

EXPERIENCES OF ADULTS OF MEXICAN ORIGIN NEWLY INFORMED OF
HAVING HYPERGLYCEMIC VALUES THAT EXCEED THE THRESHOLD OF
DIABETES

by

Veronica Vital

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Veronica Vital entitled “Experiences of Adults of Mexican Origin Newly Informed of Having Hyperglycemic Values that Exceed the Threshold of Diabetes” and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

Deborah A. Vincent, PhD, RN, ANP-BC, FAANP
Associate Professor
Date: November 27, 2013

Marylyn M. McEwen, PhD, PHCNS-BC, FAAN
Associate Professor
Date: November 27, 2013

Kathleen M. May, PhD, RN, PHCNS-BC
Clinical Associate Professor
Date: November 27, 2013

Gabriel Q. Shaibi, PhD
Assistant Professor
Date: November 27, 2013

Final approval and acceptance of this dissertation is contingent upon the candidate’s submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director: Deborah Vincent, PhD, RN, FAANP
Associate Professor
Date: November 27, 2013

STATEMENT BY AUTHOR

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SIGNED: Veronica Vital

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ABSTRACT

Hispanics are the largest minority group in the United States. They are disproportionately affected by diabetes and are twice as likely to develop diabetes than are non-Hispanic white adults. Mexican Americans are the largest subpopulation of Hispanics in the United States and one out of ten has diabetes. The purpose of this qualitative descriptive study was to explore the experiences of adults of Mexican origin who were newly informed of having elevated glucose levels in the diabetes range. This qualitative inquiry was conducted by means of in-depth semi-structured interviews with eight individuals of Mexican origin who had been recently informed of having hyperglycemic values exceeding the threshold of diabetes. A modified version of Kleinman's explanatory model of illness was used to elicit the EM of high blood sugar of the study participants. Qualitative content analysis was utilized to analyze the data. Domains, categories and subcategories were elicited through the immersion and crystallization of thematic units attained through the in-depth, semi-structured interviews. Three overarching domains emerged describing the experience the participants had of being newly informed of having high blood sugar: 1) EM of High Blood Sugar 2) Response to Being Informed of High Blood Sugar 3) Facilitators and Barriers to Seeking Care. The participants describe a Temporal Order of how they responded to being informed of having high blood sugar. Facilitators, barriers and gaps to seeking care were also discussed. This study provides valuable insight that can influence the development of culturally relevant interventions that may promote behavior changes to reduce blood glucose levels and promote healthy outcomes for this population.

CHAPTER 1: THE RESEARCH PROBLEM

Diabetes is a serious chronic disease that is multifaceted in terms of risks, complications, management, and outcomes (ADA, 2013a). The purpose of this first chapter is three fold. First, a general overview of diabetes is provided. This discussion elaborates on Type 2 diabetes and its diagnostic criteria. The statement of the problem and the burden and prevalence of diabetes is also incorporated into the discussion. A brief discussion regarding the concept of newly diagnosed diabetes is also provided. Secondly, the importance of defining a population of interest for research is addressed, including a discussion of the terms Latino, Hispanics, Mexican, Mexican Americans (MAs), and Mexican origin. Factors that impact multiple health care aspects for this population are also addressed. The third section of this chapter identifies the purpose and aims of the study. The study's significance to nursing and the implications for clinical practice is also integrated into the discussion for this chapter.

General Overview of Diabetes

There are two broad etiopathogenetic categories that encompass the majority of diabetes cases: type 1 diabetes (T1DM) and type 2 diabetes (T2DM; ADA, 2013a). This study focused on participants who had T2DM. The following section will provide a general overview of diabetes, elaborating on T2DM.

Type 2 Diabetes (T2DM), formerly known as non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes (ADA 2009; IDF, 2013), is the most common type of diabetes and represents over 90% of all those diagnosed with diabetes (ADA, 2010; Arizona Diabetes Coalition, 2008; IDF, 2013; Vaccaro & Huffman, 2012). T2DM results from an insulin deficiency and insulin resistance in which cells are unable to use insulin properly (ADHS, 2011;

Ockene et al., 2012; Taylor, 2013). While exogenous insulin may not be required for survival it is often beneficial in attaining adequate glycemic control (ADA, 2013a). Therefore, insulin may be prescribed as the disease progresses. The onset of T2DM generally begins in those over age 40 but can occur at an earlier age, especially in populations with a high prevalence of diabetes (IDF, 2013). The majority of individuals with T2DM have an increased impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) and T2DM is highly associated with abdominal and visceral obesity (ADA, 2013a; Lyssenko & Laakso, 2013). Other risk factors for T2DM include advanced age, family history of diabetes, physical inactivity, history of gestational diabetes, impaired glucose metabolism, ethnicity/race (ADA, 2013c; Grandy, Chapman & Fox, 2008; Lyssenko & Laakso, 2013), smoking and select medications such as diuretics and β -blockers (Lyssenko & Laakso, 2013). T2DM often goes undiagnosed for several years due to its gradual development of hyperglycemia (ADA, 2013a; Azura, Adibah & Juwita, 2012) and the absence of classic symptoms (ADA, 2013a). Often, T2DM is not diagnosed until complications are present (ADA, 2013a).

Symptoms

Symptoms of diabetes include polyuria, polydipsia, weight loss, blurred vision, and occasionally polyphagia. People with T2DM often present differently and the onset is insidious. Other symptoms that may be present in people with T2DM are cuts or bruises that are slow to heal, tingling or numbness of the hands or feet, and frequently occurring skin, gum, or bladder infections (ADA, 2010). However, individuals may be asymptomatic for several years prior to the detection of diabetes (ADA, 2013a).

Diagnostic Criteria

The diagnostic criterion for diabetes has undergone numerous changes over the past few decades and these changes have affected the reported prevalence of diabetes (ADA, 2013a; Sicree 2009). There are several organizations that put forth diagnostic criteria for diabetes, which include the World Health Organization (WHO), International Diabetes Federation (IDF), and the American Diabetes Association (ADA). Rationale for lowering the blood glucose threshold for diabetes is to detect individuals with diabetes at an earlier stage, institute treatment earlier and, therefore, prevent complications (Arizona Department of Health Services, 2005).

According to the American Diabetes Association (2013a), diabetes can be diagnosed using one of the following criteria: 1) fasting plasma glucose (FPG) ≥ 126 mg/dl (7.0 mmol/l) in which the fasting value is identified as no caloric intake for more than eight hours; 2) casual (random) plasma glucose ≥ 200 mg/dl (11.1 mmol/l) in conjunction with symptoms of hyperglycemia (polyuria, polydipsia, and unexplained weight loss); or 3) two hour plasma glucose ≥ 200 mg/dl (11.1 mmol/l) following a 75g anhydrous glucose load during an oral glucose tolerance test (OGTT). In 2010, the ADA added A1C values of $\geq 6.5\%$ as a fourth diagnostic criterion. A1C is a widely used measure for assessing the average blood glucose levels over a two to three month period of time and may more accurately reflect an individual's long term glycemic levels. However, if A1C values are to be used for diagnostic purposes, the test must be conducted using National Glycohemoglobin Standardization programs. Point of care assays are not yet sufficiently accurate for making a diagnosis. The diagnosis of diabetes is established once hyperglycemia is documented on two separate occasions or if an individual's results of two of

the aforementioned tests at the same visit indicate values above diagnostic threshold (ADA, 2013a).

Statement of the Problem

Diabetes is a devastating disease that has become a global epidemic and is now recognized as one of the most common non-communicable diseases (Cooper et al., 2012; Sicree, Shaw & Zimmet, 2009). An estimated 285 million individuals suffer from diabetes worldwide and the number is steadily increasing (Tivilla-Zárate et al., 2012). Approximately 30 million adults worldwide were diagnosed with diabetes in 1985. By 2000, the number of people with diabetes worldwide had increased to over 150 million and that number reached approximately 246 million by 2007 (Sicree et al., 2009). The number of adults with diabetes continues to rise at an alarming rate and is estimated to reach 380 million by the year 2025 (Esposito et al., 2009). The substantial increase in the prevalence of diabetes for most countries has resulted from an increase in obesity, sedentary lifestyles, an aging population (Glazier, Bajcar, Kennie & Wilson, 2006; Sicree et al., 2009), unhealthy diets, and cultural and social changes (Sicree et al., 2009).

In the United States, improvements in detection of diabetes have attributed to the increase in diabetes (ADA, 2013a). In 2010, an estimated 25.8 million Americans had diabetes and approximately 1.9 million individuals 20 years or older were newly diagnosed (CDC, 2011). It is estimated that 7 million individuals in the United States have undiagnosed diabetes.

Approximately 33% of the United States adult population has pre-diabetes (CDC, 2012) and 50% are predicted to advance to T2DM (Rodriguez, 2013).

Despite the tremendous effort the United States has put forth to abate this deadly disease, minorities continue to be disproportionately affected by diabetes (Caballero, 2007). Hispanics, the

largest minority group in the United States, are twice as likely to develop diabetes than are non-Hispanic white adults (Devlin, Roberts, Okaya & Xiong, 2006; Welch et al., 2006). When compared to their white counterparts, Hispanic adults with type 2 diabetes have been reported to have higher rates of complications due to diabetes, poorer glycemic control, lower rates of self-management (Alicea-Alvarez, 2012; Glazier et al., 2006; Hatcher & Whittemore, 2007; Philis-Tsimikas, Fortmann, Lleva-Ocana, Walker & Gallo 2011), lack of access to preventative care, and inadequate diabetes education (Coffman, Norton & Beene, 2012). Further, individuals of Mexican descent have higher incidence of diabetes related factors such as high carbohydrate and high fat diet (Davis et al., 2009), proteinuria, genetics, obesity, physical inactivity, glucose intolerance, and social factors. These risk factors in conjunction with late diagnosis of diabetes impose a greater risk for morbidity such as renal failure, retinopathy, and circulatory disturbances in Mexicans compared to their non-Hispanic White counterparts (Latham & Calvillo, 2009).

Burden of Diabetes

Diabetes is a complex and multifaceted disease. It presents the United States with challenges related to issues such as private insurance, public social security, and healthcare providers (Ringborg et al., 2009). This epidemic accounts for social and economic burdens that result from premature mortality, diminished quality of life, and high rates of morbidity. The burden of diabetes-related costs has increased substantially (Brown et al., 2011). In 2012, it was estimated that the total (direct and indirect) diabetes related economic cost in the United States was \$245 billion (ADA, 2013b). Direct medical costs accounted for \$176 billion and reduced productivity accounted for \$69 billion. The indirect costs of diabetes include: reduced labor

force, decreased earnings due to chronic disabilities, and lost productivity as a result of premature mortality, diminished job performance, and employment days missed due to health-related reasons. Employees with diabetes have a higher rate of absenteeism (work days missed) and presenteeism (decreased productivity while at work) due to health related issues than their coworkers without diabetes (ADA, 2013b).

For Arizona, in 2005, the average cost for hospitalization was \$31,301 per individual with diabetes (ADHS, 2008). In 2004, the average length of hospital stay for diabetes related diagnosis in Arizona was 4.7 days and accounted for 429,496 days of hospital stay. Between the years 1994 and 2004, there was a 25% increase in hospitalization rate for diabetes as the primary diagnosis at discharge. In 2004, Arizona spent greater than \$11 million for diabetes related emergency department visits, which accounted for 7,483 outpatient visits (Arizona Department of Health Services, 2005).

In Maricopa County, there were an estimated 55,919 diabetes-related hospital discharges, and 136 per 100,000 hospitalizations were persons with diabetes as the primary diagnosis in 2005. The financial impact in Maricopa County for hospitalizations of persons with diabetes in 2005 was \$1,750,302,217 (Arizona Department of Health Services, 2005). It is apparent that diabetes places a substantial burden on the nation. Therefore, resources for disease management are essential to abate consequences related to diabetes complications (ADA, 2009; Ringborg et al., 2009).

Prevalence

Diabetes is known as a public health concern, and the degree of its urgency can be underestimated due to the fact that diabetes is reported as a primary or secondary diagnosis depending

on co-morbidities (ADA, 2008). Therefore, it is difficult to estimate the true prevalence of diabetes. Data suggest that developing countries are impacted the greatest by the prevalence of diabetes (Sicree et al., 2009), and diabetes is more common or perhaps particularly problematic in urban areas (IDF, 2009). Mexico and the United States share a common border, resulting in a large population of Mexican descent in the United States border states. The current study was conducted in Arizona, which has a high population of Mexican origin. Hence, it is important to discuss the prevalence of diabetes for both countries. The following discussion provides prevalence information for these countries and the border region, and further elaborates on Maricopa County in Arizona, from which the sample for this study was recruited.

Mexico. Mexico has experienced socioeconomic changes which have resulted in the transition from being an underdeveloped country to a developing country (World Bank Group, 2010). This transition has influenced changes in the eating habits and physical activity in Mexico; these changes have contributed to its rapid and continuous increased prevalence of diabetes (Everett, 2011). Mexico also has a high population of indigenous ancestry, which is a risk factor for diabetes. However, the population of Mexico is very dynamic due to the various genetic admixtures (Caballero, 2011; Everett, 2011). For example, there are some regions in Mexico that are highly populated with individuals of Native American ancestry and others with European ancestry. Hence, it is imperative to not generalize disease prevention and health promotion strategies (Caballero, 2011).

Diabetes is the leading cause of death in Mexico and it has reached an epidemic status in this population (Everett, 2011; Hunt et al., 2011; Reynoso-Noverón et al., 2011; Zvarova, Zvarova & Callas, 2013). Between 1980 and 2001 the national mortality rate in Mexico for

T2DM drastically increased from 20 to approximately 50 deaths per 100,000 residents (PAHO & CDC, 2009). In 2004, the “Seguro Popular” (Everett, 2011, p.1778) was introduced into the Mexican healthcare system, which increased primary care, disease prevention, and health promoting services for the noninsured population. This effort has been recognized as a contributing factor to the increased prevalence of diabetes in the country (Everett, 2011). The prevalence of diabetes in Mexico significantly increased between 1993 and 2006 (6.7% and 14% respectively; Reynoso-Noverón et al., 2011). The high incidence of diabetes in Mexico could potentially increase the prevalence in the United States due to the increasing number of Mexicans migrating to the United States (Hunt et al., 2011). Therefore, it is important to address the prevalence of diabetes in both countries.

United States. Diabetes represents the sixth leading cause of death in the United States (Castro, Shaibi & Boehm-Smith, 2009; Centers for Disease Control, 2009). According to the ADA (2013b), in 2012 there were an estimated 22.3 million individuals diagnosed with diabetes in the United States. Minority groups such as African Americans (Blacks), Native Americans, Alaska Natives, and Hispanics are disproportionately affected by this deadly disease. This is evident by the rate of diabetes for Blacks reported to be 12.6%, Native Americans and Alaska Native 14.2%, and Hispanics 11.8% (ADHS, 2011; CDC, 2011).

