me about your overall health.
   Probes:
   a. What medical conditions do you have?
   b. How did you feel when you were told you had _____?
   c. How worried are you about your overall health?

2. How do you learn about general health information?
   Probes:
   a. Do you like to learn this way?
   b. How else would you like to learn more about your health conditions?

3. What do you believe are heart attack symptoms?

4. How did you learn about what are heart attack symptoms?
   Probes:
   a. Healthcare provider, family member/friend, television/radio, etc.?

5. What do you believe puts people at risk of having a heart attack?

6. How did you learn about what puts people at risk of having a heart attack?
   Probes:
   a. Healthcare provider, family member/friend, television/radio, etc.?

7. Do you know anyone who has had a heart attack?
   Probes:
   a. Who is this person?
   b. Did they describe their symptoms to you?
   c. If so, how did they describe their symptoms and what did they do?
   d. How did it make you feel?

8. How serious do you believe a heart attack is?

9. How do you think having a heart attack may change someone’s life?

10. Why do you think some people get heart attacks and some people do not?

11. Do you believe anyone has control over whether he/she will have a heart attack or not?
    Probes:
    a. Is it up to you to control your heart attack risk?
    b. Is it up to God to decide whether you or someone else will have a heart attack?

12. Have you ever thought about your own heart attack risk?
    Probes:
    a. Has your healthcare provider told you about your risk of having a heart attack?
    b. Describe how that made you feel.
    c. What did you do after you were told about your heart attack risk?
       i. Have you tried to reduce your risk of having a heart attack in any way?
          How?

13. Do you think you will have a heart attack in your lifetime?
    Probe:
    a. Tell me why you think this.

14. What do you believe might put you at risk of having a heart attack and why?

15. Do you believe it is possible to reduce your risk of having a heart attack?
16. How would you know if you were having a heart attack?

17. What is the first thing you would do if you thought you were having symptoms of a heart attack?
   Probes:
   a. Why would you ____?
   b. What would you do next?

18. What might prevent you from going to the hospital if you thought you might be having a heart attack?
   Probes:
   a. Obligations, transportation, unsure about symptoms, concerns, etc.

19. What do you think would happen if you went directly to the hospital for symptoms that you thought were a heart attack?
   Probes:
   a. treatment
   b. outcome

20. What do you think would happen if you did not go to the hospital right away for symptoms that you thought were a heart attack?
   Probe:
   a. outcome
Interview Guide
(Spanish Version)

Guía para la entrevista

1. Por favor platiqueme sobre su estado general de salud.
   a. ¿Qué condiciones médicas tiene usted?
   b. ¿Cómo se sintió cuando le dijeron que tenía _____?
   c. ¿Cuánto le preocupa su estado general de salud?
2. ¿Cómo aprende información acerca de su estado general de salud?
   a. ¿Le gusta aprender de esta manera?
   b. ¿De qué otra manera le gustaría aprender más sobre su estado de salud?
3. ¿Cuáles cree usted que son los síntomas de un ataque al corazón?
4. ¿Cómo se enteró acerca de cuáles son los síntomas de un ataque al corazón?
   a. ¿Su proveedor de atención médica, miembro de la familia, amigo, televisión, radio, etc.?
5. ¿Qué cree que pone a las personas en riesgo de tener un ataque al corazón?
6. ¿Cómo se enteró acerca de lo que pone a las personas en riesgo de tener un ataque al corazón?
   a. ¿Su proveedor de atención médica, miembro de la familia, amigo, televisión, radio, etc.?
7. ¿Conoce a alguien que ha tenido un ataque al corazón?
   a. ¿Quién es esta persona?
   b. ¿Le describieron los síntomas que padecían?
   c. En caso afirmativo, ¿cómo describieron sus síntomas y qué hicieron?
   d. ¿Cómo se sintió al respecto?
8. ¿Qué tan grave cree usted que es un ataque al corazón?
9. ¿De qué manera cree usted que un ataque al corazón puede cambiar la vida de una persona?
10. ¿Por qué cree que algunas personas tienen ataques al corazón y algunas personas no?
11. ¿Cree usted que una persona puede controlar si va a tener un ataque al corazón o no?
   a. ¿Depende de usted el controlar su riesgo de ataque al corazón?
   b. ¿Depende de Dios el decidir si usted o otra persona tendrá un ataque al corazón?
12. ¿Alguna vez ha pensado en su propio riesgo de tener un ataque al corazón?
   a. ¿Su proveedor de atención médica, le ha mencionado acerca de su riesgo de sufrir un ataque al corazón?
   b. Describa cómo lo hizo sentir.
   c. ¿Qué hizo después de que se le informó acerca de su riesgo de ataque al corazón?
      i. ¿Ha tratado de reducir su riesgo de tener un ataque al corazón de alguna manera? ¿Cómo?
13. ¿Cree usted que va a tener un ataque al corazón durante su vida?
   a. Dígame por qué cree eso.
14. ¿Qué cree que podría ponerlo en riesgo de tener un ataque al corazón y por qué?
15. ¿Cree que es posible reducir el riesgo de tener un ataque al corazón?
   a. Si es así, ¿cómo?
   b. Si no, ¿por qué?
16. ¿Cómo sabrá usted si está teniendo un ataque al corazón?