Hispanics are recognized as the fastest growing and largest minority group in the United States (Caballero, 2007; Hatcher & Whittemore, 2007; Latham & Calvillo, 2009; Pew Hispanic Center, 2012) and represented 15.8% of the nation’s total population in 2009 (Caballero, 2011). Between 2000 and 2010, greater than half the U.S. population growth resulted from the growth of the Hispanic population (Passel, Cohn & Lopez, 2011) and it is estimated that they will

account for over 30% of the U.S. population or 132.8 million by 2050 (Office of Minority Health and Health Disparities, 2009).

Hispanics are at great risk of developing T2DM and its complications (Caballero, 2007; Hatcher & Whittemore, 2007; Mainous, Diaz & Geesey, 2008). Diabetes is the fifth leading cause of death for Hispanics in the United States (Hatcher & Whittemore, 2007; Office of Minority Health and Health Disparities, 2009) and they tend to develop diabetes at a younger age (Cusi & Ocampo, 2011). Hispanics have a greater tendency to be obese or overweight and tend to have more visceral fat, which increases their risk for diabetes (Cusi & Ocampo, 2011). The diabetes prevalence rates for Hispanic adults are two times higher than for their white counterparts (Valen, Narayan & Wedeking, 2012). Hispanic adults have higher rates of diabetes related mortality and morbidity than their white counterparts and have higher rates of complications such as renal disease, retinopathy, and lower limb amputation than non-Hispanic whites (Hatcher & Whittemore, 2007). Furthermore, when compared to Whites, Hispanics were more likely to have higher hospitalization rates due to uncontrolled diabetes and long-term complications (Jiang, Andrews, Stryer & Friedman, 2005).

Mexicans are the largest subpopulation of Hispanics in the United States (Caballero, 2011; Valen, Narayan & Wedeking, 2012) and accounted for approximately 65% of all Hispanics in the United States in 2011 (Pew Research Center, 2012). In the United States, the prevalence of diabetes in the Mexican population is approximately 13.3% (CDC, 2011).

U.S.-Mexican Border. Mexico shares a common border with the United States (Ruiz-Beltran & Kamau, 2001). The U.S.-Mexican border region is 2000 miles long and encompasses 25 United States counties that are located in California, Arizona, Texas, and New Mexico and 38

municipios on the Mexico border region, which are located in Baja California, Sonora, Chihuahua, Coahuila, Tamaulipas, and Nuevo Leon (Anderson, 2003). The U.S.-Mexican border is a unique, multifaceted territory that has extremely challenging binational issues and requires collaborative efforts from both nations (Garcia, 2003; Ruiz-Beltran & Kamau, 2001). The United States side of the border consists of approximately 71% Hispanics and is faced with higher rates of poverty, uninsured, and unemployment than the rest of the country (Diaz et al., 2010).

Diabetes is the third-leading cause of death among individuals on the United States side of the border (Diaz et al., 2010; PAHO, 2007). The U.S.-Mexico Border Diabetes Prevention and Control Project conducted a survey with 10 collaborating border states. This study found approximately 7.5 million adults resided along the U.S.-Mexico border from the years 2001 to 2002 and an estimated 1.2 million (15.7%) of these individuals had T2DM (PAHO, 2009). Furthermore, approximately 22% of border residents 18 and older who had T2DM were unaware of their condition (PAHO, 2007).

Arizona. In 2012, the population of Arizona was estimated to be 6,553,255 and 30.2% were of Hispanic origin (U.S. Census Bureau, 2013). Arizona is a border state that has a long history of people migrating back and forth between Mexico and Arizona. From the years 2000 to 2007 the Hispanic population in Arizona increased by approximately 46% (The Arizona Latino Research Enterprise, ASU Department of Transborder Chicana/o and Latina/o Studies, and ASU Department of Public Affairs, 2009). In 2005, the population of Hispanics in Arizona was 31%, with 88.6% of those being of Mexican origin. It is estimated that by 2025, approximately 33% of Arizona's population will be of Mexican origin (The Arizona Latino Research Enterprise et al., 2009).

The ethnic diversity of Arizona contributes to an increased burden of diabetes. In 2011, approximately 600,000 adults in Arizona were reported to have diabetes, and there has been an 80% increase in the prevalence since 1995 (ADHS, 2011). Hispanics in Arizona are disproportionately affected by diabetes compared to non-Hispanic whites (9.2 and 7.8%, respectively), and the diabetes mortality rate for Hispanics in Arizona was three times higher than non-Hispanic whites in 2005 (Arizona Diabetes Coalition, 2008).

Maricopa County. More than half of Arizona's population resides in Maricopa County, Arizona (Arizona Department of Commerce, 2009; Health Resources and Services Administration, [HRSA], 2009). In 2012, the population for Maricopa County was approximately 3,942,169, with an estimated 30% being of Hispanic origin (U.S. Census Bureau, 2013).

Newly Diagnosed Diabetes

The participants recruited for the current study were newly informed of having hyperglycemic values in the range of diabetes. A brief discussion of how the concept of "newly diagnosed diabetes" has been used in the literature is included to provide a rationale for how the time frame was determined for the inclusion criteria for this study of those individuals who were newly diagnosed with diabetes.

In 2010, approximately 1.9 million individuals, aged 20 and older were newly diagnosed with diabetes in the United States (CDC, 2011). Individuals who are considered to have newly diagnosed diabetes are those who have had no previous diagnoses of diabetes prior to the present diagnosis (Graber & McDonald, 2000) and are naive or unaware of their hyperglycemic condition. Individuals may be informed of their new diagnosis of diabetes in the hospital

(Fonseca, 2006; Newton & Raskin, 2004; Umpierrez, Issacs, Barragan, You, Thaler & Kitabchi, 2002), emergency room or urgent care clinics (Kazlauskaitė, Evans, Mazzone & Fogelfeld, 2005), community clinics or community-wide screening programs (Burge, Lucero & Schade, 2000; United Kingdom Prospective Diabetes Study Group, 1998), or by primary healthcare providers.

Literature has not provided a consistent definition of the time frame of what is considered as being newly diagnosed with diabetes. For example, two studies used vastly different time frames for defining “newly diagnosed.” Burge et al. (2000) examined the attitudes and behaviors of 89 individuals newly diagnosed with diabetes 2-24 months after these individuals had received the diagnosis. The United Kingdom Prospective Diabetes Study identified 4,075 adults who were newly diagnosed with diabetes and conducted a follow up study three months following their initial diagnosis for those on a diet only intervention (United Kingdom Prospective Diabetes Study Group, 1998). Several studies identify using individuals who were newly diagnosed with diabetes as their study population but they did not discuss how recently the diagnosis was made nor was a definition of newly diagnosed provided (Esposito et al., 2009; Kazlauskaitė et al., 2010; Li et al., 2010). A summary of some examples of studies using “newly diagnosed diabetes” to describe the study population is provided (Appendix A). For the purpose of this study, “newly diagnosed with diabetes” is defined as those individuals who were informed that they had blood glucose values in the range of diabetes at the time of their participation in a community-based diabetes screening project. The time frame for “newly diagnosed” is defined by the time they participated in the screening project to the time they participated in the current study. This time frame ranged from 9 months to 2 years, 10 months.

Approximately 25% of individuals newly diagnosed with diabetes have diabetic retinopathy or microalbuminuria at the time of diagnosis, indicating an estimated seven year gap between onset of diabetes and diagnosis of type 2 diabetes. This information confirms the urgency to identify diabetes at an earlier stage (Saudek et al., 2008). Furthermore, Hispanics have continued to lack screening for diabetes, resulting in a lack of timely diagnosis. Consequentially this contributes to high morbidity rates (Latham & Calvillo, 2009).

Defining the Population

It is imperative to understand the population that has been selected for research in order to effectively address the health disparities and promote positive health outcomes for the population. The researcher must provide a clear definition of the population of interest and the findings associated with this population (Marotta & Garcia, 2003).

Latinos and/or Hispanics

The terms “Latino,” “Hispanic” and “Mexican American” have been used interchangeably throughout the literature. To further confuse things, culture, ethnicity, and race have also been used interchangeably (Caballero, 2007; Caballero, 2011). Individuals born in a country that was conquered by Spaniards are “Hispanic” whereas those born in a country with a Latin based language are “Latino” (Caballero, 2011). There are numerous subgroups of the Hispanic population lending to the heterogeneity and diversity of this community. The diversity of Hispanics encompasses individuals from various groups including Puerto Ricans, Mexican Americans, and Central Americans, South Americans, and Cubans (OMHD, 2009; U.S. Department of Commerce, 2011). The United States Census identified multiple combinations of

racial and ethnic categories and has directed individuals to select which they self-identify with most (U.S. Department of Commerce, 2011).

Mexican, Mexican American and Mexican Origin

As evident in previous sections, the terms Mexican and Mexican American have been used interchangeably throughout the literature with disregard to the individual's birth place, and these individuals have been identified as one group. However, it is imperative to identify the population of interest when conducting research. It is important to recognize that each Hispanic origin subgroup has variations in health status and beliefs, barriers to accessing care, and requires distinct health care strategies (Alicea-Alvarez, 2012; Portillo et al., 2001). For the purpose of this research study individuals of Mexican origin are the population of interest. This population includes those with traceable ancestry to Mexico (Glick & Van Hook, 1998; Pew Research Center, 2009) including those born in the United States and those born in Mexico who migrated to the United States. These individuals can be "naturalized citizens, legal immigrants, and unauthorized migrants from Mexico" (Glick & Van Hook, 1998, p. 571). The United States Census Bureau (2000) reported that approximately 71% Mexicans in the United States spoke a language other than English in their homes and more than 42% were foreign born.

There are many factors that influence the challenges and opportunities for providing healthcare for individuals of Mexican origin. These factors include genetic, environmental, social (Cabellero, 2007), socioeconomic, and cultural aspects (Cabellero, 2007; Hatcher & Whittemore, 2007; Morales et al., 2002; National Alliance for Hispanic Health, 2004). It is further suggested that the level of acculturation may also reflect health related behaviors (National Alliance for

Hispanic Health, 2004; Ruiz-Beltran & Kamau, 2001) and the risk of diabetes in Hispanics (Cabellero, 2007).

Socio-economic Status

Socio-economic status (SES) is identified by income, education, and/or occupation (Morales et al., 2002; Seeman, et al., 2008) and is strongly correlated with health inequalities (Burge, Lucero & Schade, 2000; Morales et al., 2002; Seeman, et al., 2008). Poorer outcomes for mortality and morbidity associated with health disparities are related to lower SES (Seeman et al., 2008). Hence, individuals who are less educated, low-income, and unemployed are at greater risk for diabetes (Arizona Department of Health Services, 2005).

Education may possibly be the most appropriate predictor of health (Seeman et al., 2008). For example, data from Arizona indicate that approximately 6.2% of adults who attained a college diploma have diabetes compared to 11.3 % of adults who did not attain a high school diploma (Arizona Department of Health Services, 2008). Financial earnings and level of education can be indicators of the accessibility of resources such as food, housing and medical care which can influence choices of lifestyle behaviors. However, knowledge and personal experience can also influence an individual's ability to cope with the challenges associated with life and influence lifestyle choices (Seeman et al., 2008).

In Arizona, individuals with lower income levels had an increased prevalence of diabetes as evident by 15.2% of adults with annual incomes less than \$15,000 compared to 6.1% of those with annual incomes over \$50,000 (Arizona Diabetes Coalition, 2008). While there is diversity in the SES of all Hispanics; Mexicans and Puerto Ricans are reported to have the lowest SES

(Morales et al., 2002). It is purported that low SES is strongly correlated with unhealthy lifestyles and behaviors of Hispanics (Morales et al., 2002).

Approximately 49% of individuals of Mexican origin claimed to have an education level greater than high school, however, less than 4% of these individuals have an education higher than a Bachelor's Degree. The average Mexican family income was \$33,621, with an estimated 23% of individuals being below poverty level. Over 17% of this population reported having a disability status. These are examples of contextual factors that stigmatize the Mexican population to be vulnerable for developing diabetes. Their minority status is another factor placing them at risk for diabetes (Shi, 2001). Furthermore, factors that could potentially influence adherence to a diabetes care plan and diabetes related outcomes include depression, level of education, family support, health literacy, fear, knowledge and beliefs about diabetes (Caballero, 2007). Recognizing these factors and integrating them into interventions and health care provided for this population will help promote culturally congruent care ultimately achieving optimal health outcomes (Caballero, 2005; Caballero, 2007). It is suggested that providing culturally tailored services will enhance the desire of minorities to utilize services, ultimately improving health outcomes (Shelton, 2004).

Access to Health Care

Access to health care is defined as the ability of individuals or groups to attain proper and timely health care from a medical health care system (Morales et al., 2002). Individuals of low socioeconomic status and those lacking medical insurance are more likely to not seek medical attention for diabetes. Often Hispanics are reported not having a primary healthcare provider and underutilize health care services due to lacking health insurance (Coffman et al., 2012). Lack of

health care access is closely associated with the health status of Hispanics (Alicea-Alvarez, 2012) and can result in undiagnosed or under treatment of Hispanics with diabetes (Coffman et al., 2012). This is a significant problem for this population in the United States, especially for those who self-identify as Mexican American (Parchman & Byrd, 2001). Hispanics have been reported to have insufficient access to care due to factors such as financial (income and health insurance), personal (linguistic and cultural), and structural (organizational, geographical, transportation) barriers (Lopez, 2002; Morales et al., 2002; Portillo et al., 2001). Portillo et al. further elaborate on structural barriers to include availability of child care, translator services, bilingual and bicultural providers and hours of operation.

One of the most significant predictors for accessing health care is medical insurance, and Hispanics are reported to lack of health care coverage (Coffman, Norton & Beene, 2012). According to a study conducted by Vaccaro and Huffman (2012), MAs were reported to have lower health insurance coverage compared to White non-Hispanics. Levels of acculturation also contribute to health care access for Hispanics (Diaz, Prigerson, Desai & Rosenhech, 2001; Lara, Gamboa, Kahramanian, Morales & Bautista, 2005; Parchman & Byrd, 2001; Portillo et al., 2001). According to a study conducted by Mainous et al. (2006), United States born Hispanics or those with higher levels of language acculturation had a greater tendency to have a standard place of care and health insurance. Hispanics with English language proficiency are more likely to have health insurance, a primary healthcare provider, and routine health check-ups (Pearson, Ahluwalia, Ford & Mokdad, 2008; Wallace, DeVoe, Heintzman & Fryer, 2009).

The ADA (2009) estimated that two million individuals with diabetes have no medical insurance. Ringborg et al. (2009) contended that a major predictor for utilizing health care

resources was the presence of complications pertaining to diabetes. Secondary complications of diabetes are extremely frequent in the Hispanic population due to the delay of seeking medical attention until the condition becomes critical (Gordon, 1994). When compared to non-Hispanic Whites, MAs experience higher morbidity, (i.e., retinopathy, circulatory complications, renal failure) resulting from late diagnosis of diabetes (Latham & Calvillo, 2009). Hence, it is imperative to promote early diagnosis and prompt treatment for this population. Furthermore, the implications for gaining a greater understanding of services used or underutilized by this population may attain support from policy makers (Lopez, 2002).

Hispanic Provider Shortage

Hispanics comprise nearly 15% of the U.S. population and it is estimated that they will represent 17.8% of the population by 2020 (Alicea-Alvarez, 2012). Although Hispanics represent a large percentage of the United States population, there is a huge discrepancy in the number of Hispanic healthcare providers. According to the National Council of La Raza [NCLR] (2009), Hispanics represent only 5.9% of the U.S. health care professionals and only 5.8% of physicians and surgeons. Furthermore, in 2008, 30.4% of the population in Arizona was Hispanic with only 3.2% of the nonfederal physician workforce was Hispanic (NCLR, 2009). Hispanic registered nurses account for only 3.6% of all registered nurses in the United States (Alicea-Alvarez, 2012). These data clearly identify a shortage of Hispanic healthcare providers and put forth the urgency for non-Hispanic healthcare providers to become culturally proficient in Hispanic issues in order to promote the effectiveness and efficiency of health care services provided for this population (National Alliance for Hispanic Health, 2004). Hispanics are more likely to seek health care from providers of similar background (Alicea-Alvarez, 2012). Furthermore, Lopez (2002) reported

Mexican-Americans who had providers ethnically similar to themselves were more likely to adhere to their treatment regimen than those with ethnically dissimilar providers. This is pertinent for reducing the disparities in health care Hispanics are currently being faced with (Alicea-Alvarez 2012).

Statement of Purpose

The purpose of this study is to explore the explanatory model of adults of Mexican origin who have participated in a community-based diabetes screening project and their experiences when they were newly informed of having hyperglycemia that exceeds the threshold of diabetes according to ADA (2010).

Research Aims

This research was guided by the following specific aims:

- 1) To explore the explanatory model (EM) that adults of Mexican origin have of high blood sugar.
- 2) To explore the response participants have to being informed of having high blood sugar.
- 3) To explore participants' experiences of facilitators and barriers to seeking care for high blood sugar

Operational Definitions

Operational definitions utilized for the purpose of this study are as follows:

High blood sugar: This definition incorporated the criteria provide by the ADA (2009) for the diagnoses of diabetes: 1) fasting plasma glucose (FPG) ≥ 126 mg/dl (7.0 mmol/l); 2) casual (random) plasma glucose ≥ 200 mg/dl (11.1 mmol/l) in conjunction with symptoms of

hyperglycemia (polyuria, polydipsia, and unexplained weight loss); or 3) two hour plasma glucose ≥ 200 mg/dl (11.1 mmol/l) following a 75g anhydrous glucose load during an oral glucose tolerance test (OGTT).

Response: The physical or emotional reaction the individual experienced from being informed of having high blood sugars.

Newly diagnosed: For the purpose of this study newly diagnosed diabetes was represented by the time frame from when the participants were informed of having high blood sugar in the parent study (MCIRI) to their participation in the current study (9 months to 2 years, 10 months).

Kleinman's Model

A modified version of Kleinman's explanatory model of illness (Kleinman, 1978; Kleinman, Eisenberg & Good, 2006) was utilized to guide the research aims for this study (Appendix B). This EM explored the understanding individuals of Mexican origin have of elevated blood glucose levels that are sufficient to meet the diagnostic criteria of diabetes (ADA, 2010). Kleinman's model has been previously used to develop EMs in MAs with T2DM (Alcozer, 2000; Jezewski & Poss, 2002) and a more in-depth discussion regarding Kleinman's model is included in Chapter 2.

Significance of the Study to Nursing

It is important to generate knowledge that can improve the care and outcomes of individuals of Mexican origin with hyperglycemia. Knowledge gained from this study will be useful to providers in promoting empowerment of clients for adapting to healthy lifestyle behaviors to reduce or eliminate complications associated with diabetes. Empowering adults of

Mexican origin to utilize resources available in the community is imperative to decrease future diabetes-related adverse health outcomes and for reducing the economic burden of diabetes in this nation. Accessibility to care increases the likelihood of an intervention to be attainable (Dunstan et al., 2006). Therefore, gaining a greater insight to what individuals of Mexican origin experience when they receive the information that they have blood glucose levels in diabetic range can inform culturally relevant interventions that may promote behavior changes to reduce their blood glucose levels and promote healthy outcomes.

Implications for Clinical Practice

The burden of diabetes affects not only the individual but also impacts the families, the community, the health care system and the state (Arizona Diabetes Coalition, 2008). Therefore, it is imperative for healthcare planners and policy makers to assess the costs and resources associated with managing diabetes and its complications. Gaining knowledge of the barriers and facilitators for accessing healthcare to address elevated blood glucose levels - in the absence of T2DM diagnosis - adults of Mexican origin experience may help facilitate proper allocation of funding to appropriate prevention and care strategies that will promote quality of care, ultimately abating the burden of this plague (Ringborg et al., 2009).

Summary

Despite all the rigorous efforts to abate the increasing rates of diabetes, the prevalence continues to rise at an alarming rate. Hispanics are predisposed to experience diabetes and its complications at a greater rate than non-Hispanic whites (Hatcher & Whittemore, 2007). Individuals of Mexican origin are the largest subgroup of Hispanics in the United States and experience diabetes two times greater than the general population (Devlin et al., 2006). Hence, it

is important to understand the EM adults of Mexican origin have of high blood sugar, the response they have to being informed of having high blood sugar and their experiences of facilitators and barriers to seeking care for high blood sugar. Understanding and incorporating culture is an essential element for providing optimal quality health care for adults of Mexican origin. This knowledge can guide culturally tailored strategies that will promote early treatment and reduce the consequences associated with diabetes in this population. Early treatment may prevent or delay the progression to severe complications, ultimately avoiding the impairment of the individual's quality of life (Kuzuya, 2000).

CHAPTER 2: REVIEW OF THE LITERATURE

Diabetes is a multifaceted disease that has rapidly increased worldwide and is projected to reach 300 million by 2025. Diabetes is a highly complex chronic disease that is associated with debilitating complications and premature mortality (Jeon, Lokken, Hu & Van Dam, 2007). There is an abundance literature addressing diabetes. However, this chapter will provide an overview of the concept of “newly diagnosed diabetes.” A discussion of Kleinman’s explanatory model and the Hispanics’ and Mexicans’ explanatory model of diabetes will also be incorporated. Lastly the cultural factors influencing diabetes outcomes will be included in this literature review.

Review of Newly Diagnosed Diabetes

A literature review was conducted using EBSCO Host and Cinahl database searching the terms “newly,” “diagnosed,” “type 2,” and “diabetes” between 2000 and 2010. The EBSCO Host search identified 387 articles incorporating these terms, however, it was identified that very few articles provided a definition or time frame for “newly diagnosed” diabetes despite using these words to define the population of interest. A table summarizing some of the articles identified in this review using “newly diagnosed” diabetes to define the study population is available (Appendix A).

Several articles used “newly diagnosed” diabetes to describe the study sample but provided no other discussion regarding the time frame associated with newly diagnosed diabetes. Bao et al., (2010) conducted a study on 46 newly diagnosed T2DM patients with no prior use of hypoglycemic medications. They provided the inclusion criteria for the participants but no discussion was included of what constitutes “newly diagnosed” diabetes. Buscemi et al. (2010)

conducted a study to assess endothelial function. It was a three group study consisting of subjects that were with or without newly diagnosed T2DM. The study sample consisted of 86 subject ages 30-65 that were overweight or obese. No further discussion was included regarding “newly diagnosed” T2DM. Li et al. (2010) conducted a randomized control study that included 60 newly diagnosed T2DM outpatients. This study also did not provide a definition of “newly diagnosed” T2DM. This literature review identified multiple studies that reported to include a sample of “newly diagnosed” T2DM but did not elaborate on what constitutes being “newly diagnosed” with diabetes (de Fine Olivarius, Richelsen, Siersma, Andreasen & Beck-Nielsen, 2008; Mitchell et al., 2009; Newton & Raskin, 2004; Pan, Guo & Li, 2010; van den Berg et al., 2008; Xu et al., 2010).

Studies were conducted using a sample consisting of participants with “newly diagnosed” diabetes but there was no consistency in time frame or no definition provided for “newly diagnosed”. Bolinder et al. (2005) recruited 396 patients with newly diagnosed DM to assess measurements of proinsulin. They defined “newly diagnosed” as the time of clinical onset of diabetes to 3-4 months after. Al-Hunayan, Al-Mutar, Kehinde, Thalib and Al-Ghorory (2007) conducted face-to-face interviews for 323 men with “newly diagnosed” T2DM. They defined “newly diagnosed” as the diagnosis of T2DM within one year from the time the interview was conducted.

A longitudinal design study conducted by Barnett, Ogston, McMurdo, Morris and Evans, (2010) recruited 10,532 individuals who were newly diagnosed with T2DM between 1993 and 2004 but were followed for 12 years to assess mortality. Lathan and Calvillo (2009) conducted a longitudinal study on 240 participants of Mexican and North American ancestry newly

diagnosed with T2DM within the first six weeks of receiving diabetes care. There is an abundance of literature utilizing the term “newly diagnosed” to indicate how recent the participant was informed of having a new condition or disease. However, after a careful review of the literature, it was identified that there was no consistency for the definitions of the term “newly diagnosed.” This information was pertinent in defining the inclusion criteria for the current study. It was determined to use all eligible participants that were newly informed of having high blood sugar despite the amount of time past since participation in the parent study. For the purpose of this study, “newly diagnosed” is defined as those participants newly informed of high blood sugar during their participation in the community-based screening project to the time of their participation in this study (9 months to 2 years, 10 months).

Few studies have been conducted to assess the effects, outcomes, and individual responsiveness to being newly diagnosed with diabetes, especially for individuals of Mexican origin. An example excludes the article by Burge et al. (2000). They identified the gap in data available for the evaluation of patients’ behavioral response and factors associated with their response to newly diagnosed diabetes and purported the detection of being newly diagnosed diabetes may be a strong indication of the prognosis of the disease.

Some articles concluded that newly diagnosed hyperglycemia is associated with higher mortality rates and poorer outcomes. An example includes the study conducted by Fonseca (2006), stating newly identified hyperglycemia has been reported to be associated with higher in-hospital mortality rate, longer hospital stays, higher admission rate to intensive care units, and more frequent transfer rate to transitional care unit or nursing home facility instead of discharging patients to home. Another study conducted by Umpierrez et al. (2002) concluded

that individuals with newly discovered hyperglycemia have a significantly higher mortality rate and poorer functional outcome than those with normoglycemia or a previous history of diabetes.

Approximately 25% of all individuals newly diagnosed with diabetes have diabetic retinopathy or microalbuminuria at the time of diagnosis, indicating an estimated seven year gap between onset of diabetes and diagnosis of type 2 diabetes. This information confirms the urgency to identify diabetes at an earlier stage (Saudek et al., 2008). Furthermore, Hispanics have continued to lack screening for diabetes, resulting in a lack of timely diagnosis. Consequentially this contributes to high morbidity rates (Latham & Calvillo, 2009).

Individuals newly diagnosed with diabetes are faced with particular challenges in adjusting to their disease; hence it is important to gain patients' views during a significant life change in order to promote effective diabetes care (Lawton, Parry, Peel & Douglas, 2005). Shelton (2004) purported that the effectiveness of treatment for a culturally diverse clientele is the responsibility of the system, not the individuals seeking care. Hence, it is important for healthcare providers to have an understanding of the individual's culture and beliefs in order to promote optimal healthcare. The following discussion will elaborate on Kleinman's explanatory model of illness which guided this study to gain a greater understanding of what individuals of Mexican origin experience and their responsiveness to being newly informed of having hyperglycemic values that exceed the threshold of diabetes according to the ADA (2010) guidelines. Also included is a discussion of cultural factors that may influence diabetes care sought by or received by the population of interest for this study.

Kleinman's Explanatory Model of Illness

Kleinman et al. (2006) describe illness as a continual process that begins with personal awareness of the alteration of body feeling and continues with the patient being labeled as ill. The process continues with the individual or family members taking action toward seeking recovery or advice from extended family members, community members or health care professionals. The authors also elaborate on the importance of recognizing the difference between illness and disease. Illness is a personal definition or perception of disease that is influenced by culture and disease is a malfunction of the individual's biologic and psychophysiologic processes (Kleinman et al., 2006; McElroy & Jezewski, 2000, pp. 191-209). Prior to conducting the current study it was not known if the participants perceived their high blood sugar as an illness. Therefore the Kleinman's model was use to elicit their EM of high blood sugar.

Explanatory models (EMs) are stories individuals create to understand health and illness in a cultural context (Jezewski & Poss, 2002; McEwen, 2005). EMs are subjective experience of illness (Bhui & Bhugra, 2002; Hatcher & Whittemore, 2007) that utilize traditional, spiritual, biomedical, and personal beliefs to elicit the understanding of an individual's beliefs and practices regarding the etiology, pathophysiology, course and treatment of an illness (Hatcher & Whittemore, 2007; Jezewski & Poss, 2002).

Furthermore, EMs transform according to the individual's personal experience, acculturation level, and knowledge of the medical model (Hatcher & Whittemore, 2007). An EM is the perception of illness that incorporates the cultural, social, and personal constituents of the illness while providing an explanation of an individual's behavior response to the illness

(Jezewski & Poss, 2002). EMs of illness are useful during patient-provider interactions to provide opportunity to negotiate a mutually agreeable and relevant treatment plan, hence, it is imperative that both the patient and provider identify their EMs of an illness (Jezewski & Poss, 2002; McElroy & Jezewski, 2000). Conflicting EMs of initial high blood sugar between a patient and a healthcare provider may result in suboptimal outcomes in regards to satisfaction with care, treatment response, and self-management (Hatcher & Whittemore, 2007).

Kleinman's EM of illness is utilized to elicit an individual's perspective of illness, and it consists of the following recommended questions: (1) What do you think has caused your problem? (2) Why do you think it started when it did? (3) What do you think your sickness does to you? How does it work? (4) How severe is your sickness? Will your illness have a short or long course? (5) What kind of treatment do you think you should receive? (6) What are the most important results you hope to receive from this treatment? (7) What are the chief problems your sickness has caused for you? (8) What do you fear most about your sickness? (Kleinman, 2006, p. 147).