17. ¿Cuál es la primera cosa que haría si creyera que tiene síntomas de un ataque al corazón?
   a. ¿Por qué______?
   b. ¿Qué haría después?

18. ¿Qué es lo que podría impedir ir al hospital si usted cree estar teniendo un ataque al corazón?
   a. Las obligaciones, el transporte, inseguridad acerca de los síntomas, preocupaciones, etc.

19. ¿Qué cree usted que pasaría si fuese directamente al hospital para tratar los síntomas que usted cree son los de un ataque al corazón?
   a. tratamiento
   b. resultado

20. ¿Qué cree usted que pasaría si no fuese al hospital de inmediato para tratar los síntomas que usted cree son los de un ataque al corazón?
   a. resultado
Appendix B
Medical Record Review

Date: _______ Confidential ID: ____________

Sex: M  F

Ethnicity: ________________

Current Age (years): ______

Highest Educational Grade Completed: _______________

Medical Insurance: _____________

Weight: ______ Height: ______ Calculated Body Mass Index: _______

Systolic Blood Pressure (mmHg): ____________

Medical History:

Diabetes yes no
Hypertension yes no
High cholesterol yes no
Tobacco Use past/current or never

Family medical history including age and cause of death:

Mother:________________________
Father:________________________
Siblings: ________________________
Appendix C
Screening Questionnaire to Establish Eligibility

1. Mexican American

2. Age ≥50 years

3. Has at least 1 of the following:
   - High blood pressure
   - High cholesterol
   - Diabetes
   - Obese (BMI >30)
   - Smoker (past or present)
   - Family History of CVD

4. Lives in Chicago

5. Excluded if has a history of heart attack, stroke, or angina. Also excluded if currently experiencing any acute symptoms of any kind.
Appendix D

Consent Form
(English Version)

Perceived Threat of a Heart Attack and Likelihood of Action among Mexican Americans with Cardiovascular Disease Risk

You are being asked to be in a study about heart attacks. We invite you to be in this study if:

- You are Mexican American
- You are 50 years of age or older
- You live in Chicago
- You have one or more risks for a heart attack.

You cannot be in this study if you have had a heart attack, chest pain (angina), and/or stroke.

My name is Elizabeth Florez and I am a nurse and graduate student at the University of Illinois at Chicago (UIC). I want to understand what Mexican Americans know about heart attacks and what they believe is their own risk of having a heart attack. The interview will take about 30 minutes of your time. You can speak Spanish or English during the interview. The interview will be voice-recorded to help me record your answers. You will be asked questions about your health and what you know about heart attacks. After the interview you will be asked to answer a few questions such as what language you use everyday. Information from your medical chart about your medical history will also be collected.