However, modifications of questions such as the order and wording of the questions may be done to meet the diverse nature of the setting, the problem addressed, and the characteristics of the patient. For the purpose of this study, questions were modified to avoid using the terms "problem" and "sickness" since it is not determined that the study population identifies high blood sugars in these terms. Also, "high blood sugar" was the language used in the parent project to inform the participants of their elevated blood glucose in the range of diabetes. Therefore, "high blood sugar" replaced these terms. The term "chief" in question 7 was also replaced by "main" to make the question more culturally appropriate. This was agreed upon during the

translation process of instruments which is discussed in Chapter 3. See Appendix B for modified version of questions.

Kleinman's EM has been utilized for HIV/AIDs (Mill, 2000); dental hygiene (Nelson, Rogo, Boyd, & Cartwright, 2008); tuberculosis (Ailinger & Dear, 1997; McEwen, 2005); mental health (Bhui & Bhugra, 2002; Dejman et al., 2008; Shelton, 2004; O'Mahony & Donnelly, 2007); asthma (van Dellen et al., 2008); and addressing cultural competency (Carrillo, Green & Betancourt, 1999). The EM of diabetes has also been elicited in many studies: (Acrury et al., 2004; Elstad, Tusiofo, Rosen & McGarvey, 2008; Jezewski & Poss, 2002; Hatcher & Whittemore, 2007; Hunt, Arar & Larme, 1998; Lai et al., 2007; Poss, Jezewski & Stuart, 2003). A modified version of Kleinman's model was used in the current study to elicit the EM high blood sugar of adult of Mexican origin.

Hispanics' and Mexicans' Explanatory Model of Diabetes

It is imperative to have a greater understanding of the explanatory models of Hispanics with T2DM so healthcare providers may provide culturally appropriate care for this population (Hatcher & Whittemore, 2007). The following section will elaborate on Hispanics' EMs of T2DM.

Hatcher and Whittemore (2007) conducted a review of the literature to explore and synthesize the EMs Hispanic adults have pertaining to T2DM. They concluded that despite the country of origin, Hispanics tend to have similar belief regarding the symptoms, trajectory, and treatment of the illness. Most of these individuals believed they were predisposed to diabetes due to biomedical factors. Factors such as *susto* (strong emotions) and religious factors were also identified as contributing to the development of diabetes. Hatcher and Whittemore (2007) further

noted an inconsistency regarding the etiology of the diabetes of Hispanic adults. Hispanic adults from Mexico more often reported a cultural etiology (i.e., *susto*) in comparison to Hispanic adults from Puerto Rico, who were more likely to report a religious etiology such as God's will. Everett (2011) reported the Mexican participants in her study also indicated the cause of diabetes was a frightening event [*susto*] and/or chronic strong emotions or bad temper [*coraje*].

According to Arcury et al. (2004), Hispanics identify diabetes as the result of either one or a combination of the following two pathways: 1) individual's behavior such as diet and/or a self-indulgent lifestyle, which includes excessive consumption of sugar and alcohol; and 2) events that are beyond the individual's control such as emotional or physical trauma. These findings were consistent with those of a study conducted to elicit the EMs of MAs beliefs about diabetes (Jezewski & Poss, 2002; Poss, Jezewski & Stuart, 2003). Results of the Arcury et al. study suggest that "*susto*," which is described as a scare or fright, is a contributing factor in the development of diabetes, which is consistent with Hatcher and Whittemore (2007). Jezewski and Poss (2002) also identified lack of exercise, being overweight, heredity, and not taking care of oneself as other precipitating factors for the development of diabetes. The participants of this study identified experiencing various symptoms ranging from no symptoms to severe. Furthermore, the MAs of this study expressed concern about low levels of blood sugar.

Alcozer (2000) conducted a study on MA women with T2DM to explore their perception and understanding of having diabetes. These women described the etiology of diabetes as based on family experience with the disease and that heredity and eating too many sweets were ways of getting diabetes. Several of the participants identified diabetes as a confusing silent illness. This finding was consistent with those from the study findings from Hatcher and Whittemore (2007).

An example was expressed by one participant's comment regarding diabetes: "I never feel ill" (Alcozer, 2000, p.790) and another commented that diabetes is "silent unless you're on insulin" (p. 790). Participants associated insulin with complications of diabetes (i.e., amputations, blindness, renal dialysis). These women identified traditional or ritual approaches to care for diabetes, however many reported that they had not used them. Further, these participants did not mention self-management (i.e., self-blood glucose monitoring, exercise, special diet) as taking care of diabetes to delay or prevent complications. The meaning of diabetes these women had was influenced by their experiences and the perception of having a reduced life span evolved from childhood experiences with family members with diabetes (Alcozer, 2000).

In a study by Jezewski and Poss (2002), MAs identified utilizing biomedical treatments but integrating their traditional beliefs about the causes of disease and traditional folk remedies into the prescribed biomedical diabetes regimen. MAs originate from a country that is deeply embedded in utilizing herbs for the treatment of various conditions (Poss et al., 2003). A variety of herbal and home remedies such as nopal (prickly pear cactus) and aloe vera were frequently identified in EMs of treatment of diabetes in conjunction with prescribed medications. Participants reported variations in their diet and exercise but the importance of both was acknowledged by the participants (Jezewski & Poss, 2002; Poss et al., 2003). In contrast to the results from the Alcozer (2000) study, participants in the Jezewski and Poss study identified the importance of a diabetic diet and exercising to avoid the progression of diabetes to a more serious stage. Most of these participants also stated that they developed diabetes due to not taking care of themselves (i.e., consumed too much alcohol, inadequate diet and exercise). Most of the MA in this study identified the importance of social support from their family.

Hunt et al. (1998) conducted a study to examine the difference between patients' and providers' perspectives and contexts in the management of T2DM. Due to the low socioeconomic status of the patients, their options for seeking appropriate diabetes care strategies were limited. Study participants reported that economic status influenced their illness orientation by two important factors (employment and cost of treatment): 1) fear of losing their job due to missing work for doctor appointments or not feeling well as a result of symptoms of high or low glucose levels; 2) limited budgets as a barrier to establishing dietary change. On the contrary, some practitioners did not feel patients' socioeconomic status presented a barrier for recommended diabetes regimens. Rather the providers identified cultural factors as the most important barrier to diabetes care. These include dietary habits and the cultural value of eating- "The fatter you are the healthier" (Hunt et al., 1998, p. 667). Other practitioners acknowledged socioeconomic status as a factor for diabetes management and challenges for treatment of comorbidities.

Culturally proficient health care providers have the opportunity to better understand the experiences and stories shared by individuals and, by so doing, can promote positive health outcomes and improve quality of care. A greater understanding of culture can influence the anticipated care the individual or healthcare provider has for a particular illness (McElroy & Jezewski, 2000, pp. 191-209). Hence it is imperative to understand cultural factors that can potentially influence diabetes outcomes. It is also important to recognize that despite the cultural commonalities Hispanics share, there are unique practices and behaviors in each subgroup and individually as well (Hatcher & Whittemore, 2007; Portillo et al., 2001) and the importance of

avoiding stereotyping when developing diabetes management (National Alliance for Hispanic Health, 2004).

Cultural Factors Influencing Diabetes Outcomes

As previously mentioned, there are various subgroups of the Hispanic population and each subgroup may have its own cultural distinctions (Gordon, 1994; Montoya, 2007; National Alliance for Hispanic Health, 2004; Portillo et al., 2001). Although variations of culture may exist among these subgroups, there are existing shared common core health and illness beliefs, values, practices and cultural patterns (Hatcher & Whittemore, 2007). According to Waldstein (2010), many Hispanics will practice “popular medicine” (p. 75) referred to as self-treatment or will seek treatment by a close relation.

Beliefs and Customs

Beliefs and traditional customs are passed on to Hispanics from families and cultural groups and influence health care (National Alliance for Hispanic Health, 2004). An example includes the Mexican cultural belief that a common cause of sickness is weather. It is believed that cold weather “can lead to sore throat, cough, bronchitis, and arthritis” (Waldstein, 2010, p. 87). It is also believed that an infant or small child can experience diarrhea and fever caused by “mal de ojo” (p. 87) which is an envious glance from a person. Many Latinos believe that diabetes is “inevitable and linked to religious belief” (Long et al., 2012, p. 140). These cultural views, beliefs, knowledge, and experiences of health and illness are significant facets for the planning and implementation of health care for a specific population, and may be influential factors for how individuals respond to, perceive, or interpret changes in health status (Gordon, 1994; National Alliance for Hispanic Health, 2004). Furthermore, it is suggested that first

generation Hispanics are more likely to retain traditional beliefs and values, while United States born Hispanics are more likely to assimilate to the norm of society. Hence, levels of acculturation may influence behaviors and responses to health and illness (Mainous et al., 2008; National Alliance for Hispanic Health, 2004; Ruiz-Beltran & Kamau, 2001). According to a study conducted on MAs in San Antonio, Texas, a decreased risk of diabetes was noted among those with a greater acculturation to the majority culture (Mainous et al., 2006).

Dichos and susto. Spanish speaking individuals from Latino cultures use dichos (sayings or idioms) to express cultural health care beliefs and their perspective on human conditions. Dichos portray an individual's world view and provide guidelines for social behavior and moral values. Further, dichos can be indicators of how much control individuals believe they have over their health. Often the dichos are turned to in times of tribulation or need (Zuniga, 1992). Examples of dichos are provided below Table 1.

TABLE 1: Examples of Dichos

Dichos	Meaning
<i>"De algo se tiene que morir uno"</i>	"You have to die of something"
<i>"Ayudate que Dios te ayudara"</i>	"Help yourself and God will help you"
<i>"Esta enfermedad es una prueba de Dios"</i>	"This illness is a test from God"
<i>"Es tus apuros y afanes, acude a tus refranes"</i>	"In time of need, turn to your proverbs"
<i>"Camarón que es descuida, se lo lleva la corriente"</i>	"The careless shrimp will be carried away by the current"
<i>"No hay mal que por venga"</i>	"There is nothing bad from which good does not come"

(National Alliance for Hispanic Healthcare, 2004, p. 67; Zuniga, 1992, p. 57).

Another common belief Hispanics share about health and illnesses is the concept of "susto" or fright, which is thought to be the cause of traumatic events or diseases (Jezewski & Poss, 2002; National Alliance for Hispanic Healthcare, 2004; Poss & Jezewski, 2002). However the concept of susto as the cause of diabetes is more common in the MA population (Hatcher &

Whittemore, 2007) and this is consistent with the findings in the study conducted by Jezewski and Poss (2002). Further, MAs view *susto* as a precipitating factor to the cause of diabetes rather than an illness itself (Jezewski & Poss, 2002; Poss & Jezewski, 2002). Hatcher and Whittemore (2007) reported that Hispanic adults believed diabetes to be present in the body and strong emotional events increased susceptibility to diabetes. Treatment for *susto* may include ritualistic sweeping of the body with eggs, lemons and herbs (Poss & Jezewski, 2002). These types of sayings and concepts tend to reflect the health care beliefs and behaviors of many Hispanics. Incorporating these into health care provided for this population can promote culturally sensitive care.

Remedies and medications. Other components of Hispanics' cultural health beliefs include the use of various home remedies, herbs, rituals (Gordon, 1994; Jezewski and Poss, 2002), ointments, and consultations with folk healers known as *curanderos/as* (Gordon, 1994; National Alliance for Hispanic Healthcare, 2004) or *Santeros/santeras* (National Alliance for Hispanic Healthcare, 2004). On the contrary, Hunt et al. (2000) who conducted a study with 43 MAs with T2DM did not identify any participants who utilized *curanderos* for diabetes treatment. Approximately 70-90% of the Hispanic population will self-recognize (self-diagnose) illness and manage with home remedies (Gordon, 1994; Kleinman, Eisenberg & Good, 2006). According Hunt et al. (2000), 67% of the MAs in the study reported using folk remedies. Some Hispanics will share prescribed medications with family members hoping the medication will help them and some will stop taking prescribed medications as soon as they feel the medication is working (National Alliance for Hispanic Health, 2004). Other Hispanics will ask relatives in

their home country to send medications that are not available or require a prescription in the United States (National Alliance for Hispanic Health, 2004).

Family. Family is a vital component for achieving optimal health outcomes in Hispanics. “Familismo” is a cultural concept that refers to strong sense of identity and loyalty Hispanics have for nuclear and extended family (Caballero, 2011). The family is a strong natural support for the patient (Caballero, 2011; Hatcher & Whittemore, 2007; Jezewski & Poss, 2002) and family decisions may supersede decisions made by health care providers (Gordon, 1994; National Alliance for Hispanic Healthcare, 2004). Throughout the process of seeking health care, Hispanic mothers or primary female caretakers of the home will determine when an illness is beyond their ability to treat with home remedies and when to seek assistance. With many Hispanic families the patient traditionally becomes passive (National Alliance for Hispanic Healthcare, 2004) and the entire family then becomes involved in the decision-making process (Caballero, 2011).

A study conducted by Zunker, Rutt and Meza (2005) identified that MA elders perceived family as the main resource for providing care for this elderly population. However, some of these individuals contended they did not want to burden their children. This is consistent with the findings of Hatcher and Whittemore (2007), Hispanic adults disliked the reversal of traditional family roles associated with diabetes. Hence, it is imperative to recognize the importance of family and incorporating family in the treatment of T2DM (Callabero, 2011; Whittemore, 2007).

Balance and harmony. Hispanics define health according to the balance of the body, mind, and spirit with balance and harmony being of the utmost importance. They believe illness results from a disharmony or an imbalance in the body, and the severity of the condition will be

determined by the degree of imbalance (National Alliance for Hispanic Healthcare, 2004; this imbalance may exist in food, water, air, or between man and God. They also utilize the hot and cold theory of disease and treatment (Caballero, 2007; National Alliance for Hispanic Healthcare, 2004; Poss & Jezewski, 2000). An example of this is utilizing hot foods to treat a common cold (National Alliance for Hispanic Healthcare, 2004).

Religious beliefs may also influence healthcare behaviors and outcomes for Hispanics (Caballero, 2011). Hunt et al. (2000) identified that 77% of MA participants ($n=43$) believed God helped them with their diabetes and prayer had an indirect impact by decreasing anxiety and stress. However, none of the participants felt God or prayer could replace medical treatment. Delvin et al. (2006) also identified Hispanics as viewing God was an important source of strength and resource for the management of diabetes. This is consistent with the findings from a study conducting on Hispanic patients with diabetes; 78% believed it was God's will to have diabetes and 81% felt God was the only one who could control their diabetes (Caballero, 2011).

Management and Care Seeking

Hispanic adults with T2DM have higher rates of diabetes related complications due to poorer glycemic control and lower rates of self-management than their non-Hispanic white counterparts (Hatcher & Whittemore, 2007; Jiang et al., 2005). Hispanics have been identified as giving low priority to health education and preventive care and tend to delay seeking treatment for an illness until they are prevented from performing their usual activities (Gordon, 1994). Hispanics also have been reported to have more sedentary lifestyles and diets consisting of higher consumption of carbohydrates, fats, and calories than the white population (Caballero, 2011). Furthermore, Hispanics were reported to have the highest rate of leisure time inactivity

compared to all ethnic and racial groups (Marquez & McAuley, 2006) placing them at risk for diabetes and other health problems.

Several studies have identified cultural factors that may influence healthcare for Hispanics (Caballero, 2007; Coffman et al., 2012) and the explanatory model of T2DM in MAs (Jezewski & Poss, 2002). However, no literature was found that discussed the experiences of individuals of Mexican origin when they were informed for the first time of elevated blood glucose levels. Since early identification and treatment are crucial in preventing complications, understanding the experience of an individual who has been newly informed of elevated blood glucose levels is clinically important. A study conducted by Adams (2003), reported Latinas with T2DM identified suffering from complications of diabetes to be inevitable and “it is in God’s hands” (p. 258). Further, individuals felt their new diagnosis of diabetes would not have a positive influence on their life and some identified an external locus of control. A few participants described the diagnosis of diabetes to be part of their life but did have to accept it rather than “just have to deal with it” (p. 258).

Summary

Researchers face multiple challenges when developing and implementing interventions for Hispanics with T2DM (Kim, Flaskerud, Koniak-Griffin & Dixon, 2005; McQuiston, Parrado, Martinez & Uribe, 2005). Despite the rigorous efforts of researchers to abate the prevalence of T2DM in the Hispanic population, the number continues to increase (Kim et al., 2005; McQuiston et al., 2005). People of Mexican origin are at increased risk for developing diabetes and experiencing complications associated with this deadly disease (Dergance, Mouton, Lichtenstein & Hazuda, 2005; Latham & Calvillo, 2009; Satterfield et al., 2003). There is little

known about the health practices, beliefs and knowledge they have regarding diabetes (Jezewski & Poss, 2002). However, it is purported that MAs will integrate traditional cultural values and folk treatment with a biomedical plan of care for diabetes (Jezewski & Poss, 2002).

Gaining an understanding of an individual's perception of diabetes is imperative for the development of a healthcare regimen. An individual's EM of health or illness reflects meanings of their individual experience and may influence how they respond to a prescribed medical regimen (Hunt et al., 1998). It is important to understand the experiences individuals of Mexican origin endure when they are informed of elevated blood glucose levels. Having a greater understanding of their experience and incorporating culture can promote optimal quality of health care for adults of Mexican origin and can guide strategies that will promote early treatment and reduce the consequence associated with diabetes for this population.

CHAPTER 3: METHODOLOGY

This chapter describes the methods that were used in this study. First the study design and a brief discussion of the constructivist epistemology utilized to guide this qualitative study and the rationale are presented. This is followed by a discussion regarding the sampling, recruitment, data collection, and the translation process for instruments utilized for addressing the specific aims of the study. Lastly data analysis, data security, and evaluation criteria are discussed.

Study Design

The design of a study and its implementation is guided by the research approach. A constructivist epistemology is a perspective in which knowledge and meaning of human phenomena are socially constructed by one's experience in contrast with being objectively real (Padgett, 2008). This qualitative study was guided by a constructivism perspective and used a qualitative descriptive design. According to Sandelowski (2000), qualitative descriptive studies are a categorical method of inquiry and do not demand conceptual or highly abstract interpretation of data. Furthermore, in qualitative descriptive methods, interpretations are low-inference and the facts of the phenomena are presented in everyday common language, thereby permitting researchers to remain close to the precise words and events of the data (Sandelowski, 2000). A modified version of Kleinman's model of illness (Kleinman, 1978) was used to guide this research. The purpose of this study is to explore the explanatory model of adults of Mexican origin who have participated in a community-based diabetes screening project and their experiences when they were newly informed of having hyperglycemia that exceeds the threshold of diabetes according to ADA (2010).

Sampling and Setting

Background of the Study Participants

The study participants were recruited from a larger diabetes screening project that was conducted at Arizona State University. A brief description of the initiative is provided in order to form a better understanding of the sampling process for this qualitative study. The Maricopa County Insulin Resistance Initiative (MCIRI) screened Hispanic individuals in Maricopa County for diabetes during 2008 to 2011. Participants were also invited to participate in a biorepository and be contacted for future research. Individuals who were screened reported no history of diabetes. Eligibility to participate in the study included diabetes naïve individuals who self-identified as being of Hispanic or Latino origin and were between the ages of 8-85 years old. Minors signed an assent to participate in the parent study and their parents signed a consent granting them permission to participate. Individuals who were receiving treatment for metabolic disease, had been diagnosed with HIV/AIDS, active cancer, or were experiencing an acute illness were excluded. For this chapter, the term “Hispanic” is used to identify those who participated in the parent project.

Eligible participants for the project were invited to participate in a health screening done at the Clinical Research Unit at Arizona State University. Anthropometric measures (BMI, weight, height, waist and hip circumference), urine analysis, laboratory blood measures and medical history were obtained from participants. Additionally, fasting samples of serum, RNA, and DNA were collected from those consenting to participate in the biorepository. The purpose of the community screening project was to assess the risk factors for diabetes in a previously undiagnosed population and develop a research registry of Latinos for future research. During

the consenting process of the aforementioned study, the participants were invited to be included in a large registry of individuals who had agreed to be contacted for future research studies. The registry is a community-wide research registry purposing to decrease the underrepresentation of Hispanics in biomedical research in Arizona. The screening project found that approximately 40% of the participants had hyperglycemia (pre-diabetes or diabetes). For more information regarding the parent project see Shaibi, Coletta, Vital and Mandarino (2013). The registry from this project was used to recruit adults of Mexican origin who were newly informed of having hyperglycemic values in the range of diabetes to participate in the qualitative study reported in this dissertation.

Sampling

The proposed study used purposive sampling to invite adults of Mexican origin to participate in semi-structured interviews. This sampling strategy allowed the researcher to have a degree of control to ensure that the participants recruited were able to provide information needed to answer the research questions of interest for this study (Barbour, 2001; Coyne, 1997; Padgett, 2008). A type of purposeful sampling is criterion sampling, which has been defined by Patton (1990) as the opportunity to study cases that meet important predetermined criteria for a phenomenon of interest. This sampling strategy is an important qualitative component to ensure the understanding of information-rich data, which may potentially reveal important factors that may be targeted for the opportunity to improve, promote, or develop health care programs and disease management (Patton, 1990). Hence, this criterion sampling was utilized to recruit individuals from the registry who met the predetermined criterion to participate in in-depth interviews.

Participants recruited for this qualitative study were those who met the following inclusion criteria: self-identified as being of Mexican origin; between the ages of 18 and 65 years; had participated in the MCIRI and had consented to be re-contacted for future studies; and had documented (see Transferable Data Form: Appendix F) elevated glucose values in the range of diabetes (A1C \geq 6.5%, fasting blood glucose levels \geq 126mg/dl, and/or two hour plasma glucose \geq 200mg/dl following a 75g anhydrous glucose load during an oral glucose tolerance test). The exclusion criteria were: self-reported diagnosis of mental impairment or unable to communicate. The purpose of the exclusion criteria was to ensure the individuals were able to participate in dialogue in order to elicit the experiences of having been newly informed of having hyperglycemia in the range of diabetes.

Sample Size

The sample size for this study was anticipated to be 8-15 participants. However, theoretical saturation was used to determine an adequate sample size. Saturation is identified during the analysis of data when redundancy of data is observed and no new information emerges (Padgett, 2008). Although there are no identifiable published guidelines or tests of adequacy for estimating the sample size required for reaching saturation, this criterion has been identified as the gold standard by which purposive sample sizes are determined (Guest, Brunce & Johnson, 2006).

Recruitment Procedures

Recruitment for this study consisted of using the aforementioned registry to identify individuals who met the inclusion criterion. Two recruitment strategies were utilized. First, the researcher identified eligible individuals from the registry and attempted to contact each potential

participant via telephone. When successful contact was made, the researcher read the Recruitment Script (Appendix C). In the event that three unsuccessful telephone attempts were made, a second strategy of mailing of the Recruitment Letter (Appendix D) to potential participants was used.

This researcher has worked with the target population in other capacities and has experienced that this population frequently tends to change telephone numbers and/or have numbers disconnected or unavailable. So initially, sending a letter was thought to be necessary if telephone contact was unsuccessful. Although the researcher anticipated some difficulty in contacting an adequate number of potential participants, this proved not be the case. The researcher was able to contact all eight participants by telephone. The potential participants were provided information regarding this doctoral study, and once the individual agreed to participate, an appointment for an in-depth, face-to-face interview was scheduled at a convenient time and place for the participant. Prior to proceeding with the interview, consent was obtained in the preferred language (English or Spanish) of the participant and this process is discussed later in this chapter.

Setting

The setting for this study was Maricopa County in Arizona. Maricopa County is a metropolitan area with a high concentration of Hispanics. In 2011, the Hispanic population in Arizona was 1,950,000, representing 30% of the total population in the state, and 91% were of Mexican origin (Pew Research Center, 2013). Therefore, this area was appropriate to conduct this study to gain a greater understanding of the experiences individuals of Mexican origin have

when they are newly informed of having hyperglycemic values exceeding the threshold of diabetes.

To collect rich data, the setting must be one in which the participant feels safe and willing to share pertinent information for the study. Therefore, the role of the researcher was made explicit and consideration of privacy was accounted for to assure the confidentiality of the participants. The interviews were conducted in a secure private room at the Tempe or Phoenix Downtown ASU campuses or in participants' homes (participants' preference).

Procedures for Protection of Human Subjects

Prior to conducting research involving human subjects, an application must be submitted to the Institutional Review Board (IRB). Due to the nature of the study, approval from the Human Subject Committee of Arizona State University (ASU) and the College of Nursing, University of Arizona (UA) was required. Since this study used the registry developed from the MCIRI to identify potentially eligible individuals, approval from the Human Subject Committee of Arizona State University (ASU) was obtained first. Once ASU IRB approval was granted, a Deferral of IRB Oversight (Appendix E) form was submitted to the College of Nursing, University of Arizona. Once approval was obtained through the College of Nursing, the application was submitted to the UA IRB for the final approval. Upon obtaining approval from both institutions, the researcher reviewed the registry to identify potentially eligible individuals. As previously mentioned, participants of the registry had agreed to be contacted for future research studies and to have their data available to other researchers.

Data Collection Methods

To ensure eligibility for this study, participants meeting inclusion criteria were identified from the MCIRI registry and necessary data were transferred from the registry to the Transferable Data form (Appendix F) Participants' data extracted from the registry included: verification of consent to participate in other studies; age; ethnicity; and glycemic values (A1C, two hour blood glucose, fasting blood glucose). Once eligible individuals were identified, they were contacted and an appointment for an interview was scheduled, as previously described. On the day of the interview, the researcher read the Informed Consent (Appendix G) aloud in the participants' preferred language (English or Spanish) and a copy was provided for the individual to read along. All questions and concerns were addressed and the interview process was initiated once the participant signed the informed consent. Each participant completed a descriptive data questionnaire (Appendix H) and participated in a Talk [Platica] (Appendix B), which is an in-depth semi-structured interview. Language of preference (English or Spanish) was established at the time of recruitment and confirmed at the time of the interview so all interaction was conducted in the participant's preferred language. All interviews were audio-taped and the researcher also kept field notes to ensure accuracy of the data.

Data Security

It is imperative that all measures are taken to ensure strict confidentiality and that the informants' identities are never revealed (Padgett, 2008). In order ensure strict privacy of the informant's identification, a participant identification number was assigned to each participant. A list of the participants' names with corresponding ID numbers for the MCIRI and the newly assigned ID number for the current study was kept in a password protected file in a password

protected computer to allow for tracking of the recruitment process. This information was kept in the computer and was accessible only by the research team. Signed Consent Forms were locked in a file cabinet in the PI's office. Audio records and field notes were kept in a separate locked drawer of a filing cabinet in the researcher's office. This researcher translated the audio record recordings, checked for accuracy, analyzed and stored them in a password protected computer until the completion of the study. These data will be kept for six years following the completion of the study. Demographic data were entered into a table format using the study ID number and stored in a password protected computer.

Data Collection Instruments

Descriptive Data Questionnaire

The Descriptive Data Questionnaire (Appendix H) is a brief questionnaire and was utilized to elicit participant demographic information. Data collected included: gender, age, preferred language, birth place, presence of medical insurance, level of education, income, marital status and family history of diabetes. The questionnaire was provided in the participants' preferred language and was self-administered.

In-depth Semi-structured Interview

The interview was guided by the questions from A Talk [Platica] About Your Health (Appendix B). This was a face to face semi-structured in-depth interview used to address the aims of this study. This form of interview consists of predetermined open-ended questions with opportunity for other questions to develop from the dialogue between researcher and participant (DiCicco-Bloom & Crabtree, 2006). These questions were used to elicit the experiences of adults

of Mexican origin have once they are newly informed of having hyperglycemic values that exceeds the threshold of diabetes.

The length of the Talk [Platica] process of the interview ranged from 26 to 59 minutes ($m=37$). However, the entire visit lasted approximately two hours, which included time for the consenting process, completion of the demographic data form and addressing any questions and concerns the participant may have had. The participant's identity was not revealed throughout the interview to maintain the integrity and privacy. Confidentiality issues are discussed in a later section. The interview was conducted in the participant's preferred language.

Translation Process

To ensure the validity of the translated demographic questionnaire and the interview guide, two bilingual individuals were selected for the translation process. This process was done despite the fact that this author is fluent in the source language (English) and the target language (Spanish). An in-depth discussion regarding the translation process is provided in the following section.

Translation Participants

It is imperative to select qualified and truly bilingual individuals for the translation of a questionnaire to ensure appropriate correlations of sentences between the languages of interest (Nelson & Palchanes, 1994). Therefore, special care and consideration was given prior to soliciting the participants for the translation of this questionnaire. The first translator, R.O., was born in Phoenix, Arizona. She obtained her BS in kinesiology from ASU. Her primary language is English; however, she is fluent in Spanish and English but primarily speaks Spanish with family members. The second translator, M.S., was born in Chihuahua, Mexico. She received

most of her education in Mexico, where she obtained her nursing degree and worked as a nurse for 17 years. She moved to the United States nine years ago and has initiated the process to obtain her nursing license to practice in the United States. Her primary language is Spanish and she learned English when she started attending school in the United States. She is also fluent in Spanish and English but primarily speaks Spanish with her parents. Therefore, due to both participants' fluency in speaking and writing in the target language (Spanish) they were selected for the translation of the instruments. Back-translation approach was used to translate all the forms that were shared with the participant and is a preferred approach (Hilton & Skrutkowski, 2002). This researcher initially developed all forms in the source language (English) in terms that were easily translatable and the translation process used was consistent with that discussed by Brislin (1970). The two bilingual individuals, R.O. and M.S., translated all study forms and questionnaires. First, R.O. translated the materials from the source language to the target language (Spanish). Next, M.S. translated the new version back to the source language (English). This researcher then reviewed both versions to determine equivalency of the versions. Any discrepancies noted were discussed by this researcher and the bilingual individuals to revise the original version to ensure consistency in all versions.