When the interview is done, you will be given a $10 gift card and information about lowering your risk of a heart attack and stroke.

The only risk you may have in being in this study is the loss of privacy. However, we are protecting your privacy by not including your name with any of your answers and all study information will be locked in a safe room. The researchers and Julie Zerwic agree to protect your health information and will only share this information as described within this research consent/authorization form.

State and federal laws, including the Health Insurance Portability and Accountability Act (HIPAA), require researchers to protect your health information. This section of this form describes how researchers, with your authorization (permission), may use and release (disclose or share) your protected health information in this research study. By signing this form you are authorizing Elizabeth Florez and her research team to create, get, use, store, and share protected health information that identifies you for the purposes of this research.
The health information includes all information created and/or collected during the research as described within this consent form and/or any health information in your medical record that is needed for the research and that specifically includes your name, telephone number, age, ethnicity, gender, highest education level, medical insurance status, height, weight, systolic blood pressure reading, and medical history.

During the conduct of the research, the researchers may use or share your health information with each other and with other researchers involved with the study.

When your health information is given to people outside of the research study, those agencies that receive your health information may not be required by federal privacy laws (such as the Privacy Rule) to protect it. They may also share your information with others without your permission, if permitted by laws that they have to follow.

Your Authorization for release of health information for this research expires at the end of the study, but can be canceled sooner if you decide to withdraw your permission. You may change your mind and cancel this Authorization at any time. To cancel this Authorization, you must write to: at 845 South Damen Ave. M/C 802, Chicago, IL 60612-7350. Please feel free to ask any questions you may have. If you have any questions that may come up later, please contact Elizabeth Florez at (xxx) xxx-xxxx or email enakam1@uic.edu. You can also call Elizabeth’s supervisor Julie Zerwic at (xxx) xxx-xxxx or email her at juljohns@uic.edu.

If you cancel this Authorization, you may no longer be allowed to take part in the research study. Even if you cancel this Authorization, the researchers may still use and disclose health information they have already obtained as necessary to maintain the integrity and reliability of the research and to report any adverse (bad) effects that may have happened to you.

You have the following rights as a research subject:

- If you have questions or concerns regarding your privacy rights under HIPAA, you should contact the University of Illinois at Chicago Privacy Officer at (312) 996-2271.
- Right to Refuse to Sign this Authorization. You do not have to sign this Consent/Authorization. However, because your health information is required for research participation, you cannot be in this research study if you do not sign this form. If you decide not to sign this Consent/Authorization form, it will only mean you cannot take part in this research. Not signing this form will not affect your non-research related treatment, payment or enrollment in any health plans or your eligibility for other medical benefits.
- If you have not already received a copy of the Notice of Privacy Practices, you should ask for one.
- Being in this study is voluntary, which means you do not have to be in this study.
Your signature below indicates that you are providing both consent to participate in the research study and authorization for the researcher to use and share your health information for the research.

You will be given a copy of this consent form for your records.

_________________________  _______________________
Signature                  Date
Formulario de consentimiento
(Spanish Version)

Percepción de amenaza de un ataque al corazón y la probabilidad de acción entre estadounidenses de origen mexicano con riesgo de enfermedad cardiovascular

Se le pide que participe en un estudio sobre ataques al corazón. Le invitamos a participar en este estudio si usted es:
- De origen mexicano
- Tiene 50 años de edad o más
- Vive en Chicago
- Tiene uno o más riesgos para un ataque al corazón
- Usted no puede participar en el estudio si usted ha tenido un ataque al corazón, dolor en el pecho (angina), y/o un accidente cerebrovascular.