Data Analysis

All demographic variables were described using descriptive statistics appropriate for the level of measurement and were evaluated for normality of distribution. Demographic variables of gender and marital status are nominal level. Age and education were collected as interval data.

The audio-recorded interviews were transcribed into a Word document. This information was rechecked by this researcher to ensure the accuracy of the transcription. For the interviews

conducted in Spanish, the data were transcribed by an individual who was fluent in Spanish and English. This researcher verified accuracy of these transcriptions by listening to the audio-recordings multiple times. The data were also translated in English by the bilingual transcriber/translator. To ensure accuracy of the translation, this researcher reviewed all translated data.

Data were analyzed using qualitative content analysis (Morgan, 1993). Qualitative content analysis is used when the existing knowledge about the phenomenon is limited or fragmented (Elo & Kyngas, 2008). There is limited knowledge of experiences adults of Mexican origin have of being newly informed of having hyperglycemia in the range of diabetes, therefore qualitative content analysis was the approach utilized for analyzing the data elicited from the interviews. Due to the limited knowledge of this phenomenon, an inductive approach was used to form categories by transferring data from specific to general statements. Three main phases of this inductive process which include “preparation, organizing and reporting” (Elo & Kyngas, 2008, p.109) were used. The data were then organized using “opening coding, creating categories and abstraction” (p.109). The following discussion describes the process for this research in greater detail.

After the first interview, the researcher read and re-read the transcript in its entirety. Analytical development and inductive, open coding of data were conducted by the researcher by highlighting words and making notations on the transcript pages of phrases, patterns, relationships, and commonalities or disparities in the data. Through immersion of the thematic units, the researcher identified common codes or categories. The transcripts and data analysis were reviewed by dissertation committee member, Dr. McEwen, who has expertise in

conducting qualitative studies. When a lack of congruence occurred, we discussed the data until there was a consensus of categories. This process was repeated with the following seven interviews. Categories were confirmed and new categories were identified throughout the iterative process of data collection and analysis. Through immersion and crystallization, data were assigned to final categories and subcategories. The process was conducted manually using Word documents of the transcripts. This researcher and Dr. McEwen met for a final review of the data. Final categories were crystallized and thematic units were distributed to appropriate categories. Through further abstraction of data, emerging overarching domains were also identified.

Rigor in Qualitative Research

Qualitative research is a “naturalistic” inquiry aimed at discovering human phenomena or a lived experience as perceived by a participant. According to Sandelowski (1986), for decades, the scientific merit of qualitative research has been debated due to its somewhat artistic approach. Lincoln and Guba (as cited in Boswell & Cannon, 2014) proposed four criteria to establish rigor or trustworthiness of data and data interpretation. The criteria include: 1) credibility; 2) transferability; 3) dependability; and 4) confirmability (Boswell & Cannon, 2014).

Credibility

Credibility is also known as “truth value” of qualitative inquiry. This is attained through the validation of data, data analysis, and findings by experts in the phenomena of interest. Multiple checks of coding and interpretation are also done by these experts (Boswell & Cannon, 2014). Furthermore, Sandelowski (1986) purports “truth is subject-oriented rather than researcher-defined” (p. 30). The researcher is considered as a subject in their own study due to

the extent of immersion, and this can be viewed as threat to the truth if the researcher was influenced by the subjects or if the subjects were influenced by the researcher. Another potential threat or enhancement to credibility is the closeness of the relationship between investigator and subject (Sandelowski, 1986).

This researcher did participate in the parent project conducted at ASU and developed rapport with the participants and became very informed of the population of interest, which enhances credibility. Furthermore, this researcher took extra care to identify own biases and not to let biases influence interpretation of data. This researcher worked in collaboration with Dr. McEwen, an expert in the phenomena of interest. After the first interview with the participant was conducted, this researcher read and re-read the data, highlighting and coding. Transcripts were then sent to Dr. McEwen for analysis. She too read the data multiple times to become immersed in the data. Codes were compared and dialogue done via email to discuss coding and the development of categories. This process was repeated for all participants. This researcher met in person with Dr. McEwen a final time to analyze data and the abstraction of domains was achieved.

Transferability

Transferability is the ability to apply findings of a study to “other population in different context” (Boswell & Cannon, 2014, p. 237) and is achieved by presenting a detailed description of the sample, data, and setting for readers to determine the transferability of the findings. This researcher provided a detailed description of the sample and setting. The data are also presented in great detail to provide an in-depth presentation of the context.

Dependability

Dependability is also known as auditability, which allows other researchers to follow an audit trail of the investigator's decisions and provides evidence allowing other researchers to reconstruct the investigator's efforts (Boswell & Cannon, 2014). This researcher carefully analyzed the data manually by highlighting and incorporating codes in the margins. The data were then reread several times to ensure proper abstraction of domains and categories. An audit trail was developed to ensure dependability was achieved. All email dialogue was also incorporated as part of the audit trial.

Confirmability

Confirmability is also known as neutrality and indicates that the data were analyzed without the influence of biases, assumptions or researcher perspectives. All analyzed data should be reviewed with study participant if opportunity presents and should also review with experts to reduce the researcher biases (Boswell & Cannon, 2014). This researcher kept adequate documentation of the analysis process. This researcher dialogued with Dr. McEwen regarding categories that emerged and modified accordingly to ensure that the categories were reflective of the participants' experiences and that personal biases and assumptions were mitigated.

Summary

In summary, a constructivist perspective was used for this study to elicit the experiences individuals of Mexican origin have of being newly informed of having hyperglycemic values exceeding the threshold of diabetes. This qualitative inquiry was conducted by means of in-depth semi-structured interviews and a descriptive demographic questionnaire done in the participants' preferred language. This chapter provides a discussion of how the integrity and privacy of the

participants was maintained throughout the study and the importance of participants' sense of security with sharing pertinent information for gaining a greater understanding of the phenomenon of interest. Furthermore, this chapter described the setting, sampling, recruitment, informed consent, data management, analysis utilized to elicit pertinent in-depth data to address the research aims of this study, and criteria for scientific rigor.

CHAPTER 4: FINDINGS AND RESULTS

The purpose of this chapter is to provide a comprehensive discussion of the study findings. The discussion includes demographic data and the findings elicited through an in-depth interview from eight participants of Mexican origin who were newly informed of having hyperglycemic values that exceed the threshold of diabetes. This discussion will elaborate on the categories and subcategories that emerged through the inductive data analysis process and the distribution of thematic units to appropriate categories.

Descriptive Data

A total of eight individuals consented to participate and successfully completed the study. Demographic information was obtained via the Descriptive Data Questionnaire which included: gender; age; language; birth place; how long lived in the United States; level of education; income; marital status; insurance; and family history of diabetes. The sample included two (25%) males and six (75%) females. Mean age was 47.1 years and age ranged from 32 to 64 years. All but one participant identified Spanish as their primary language. However, despite selecting Spanish as the primary language, one participant requested to have the interview conducted in English. She stated she preferred to speak in English when pertaining to medical information. Therefore, two interviews were conducted in English. The majority of participants (75%) were born in Mexico and 25% ($n=2$) were born in the United States. When asked how long they lived in the United States, the participants responded as follows: 6-10 years (12.5%); 11-20 years (37.5%), and >20 years (50%).

The levels of education were reported as follows: Elementary- 25% ($n=2$); Some High School-25% ($n=2$); High School Graduate-25% ($n=2$); and Some College-25% ($n=2$). The

majority (87.5%) of the participants reported an income of less than \$30,000, which included 37.5% ($n=3$) responding <\$5000. Only one participant reported to have an income >\$35,000. Marital status was reported as follows: single (12.5%); married (50%); widowed (12.5%); and having a partner (25%). Five (62.5%) of the participants reported not having insurance and all eight participants identified having a family history of diabetes. The participants in this study represented diversity within the sample and the data provided rich knowledge of what adults of Mexican origin have of being newly informed of having hyperglycemia that exceeds the threshold of diabetes according to ADA (2010).

Overview of Interviews

The qualitative content analysis process used to analyze data, which consisted of an iterative process and careful reading of the data, resulted in the identification of several code categories (Morgan, 1993). Qualitative content analysis is used when the existing knowledge about the phenomenon is limited or fragmented (Elo & Kyngas, 2008). Therefore, this method was used since there is little known about what adults of Mexican origin experience when they are newly informed of having elevated glucose levels in the diabetes range. As a result of the critical analysis of the data from the interviews, theoretical saturation was met after interviewing eight participants. The following discussions will provide greater detail about the results that were elicited from the participants through the in-depth, face-to-face interviews addressing the specific research aims. Three overarching domains were elicited through abstraction of the data analysis and will also be discussed further: 1) EM of High Blood Sugar 2) Response to Being Informed of High Blood Sugar 3) Facilitators & Barriers to Seeking Care.

Aim I: EM of High Blood Sugar

The purpose of aim one was to elicit the EM that adults of Mexican origin have of high blood sugar. The interview was guided by the questions from a modified version of Kleinman's explanatory model of illness (Appendix B). The overarching domain EM of High Blood Sugar was abstracted through the iterative review of the data. Four main categories supporting this domain emerged from the inductive process of qualitative content analysis: 1) Cause of Elevated Blood sugar; 2) High Blood Sugar Affects Me; 3) Diabetes Scares Me; and 4) Expected Results: Stay in Control. Subcategories were generated with data belonging to these main categories and will be discussed in further detail (Figure 1).

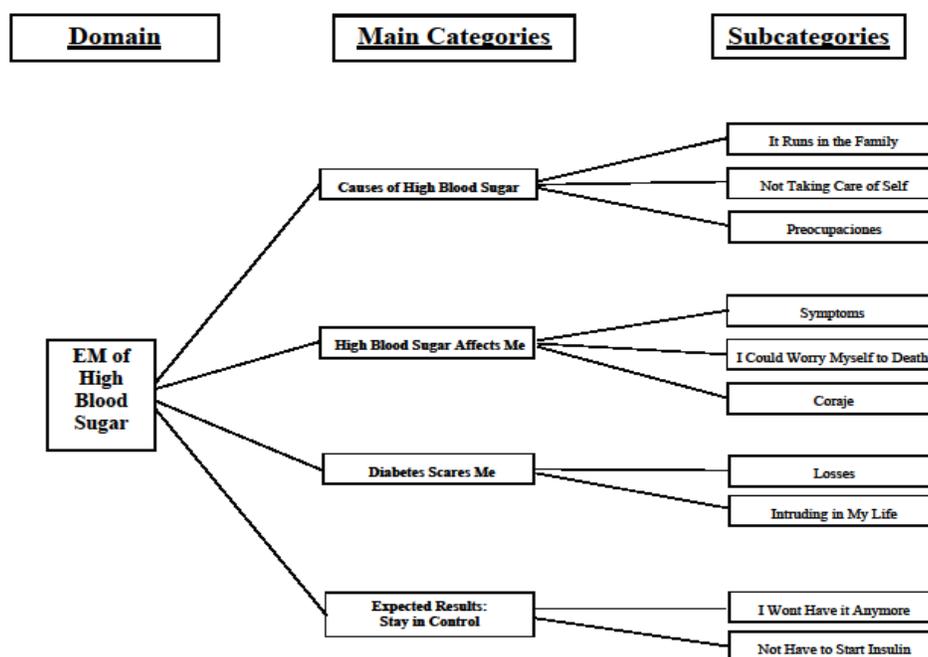


FIGURE 1. Aim I: Explore EM of High Blood Sugar

Cause of Elevated Blood Sugar

The first main category Cause of Elevated Blood Sugar emerged from the interviews. Through further interpretation of the data, three subcategories were generated: 1) It Runs in Family; 2) Not Taking Care of self; and 3) Preocupaciones.

It Runs in family. First, when the study participants were asked about the etiology of their elevated blood sugar, several of the study participants identified having a family history of diabetes as a cause. The emergent subcategory, It Runs in Family resulted from abstraction of the data. One participant noted, “I really, I just knew that, that I would probably have it because my whole family has it” (EM001: 205-206) and “...it runs in my family um my mom is a diabetic and so is my father um my brother and my sister” (EM001: 15-16). Another participant stated: “I have my family on both sides of the family have history of, of diabetes on both sides” (EM002: 18-19); Another expressed how she didn’t expect to get high blood sugar but felt it was due to her mother having it as well: “I did not expect it. I expected it, but at first I said it is because my mom has it...well, that is why I have it also” (EM004: 35-36). One participant also shared that several of her family members have diabetes:

“I have family almost the majority of them, everybody I think that has it [diabetes]. There are only two of my sisters that don’t have diabetes but from there, my sisters, my brothers, my nieces and nephews are diabetic.” (EM005: 87-90)

Some of the participants discussed the concept of It Runs in the Family in terms of being hereditary. One participant stated, “...it could be because my family is diabetic. I don’t know, it is hereditary, I don’t know if it is true that you can inherit it” (EM005: 26-31). Another participant said: “But again I repeat I wasn’t shock to find out that I got...I just I don’t know if its hereditary or not but um I seem to think that because they always ask does anybody in your

family... well I got it from both sides” (EM002: 278-280). Another participant expressed, “I think that there are two things, one that it can be hereditary and the other is on that one is not careful in their diet, in their daily life...I believe that these are the two reasons I acquired this disease” (EM004:30).

Other participants describe It Runs in the Family in terms of genes. One participant expressed: “...I’ve been brought up with and somehow um it’s just in my genes so it’s just in the genes so I don’t like it but it’s just something you have to deal with if you have to deal with it” (EM001: 97-98). Another participant said:

“I also think that’s in the genes, I mean if there’s a person with family that has diabetes one also tends to be a person that have a high levels of (pause) reacting to the same disease. I mean if my grandmother had it, if my aunt had it there is a high chance that I will have it too.” (EM006: 30-32)

Not taking care of self. The second subcategory for the etiology of high blood sugar was identified as Not Taking Care of Self. The participants discussed this category in terms of poor health behaviors such as poor eating habits and lack of physical activity. They further elaborated on the influence of the culture on these behaviors.

One participant explained: “Well, I think that all that I want to stop doing is what has caused it [diabetes]. Not taking care of myself, eating what I’m not supposed to eat, too many carbohydrates, not exercising, not walking” (EM003: 30-32). Another participant responded:

“Poor diet, no exercising, I think stress influences a lot too, stress. Um, the, for example when I go shopping at the store that is close, I drive ... everybody drives everywhere and I think that is what has caused us to get diabetes.” (EM005: 21-24)

The majority of the participants for this study elaborated on the influence of culture on their poor eating habits: One participant stated: “...being a Mexican...there are certain foods you eat that are probably not good for you” (EM001: 261-262). Another participant shared: “I’m of

Mexican origin and the bad habits were learned since I was a little girl because we really liked fried foods...” (EM006: 21-22). She further explained:

“Well, sometimes yes, I feel like I need to stop my diet, why? Because our Mexican food is very delicious I don’t eat the same amounts but for example, I don’t stop tasting it...because it’s something that I like. Food is my addiction, I mean there are people that have alcohol or there are people that have drugs...my food is the addiction, my only addiction is to eat deliciously!” (EM006:131-138)

Another participant shared:

“I feel that it has to do a lot with our culture. We were brought up that way at a very young age. Our children, if we do it...I’ve done it to my children” (EM002: 68-69) and “...my eating habits come from being newborn, I mean that’s the way I was raised. Uh a lot of it has to do, especially I think with the Hispanic culture.” (EM002: 590-593)

She further explained how culture has influenced her dietary habits:

“I have a lot of bad eating habits I guess, I don’t know and that’s from the Hispanic culture las tortillas and you’re, you’re taught that at a very young age.” (EM002: 45-47) and “...tamales which are coming into right now, the Christmas. I mean that’s deadly...The holidays are hard. And we’re hitting Thanksgiving and then...Christmas and then the New Year so we hit the menudo and more tamales. The, the Mexicanos you know, so that’s heavy...that’s fatty [food].” (EM002: 54-65)

Preocupaciones (worries). The term *preocupación* is a Spanish term used to express “mental absorption,” “concern,” “worry” and “anxiety” (Vox, 1995, p. 1264). The subcategory *preocupaciones* emerged when the participants were asked what caused their high blood sugar. The study participants identified *preocupaciones* as a causal factor of high blood sugar. One participant expressed that he thought his high blood sugar was due to “alguna preocupación” [a concern] (EM007:27) and further elaborated on losing his house due to a decrease in his work. He expressed that he felt this precipitated his high blood sugar; “I think yes, from there it [diabetes] started, like...the concerns [las preocupaciones] and all that” (EM007:33) and

explained he always had concerns: “Well not many problems, but always, always concerns [preocupaciones] stressed out, I say yes.” (EM007:135).

The term *susto* is used in a similar context as *preocupacion*. It is described as “a scare, stress, worry, or a strong emotion (either happy or sad)...” (Jezewski & Poss, p. 846). One participant stated *susto* and *preocupacion* were causal factors of her high blood sugar: “They say it is because of a fright [*susto*] or due to concerns [*preocupaciones*], I think that’s what they say” (EM008: 23-24). Another participant said:

“Well, it appeared first when I was pregnant 10 years ago, I don’t know the reason for it, ... it went away again then from there everything came out normal and one day after a scare [*susto*], I say, I started having diarrhea and with um, with my stomach growling a lot and from then it [*diabetes*] didn’t go away anymore.” (EM005: 26-31)

High Blood Sugar Affects Me

In the continued effort to elicit the EM of high blood sugar of individuals of Mexican origin who were newly informed of having high blood sugar, a second main category of High Blood Sugar Affects Me emerged. This category consists of three subcategories: 1) Symptoms; 2) I Could Worry Myself to Death; and 3) Coraje.

Symptoms. When eliciting the EM of high blood sugar, some of the questions asked included: 1) “What do you think high blood sugar does to you?” and 2) “What is the main problem high blood sugar has caused for you?” Several codes emerged incorporating various symptoms. The emergent subcategory Symptoms supports the main category High Blood Sugar Affects Me.

Several study participants discussed how they experienced worsening of their eye sight and headaches. One example of this was the response from a participant: “... I learned that it, it

does damage to your eyes” (001: 26) and “...I think my eye sight has gotten a little bit worse” (EM001: 66). One participant explained: “I have seen and talked to people that are losing their eyesight” (EM004: 88). Another participant shared: “Um, headache, all that...even my eyes (EM007:38). Another responded, “Well, I think it affects my sight the most, because I already started wearing glasses” (EM008: 26-27). One participant also shared “Another thing is my sight...my sight is like very tired, my sight is very fatigued” (EM005: 67-68).

Several participants identified organ damage, increase thirst, dry lips, dizziness, fatigue and no desire to do anything as symptoms they experienced with their high blood sugar. An example includes the response of a participant: “that it affects your heart sometimes” (EM001: 27) and continued with “... just some of your organs so I just don’t want to uh have any damage if I can prevent that, you know...(001: 28-29). Another participant said: “Well, it affects me because there are times where I feel extremely dizzy all of the sudden, I don’t have any energy and ummm...well, I don’t feel in the mood to do anything” (EM004: 34-35) and she further elaborated: “Uh, it is to feel tired, suddenly...not having the desire to do umm...anything. Eh, I think that when my sugar level is high, that, I feel that I am ... I don’t do things like myself” (EM004: 69-71). Another participant shared: “A lot of things change in your body um, the way you feel because I don’t feel the same as before...I don’t have the same energy that I had before, the same strength that I had before” (EM005:74-76). Another participant said: “It affects me because like I tell you, I feel my mouth very dry and sometimes I feel very weak” (EM007: 35). Another example includes a participant response: “Well my mouth gets very dry, water. I need to drink water” (EM008: 29).

I could worry myself to death. Several of the participants stated they experienced excessive worrying as a result of having high blood sugar. Therefore, “I Could Worry Myself to Death” is a second subcategory supporting the category of High Blood Sugar Affects Me. This subcategory was elicited from interviews indicating something their elevated blood sugar has caused them. An example includes the response of a participant:

“Well, I’m just saying that you know that it’s something you have to worry about. You know I, I’m not well, I don’t do well with stress. I’m one of those people that um you know, uh so I could worry myself to death because I have to do this and you know um I, I don’t like it, I wouldn’t like it.” (EM001: 78-82)

She further elaborates:

“... it’s something that’s, that’s lingering there. You know it’s something that you have to take care of. You know, on top of all the other things you have to do. You know and you wanna to keep a balance in your life but it... sometimes it could be hard. You know when you have to worry umm you have to store your stuff in the refrigerator or you have to buy your supplies or... um stuff like that. I don’t think I would like. But if I had to do it I guess I have to do it.” (EM001: 84-89)

Another participant expressed how she worried about being hospitalized due to the financial impact on her life: “I’ll worry about the bill later but you know the hospital bills scares me to death. And I cannot afford insurance...I cannot afford insurance.” (EM002: 523-524) and “...that scares me because of the bill afterwards. If I go to the hospital for anything you might as well bury me!” (EM002: 532-533).

Other participants shared that being informed of high blood sugar caused them to worry about their health and what could potentially happen. One participant stated: “It has change in the way that now I worry a little bit more about my health and I don’t do a lot of activities, before I didn’t...give it any importance and now, no I mean, I became aware that it’s more important to take care of your health, exercise and spend time with your family because...you

never know what can happen in the future” (EM006: 166-170). Another participant said: “Now I am going to think that there is something wrong with me and if I don’t take care of myself something worse could happen and well, that’s where I am. (003: 69-70) and “...I did have problems. Well not many problems, but always, always concerns, stressed out...” (003:135-136).

Another participant shared that she worries about food she eats:

“...when I eat something that I shouldn’t have then I get worried and it is then when I check it [blood sugar] but I already know that it will be a little [elevated] because I ate, like if I went to a party and I overate.” (EM005: 065-167)

High blood sugar also caused a participant to worry about her family. She said: “That my children will inherit that [diabetes]. That is what worries me the most” (EM003: 61) and she also explained:

“Well, ummm...like, the worrying...to think about...that something will happen to me or, or to think that my family had it and two or three members of my family members passed away due to diabetes. And this does make me think a little.” (EM003: 52-54)

One participant shared that having high blood sugar caused her to worry about not having optimal health and this was discussed in terms of not being able to care for her family due to her high blood sugar by one participant:

“What worries me the most is to not have optimal health to take care of my family and my children... I would like to have a good quality life... not being able to do certain activities because my health doesn’t allow me, it isn’t my intention to be a burden.” (EM006: 85-90)

Participants also expressed worrying about delayed healing and discussed this in the context of amputations and cuts. One participant shared: “our levels of sugar are so high that if we cut ourselves or something, we have to take extra precautions because they won’t heal quickly” (EM006: 55-56). Another participant responded:

“my grandfather on my dad’s side of the family had both of his legs amputated and my grandmother had one leg amputated on my mom’s side. Uh all due to the diabetes and a cut and it turned to gangrene and it spreads because the diabetes doesn’t allow it to heal properly, quickly enough.” (EM002: 91-95)

Another participant said; “Other things that have affected me a lot is that if I get a small cut it doesn’t heal as fast, my little cut doesn’t heal as fast” (EM005: 63-64) and further elaborated:

“I have heard them say, that um that they cut off their feet or a finger because they get gangrene, amputations and all that... I am trying that it doesn’t happen to me, I’m really taking care of myself including where I step, I try to avoid stepping on rocks where there is little rocks, um I try to grab things when I’m doing the dishes, to take notice that I don’t stab myself, that I won’t cut myself...” (EM005: 81-85)

Coraje. The concept of Coraje is a subcategory that emerged throughout the analysis of the interviews and supports the main category High Blood Sugar Affects Me. Coraje is defined as an emotion such as anger or rage that is associated with prolonged traumatic or stressful events (Dolan & Lee, 2013; Mendenhall et al., 2010). Participants expressed that having high blood sugar precipitated Coraje. One participant shared:

“Yes, yes they say here that I have changed too, especially my family, that I get a bad temper for every little thing and they say it is due to diabetes...yes I get mad easier I get mad easier...” (EM008:175-179) and “...you get a bad temper, that happens.” (EM008:173)

Another participant shared that high blood sugar has caused her “...to get angry a lot, it is an anger” (EM005: 58) and further explained: “I don’t have the patience that I could have before, I can’t anymore, I complain about cleaning” (EM005: 147-148). These data support that the subcategory Coraje belongs to the main category High Blood Sugar Affects Me.

Another participant expressed that having high blood sugar has caused her to become angry with herself and others: “...this is what upsets me with myself. I’ve seen it I’ve lost my

mother, my father, my husband I'm going through it with my aunt right now and yet I'll sit down and grab a tortilla and salt and my grandchildren and my daughter my brother will scold me... when I'm gonna eat. 'Oh take it easy with the salt, put the salt down' and...they anger me" (EM002:95-100). She further elaborated: "again if somebody's watching me [eat] and bring it to my attention I get upset and I don't do it but hey they shouldn't have to bring it to my attention I know...I'm doing it to myself" (EM002:373-375).

Diabetes Scares Me

When discussing their experience of having high blood sugar, several of the participants expressed some degree of fear. The thematic units elicited formed the third main category of Diabetes Scares Me. An example of a participant's response that contributed to the generation of this category includes: "Well I am afraid that [diabetes] will affect me in many ways. I have heard many things about diabetes and that scares me" (EM003: 43-44). Two emergent subcategories were abstracted from the data to support the main category: 1) Losses and 2) Intruding in My Life.

Losses. Some participants discussed how high blood sugar scares them in context of Losses. They expressed fearing loss of 1) family due to death and 2) body function or parts. Loss due to death was expressed by one participant as "And I've seen it, I've lived it. My husband got a kidney transplant. Lost my mom to diabetes, my dad... my Tia now" (002: 199-200). Another participant also said: "I'm going to die!...my sister died when she was 26 years old due to cancer and my aunt died young at 46 years old, my grandmother died at 26 years old" (EM006: 159).

Another participant shared:

"Well, ummm...like, the worrying...to think about...that something will happen to me or, or to think that my family had it [diabetes] and two or three members of

my family members passed away due to diabetes. And this does make me think a little.” (EM003: 52-54)

A participant expressed feared of not being able to say goodbye to family prior to dying: “Well, yes to die... without saying good bye, that’s bad” (EM007: 55-56). Fear of leaving their children motherless was expressed by another participant: “Well, it worries me to become ill and leave my children without their mother...” (EM003: 58-59). Another participant shared that he feared he was going to die when he was informed of having high blood sugar:

“I thought I was going to die... yes, yes I thought that was very bad, I didn’t know a lot about diabetes. I had to read and read a lot to, yes because, there were days that ... you even lose your appetite from thinking about diabetes.” (EM008: 68-70)

Loss of body function or parts was expressed by one participant by explaining how she worries about being “...in a condition where I can’t help them, because my children are too small still (EM006: 96) and “Having to get an amputation or to lose my sight or not being able to do certain activities because my health doesn’t allow me...it isn’t my intention to be a burden” (EM006:89-90).

Another participant said:

“Um, it worries me well, the things that I have found out is that eh there is brain death, there is um paralysis because of diabetes, um diabetic fainting. That’s what I have heard, I have heard them say, that um that they cut off their feet or a finger because they get gangrene, amputations and all that.” (EM005: 80-82)

Another participant stated that she was hopeful that:

“...I’m not gonna damage any of my organs you know or prevent me from um living you know normally. You know I sure don’t want to lose my eye sight. Umm I sure don’t want to have any problems with my heart or something. So, so that’s what I’m hoping that I can stay balanced in my body functions.” (EM001: 60-63)

Intruding in my life. The study participants also elaborated on how high blood sugar scares them in regards to the inconvenience it imposes on their lifestyle and they further explained how experiencing high blood sugar is intrusive in their lives. One participant shared that she felt “very worried ... mortified” (EM001: 65) when she found about having high blood sugar and explained: “...when you know something is wrong, your life changes, it changes because you know you have to make drastic changes immediately...If you want to take care of yourself and be well, then you have to change your life” (EM001: 73-75). Another participant said:

“You know just, I think the fear of it damaging, you know, making my life uh inconvenient and having to deal with it and just intruding in my life style. I don’t think I would like that, you know, I would have to stop and take a shot, or you know... I don’t think I would like that.” (EM001: 72-75).

She further explains: “...your body’s changing and you know, kinda like a wakeup call that you need to make changes in yourself. It’s not like it used to be.” (EM001: 111-112).

One participant expressed being “...afraid of finding out” (EM 007: 138) about having high blood sugar and how his activity level has decrease due to this: “I tell you ...about diabetes that I feel very weak, um so there are times that sometimes I don’t even feel with the strength to get up. I get home and I sit and I don’t even want to stand up again, as if my bones hurt...” (EM007:131-133).