Me llamo Elizabeth Flórez y soy enfermera y estudiante de postgrado de la Universidad de Illinois en Chicago (UIC). Quiero entender lo que los estadounidenses de origen mexicano saben sobre ataques al corazón y lo que creen acerca de su propio riesgo de tener un ataque al corazón. La entrevista tomará aproximadamente 30 minutos de su tiempo. Usted puede hablar en español o en inglés durante la entrevista. La entrevista será grabada para que me ayude registrar sus respuestas. Se le harán preguntas sobre su salud y lo que usted sabe sobre ataques cardíacos. Después de la entrevista se le harán preguntas sobre qué idioma usa usted todos los días y sobre sus amigos. También se recogerá información sobre su historial médico y clínico.

Cuando se termine la entrevista, se le dará una tarjeta de regalo de USD $10 e información sobre cómo reducir el riesgo de un ataque cardíaco y accidente cerebrovascular.

El único riesgo que usted pueda tener al participar en este estudio es la pérdida de privacidad. Sin embargo, estamos protegiendo su privacidad al no incluir su nombre en ninguna de sus respuestas y toda la información del estudio estará bajo llave en una habitación segura. Los investigadores y Julie Zerwic están de acuerdo en proteger la información sobre su salud y únicamente compartirán esta información de acuerdo a lo descrito en esta Autorización/formulario de consentimiento.

Las leyes del estado y federales, inclusive La Ley Federal de Transportabilidad y Contabilidad de Seguros Médicos de 1996 (HIPAA), requiere a investigadores a proteger la información sobre su salud. Esta sección de este formato describe cómo, con su autorización (permiso), se usará y se revelará (o se compartirá) la información sobre su salud en este estudio. Si usted firma esta autorización, usted permite Elizabeth Florez y/o su grupo de investigación a crear, conseguir, utilizar, almacenar, y compartir información protegida sobre la salud que identifica usted para el propósito de este estudio de investigación.
La información sobre la salud incluye toda creada y/o recogida durante la investigación como descrita en este formato de autorización y/o información sobre la salud en su expediente médico si se necesita para la investigación; la información sobre la salud incluye específicamente: su nombre, número de teléfono, edad, etnia, género, mayor nivel de educación, estado de seguro médico, altura, peso, lectura de presión arterial sistólica, e historial médico.

En el curso de la investigación, los investigadores pueden usar o compartir información sobre su salud entre ellos y con otros investigadores involucrados con el estudio.

Cuando la información relativa a su salud sea proporcionada a gente no asociada al estudio de investigación, las entidades que reciban la información pueden no estar sujetas a leyes federales de confidencialidad (tales como el Reglamento de Confidencialidad) con el fin de protegerla. Ellos podrán también compartir su información con terceros sin su autorización, si esto es permitido por las leyes a que estén sujetos.

La Autorización para revelar información sobre su salud para este estudio de investigación se acaba al fin del estudio, pero puede ser cancelada (revocada) en cualquier momento si usted decide retirar su permiso.

Usted podrá cambiar de opinión y cancelar esta Autorización en cualquier momento. Para cancelar la Autorización deberá dirigirse al: at 845 South Damen Ave. M/C 802, Chicago, IL 60612-7350. Por favor sentirse con libertad de hacernos cualquier pregunta que pueda tener. Si usted tiene alguna pregunta que pueda surgir más tarde, por favor póngase en contacto conmigo en el (xxx) xxx-xxxx o envíe por correo electrónico a enakam1@uic.edu. También puede ponerse en contacto con mi supervisora Julie Zerwic en el (xxx) xxx-xxxx o enviarle un mensaje por correo electrónico a juljohns@uic.edu.

Si cancela la Autorización, no se le permitirá seguir participando en la investigación. Aun cuando cancelara esta Autorización, los investigadores podrán seguir utilizando y revelando la información relativa a su salud previamente obtenida para mantener la integridad y confiabilidad de la investigación y, si aplica, a reportar acontecimientos adversos que puedan haberle sucedido.

You have the following rights as a research subject:

- Si usted tiene preguntas o inquietudes acerca de sus derechos de confidencialidad conforme a la HIPAA, deberá ponerse en contacto con el Agente de Confidencialidad de la Universidad de Illinois en Chicago al teléfono: (312) 996-2271.
- Usted no está obligado a firmar esta Autorización. Sin embargo, debido a que la información relative a su salud se requiere para la participación en el estudio, en
case de que decida no firmar esta Autorización no podrá participar en él. El no firmar este formato no afectará los tratamientos ajenos a esta investigación, el pago o la inscripción en algún otro plan de salud, o su elegibilidad para otros beneficios médicos.

- Si todavía no recibe una copia del Aviso de Prácticas de Confidencialidad, deberá solicitar un ejemplar.
- La participación en este estudio es voluntaria, lo cual significa que usted no tiene la obligación de tomar parte en el mismo.

Su firma abajo indica que usted se proporciona ambos consentimiento para tomar parte en el estudio de investigación y autorización para el investigador para utilizar y compartir su información de la salud para la investigación.

Se le dará una copia de esta hoja de información para sus archivos.

__________________________  ________________
Firma                          Fecha
Elizabeth Florez, MS, RN  
Curriculum Vitae

EDUCATION

University of Illinois at Urbana-Champaign  B.S. in Biology & Psychology  2003
DePaul University, Chicago, IL  M.S. General Nursing  2006
University of Illinois at Chicago  Ph.D.  2013

PROFESSIONAL EXPERIENCE

2011- present  Clinical Assistant Professor. DePaul University, School of Nursing, Chicago, IL
2009 – 2011  Clinical Instructor. DePaul University, School of Nursing, Chicago, IL
2007 – 2011  Staff Nurse/Charge Nurse. Advocate Illinois Masonic Medical Center, Surgical Intensive Care Unit, Chicago, IL.
2006 – 2008  Research Assistant. DePaul University, School of Nursing, Chicago, IL.

PUBLICATIONS (* denotes data-based paper, all peer-reviewed journals)


PRESENTATIONS


125
SCHOLARSHIPS & FELLOWSHIPS

2012 – 2013 Sigma Theta Tau International, Zeta Sigma Chapter Research Scholarship. ($1,000)

2008 - 2012 Diversifying Faculty of Illinois Fellowship


2007 Dorothy Camilleri Leadership in Minority Health Scholarship

TRAINING GRANT


RESEARCH GRANTS

2012 - 2013 Lee, Y.M. (PI) & Florez, E. (Program Director). New Careers in Nursing Scholarship (NICN) Robert Wood Johnson Grant. ($100,000)

PROFESSIONAL ORGANIZATIONS

American Heart Association (AHA), 2013- present
   Multicultural Leadership Committee Member-Midwest Affiliate
   A Todo Corazon Subcommittee Member
   Go Red Por Tu Salud Subcommittee Member
   Madrinas Initiative Subcommittee Member
   Heart360 Get to Goal Subcommittee Member
   Judge for the AHA Go Red for Women Multicultural Scholarship

American Heart Association Heart Walk,
   Captain for DePaul University, School of Nursing, 2012

Midwest Nursing Research Society (MNRS), 2011 - present

Urban Health Program-College of Nursing Student Association, UIC, 2011 - present

National Association of Hispanic Nurses (NAHN), 2008 - present
   Illinois Hispanic Nurses Association (IHNA) Chapter, 2008 - present
   IHNA-AHA Liaison, 2012 - present

American Association of Critical-Care Nurses, 2007 - present

Sigma Theta Tau International Honor Society, 2005 - present
   Alpha Lambda Chapter, 2011 - present
   Zeta Sigma Chapter, 2005 - present
   Treasurer, 2012 - present

Member of the National Nursing Student Association, 2005 - 2006

DePaul Student Nursing Association, 2005 - 2006
   Vice President