One participant explained how high blood sugar intrudes in her busy life:

“I’ve tried [exercising] a day or two and then I get busy running around with things I have to do and I don’t make the time. And I could make time if you set the time aside but it’s easier to just move on.” (EM002: 378-380)

She also discussed how she now has to monitor her diet and blood glucose levels:

“...Now what? Am I gonna... have a diet or something that I am supposed to follow. I expected

a printout you know saying these are the things you should stay away from and these are the things that are good for you or something to that manner” (EM002: 309-313) and explained that she is “...trying to cut back a lil’ bit here and there [food]” (EM002: 367-368). This participant also explained how checking her blood glucose four times a day intruding in her life:

“I used to do it before breakfast, after breakfast, before lunch, after lunch and midmorning snack and right before I go to bed... Well your fingers get sore and it’s too much and the strips are too expensive so I’ll do it in the morning on an empty stomach just to find out where I’m at and then maybe, maybe three or four o’clock in the afternoon and then I should do it again after dinner ... and then we’re off showing properties or um I’m shopping or I’m cleaning or whatever I forget I don’t do it before I go to bed...” (EM002: 386-392)

Expected Results: Stay in Control

Study participants were asked what results they expected from the treatments they received for their high blood sugar. The main category, Expected Results: Stay in Control, was inductively generated from the participant interviews. The two subcategories that emerged included: 1) I Won’t Have it Anymore (Cured) and 2) Not Have to Start Insulin.

I won’t have it anymore: Cured. The subcategory of I Won’t Have it Anymore: Cured emerged from the interviews. The study participants expressed that they felt their high blood sugar would go away if they followed the recommendations for DM management. One participant said: “Well, if I take care of myself I don’t think it [diabetes] will be for a long time. I am going to try to take care of myself so it’s not permanent or for a long time” (EM003: 19-20).

When asked if their high blood sugar would have a long or short course, one study participant responded, “If, if I continue the way I am right now, I think short term” (EM005: 19). Another participant said: “Well I hope it’s a short course. I don’t want it to continue. I’d like to do some type of regimen like exercise but it’s just so hard. You know. And then I have knee

replacements so it's not like I can just go out and, and you know...run or do strenuous exercise to lose weight. I'd have to more so do it with my food I believe" (EM001: 40-43): Another participant stated: "Well, no. As long as I control it [high blood sugar] I'm fine, as long as I have a diet. ... I mean it [blood sugar] gets higher and lower a little bit but no, because I am eating what I'm supposed to be eating" (EM008: 77-79).

Another participant shared: "Well, I am not sure exactly how severe it is, I think eh...I'm starting, I'm starting and I feel...good. I don't feel that I have a really high level [blood sugar]" (EM004:13-14).

Not have to start insulin. The subcategory, Not Have to Start Insulin, emerged from the data supporting the main category Expected Results: Stay in Control. Participants stated that they were hopeful that their lifestyle modifications would prevent them from having insulin prescribe for them. One participant shared: "I would not like uh you know injections or anything like that. I don't, I don't, I would not like it so before I even got to that point I would try um as much as I could to prevent that [insulin]" (EM001: 51-53).

Another participant expressed that her high blood sugar was serious yet since she had not started taking insulin: "...it [diabetes] isn't as serious because I'm not using insulin yet, I'm controlling it with medication" (EM006: 17-18) and "Well, the doctor told me already that I have to control the levels of sugar with medication and a good diet for life" (EM006: 17-18).

One participant expressed that she was hopeful in controlling her high blood sugar so she would not need to starting insulin as she felt that would result in the need for dialysis:

"Well, hoping to balance myself out...to stay off the.... able to control my diabetes and not have to go into, uh, insulin, because I know that if I don't control it I'll be headed to insulin because if I go to insulin I'm going to end up on dialysis." (EM002: 196-199)

Another participant shared that he was prescribed insulin when he was hospitalized but longer needed it: "...they gave me insulin and...I left from there doing very well. They gave me for a month, no not anymore, they only gave it to me for like two or three days and then, I didn't need it anymore" (EM008: 54-58). He further expressed: "...as long as I control it I'm fine, as long as I have a diet...I am eating what I'm supposed to be eating" (EM008:77-79).

Aim II: Response to Being Informed of High Blood Sugar

The overall emergent domain, Response to Being Informed of High Blood Sugar, was abstracted from analyzing how participants responded to being informed of having high blood sugar. Three main categories emerged supporting this domain include: 1) Initial and Subsequent Response to High Blood Sugar; 2) Taking Control of High Blood Sugar; and 3) Challenges to Taking Control (Figure 2). It was identified that the participants responded to being informed in a temporal order and categories happened in a cyclic manner.

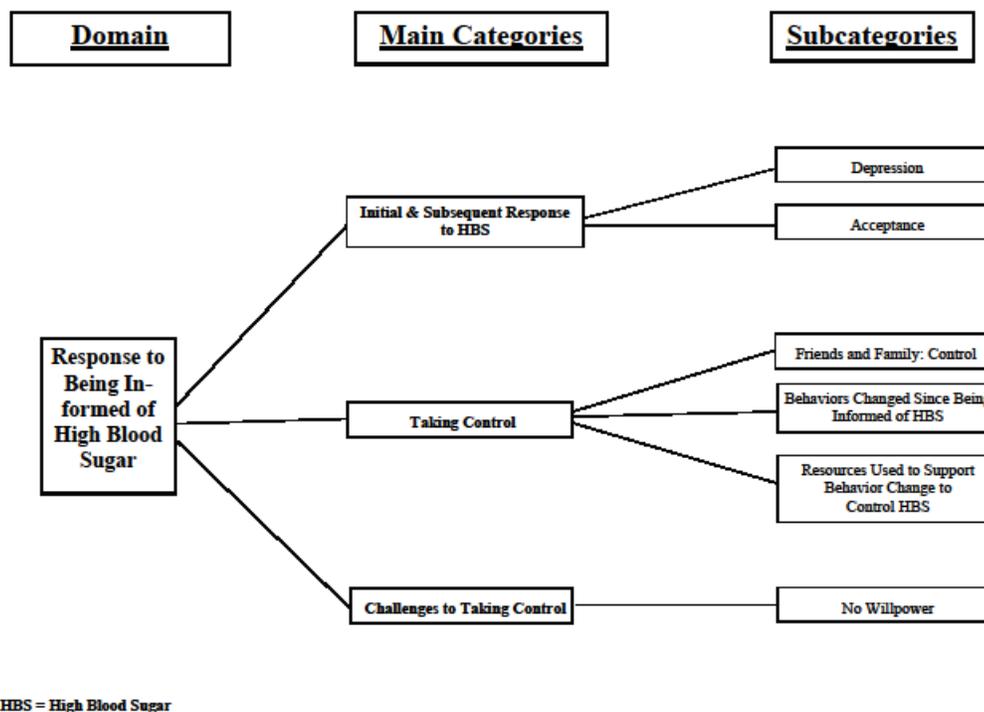


FIGURE 2. Aim II: Explore Response to Being Informed of High Blood Sugar

Initial and Subsequent Response to High Blood Sugar

A main category that emerged through the analysis of the data is Initial and Subsequent Response to High Blood Sugar. One participant shared: “You know I have a brother that’s on insulin and my sister takes pills so I just assumed, oh ‘it’s coming sooner or later” (EM001: 206-207). Two subcategories were generated as data and were further analyzed and grouped to support the category Initial and Subsequent Response to High Blood Sugar. The two subcategories include: 1) Depression and 2) Acceptance.

Depression. Depression is a subcategory that was abstracted from the participant interviews that support the main category Initial and Subsequent Response to High Blood Sugar. Several of the participants expressed that they experienced depression when they were initially informed of having high blood sugar. One participant shared:

“At the beginning I didn’t believe it...but I consulted two doctors anyways. I mean the first one didn’t convince me. I went with the second one and told me the same thing so I understood that I did have the problem and then I became like depressed because I say that my children are too small still and the need me so I want to be there for my children.” (EM006: 92-95)

Another participant explained:

“At that moment, I said ‘How? It is not true’... but later you start to accept it. But yes, you feel your spirit down and tell yourself that you won’t be able to do this...I won’t be able to eat this or that. You feel depressed...depressed.” (EM004:94-97)

Another participant shared that when he initially found out about his high blood sugar: “I got really depressed. I got really sad...” (EM007: 58).

Acceptance. A second subcategory category supporting the main category, Initial and Subsequent Response to High Blood Sugar, is Acceptance. After experiencing an initially negative response of being newly informed of having high blood sugars, the study participants shifted to a state of acceptance. One participant expressed, “Well, at first I felt sad but I have accepted it now and I know that with my care, ...with loving myself um, with my diet and all I am going to be...normal like other people” (EM005: 101-102).

Another participant explained how you have to accept high blood sugar since it is forever:

“Well, I think it's hard to deal with it at the beginning but you need to keep learning little by little how to live a normal life because this is a disease that you will have forever. It is not like a cold that goes away tomorrow. You have to learn

how to live with it so it won't affect others and to help others avoid going through the same thing as you.” (EM004: 297-301)

She further explained:

“...no it [being informed] has not affected me because I already had a little notion about things, and I told to myself that I probably could [get diabetes] because my mom, right? But no, it didn't affect me as much. No, because just the first days one feels...‘why, why me?’” (EM004:136-139)

Another participant expressed that after the initial shock of being informed of having high blood sugar, she is now in a state of: “Tranquility because before I use to feel very stressed out or with more problems and now I feel more tranquil. I have more peace. I feel more in reality” (EM003: 125-128).

Another study participant elaborated on acceptance by stating, “Well I've accepted the fact but I'm just...trying to uh cut back on my sugars...” (EM001: 103-108) and “Well, it [life] hasn't really changed. You just accept the fact you know and just try to do uh something for it to, to alleviate the problem. That's it.” (EM001: 122-123)

Taking Control of High Blood Sugar

A second main category, Taking Control of High Blood Sugar, supporting the overarching domain Response to Being Informed of High Blood Sugar emerged from the inductive process of analyzing the data. Prior to being informed of having high blood sugar, the participants expressed that they really never paid attention to it [diabetes] or were never concerned they would someday have it. However, once they were informed of having elevated glucose they responded by attempting to Take Control. One study participant stated, “No, no even if I knew that my mom had it and I knew that, that my mom's brothers, two people, two or three people died from diabetes, with diabetes and in spite of this I did not care, I did not

acknowledge it, I did not pay attention to taking care of myself...It was until the moment that you went to do the study, it was that moment that I said enough, I have to take care of myself, God forbid...and something could happen to me. And that was a lot of help for me” (EM003: 185-190). The data for Taking Control of High Blood Sugar were further grouped into three subcategories, which include: 1) Friends and Family: Control; 2) Behaviors Changed Since Being Informed of High Blood Sugar; and 3) Resources Used to Support Behavior Change to Control High Blood Sugar. Data were further analyzed and grouped into appropriate categories.

Friends and family: Control. The subcategory Friends and Family: Control was generated from the analysis of data. Throughout the interviews the participants expressed how family and friends monitored their lifestyle behaviors and would either encourage study participants to make healthier choices or would sometimes demand participants to make healthier choices. Therefore, the category of Taking Control of High Blood Sugar was supported by the concepts of Enable Participants to Take Control and Assume Control.

From the data analysis process, Enable Participants to Take Control was identified as a concept used to discuss Friends and Family: Control. Family members and friends encourage the participants to take control of their high blood sugar: One participant shared, “Yes, yes she [mom] has her levels controlled. She does take medication, so that is why she tells me 'you have to do this so you won't be...like me. That takes all kinds of pills'. So she tells me 'you need to control your sugar levels so you won't get to that point. So control it like how the doctor is telling you to, now that you control it with diet and exercise only” (EM004: 290-294).

Another participant stated, “...when she [daughter] found out she was ... concerned. And she wants to make sure she calls me every month, ‘it’s time to order your meds and don’t forget

your meds' and she's right there so I'm real blessed with my daughter" (EM002: 301) and "my daughter I think in a sense of reminding me to get my meds that it's time to go get 'em and go see the doctor. Uh she's right there" (EM002: 484).

Participants of the study express that the family members and friends tend to monitor the participant's lifestyle behaviors and try to assume control over them. One participant shared how several family members have tried to assume control of her high blood sugars: "Yes, she [daughter] tries to. If there is something I am going to get, she tells me 'you can only get a little bit' or 'you cannot take too much of that'. They give my mom less, like at birthday parties my mom gets smaller portions [cake]; yes, she [daughter] is the one that watches me the most, more than my husband does" (EM004: 230-233). She also explains: "...he [husband] tries to help me by telling me 'you cannot do this' or 'you have to eat more like this' (EM004:121-122) and "Well, them two more than anything; my friends also because they try to take care of me in the aspect of, 'don't eat this, don't eat that' but more importantly my mom and my daughter" (EM004: 235-237).

Another participant shared, "... they anger me but they don't let me...my girlfriends all of 'em. They're all watching me so when I'm around them I watch and when I'm alone I get the salt shaker (smirking while acting like using salt shaker) and go crazy" (EM002: 99-102) and "yet I'll sit down and grab a tortilla and salt and my, my, my grandchildren and my daughter my brother will scold me..."(EM002: 97-104).

Behaviors Changed Since Being Informed of High Blood Sugar. In an attempt to elicit how the participants responded to being informed of having high blood sugar, one of the questions asked during the interview was "What health behaviors have you changed, if any, since

receiving your blood sugar result?” (Appendix B). Through this discussion, the subcategory of Behaviors Changed Since Being Informed of High Blood Sugar emerged and was discussed in contexts of Diet; Exercise; Monitoring Blood Sugar; and Medication.

Diet. All participants elaborated on the importance of diet in managing their high blood sugars. One participant stated: “Well, what I’m doing I hope is helping. You know, I believe just changing my diet, that maybe exercising a lil’ bit I can’t do nothing strenuous but I’ve attempted some yoga in hopes that it would help me some and um just, just really watching my diet” (EM001: 131-135). She also explained:

“Oh I just listened to my body. I try not to over eat. I really do listen you know I just eat what I think is, is appropriate and I just try not to over eat. I think that could be a big problem of...you take in too much and then your body it’s hard for it to process it. That’s what I’m thinking so I try to just to just to limit my intake of foods and the type of foods.” (EM001: 152-160)

Another participant expressed that the only change he made was his diet: “... the only thing is that I don’t eat the same way, the only thing that has changed is food, I used to eat a lot ... a lot of flour, she used to make tortillas very often ... so, not anymore, maybe only once a month” (EM008: 88-90). Another participant shared:

“Yes, it has changed but um...it changed because of the disease but it changed for the best because now I’m watching my diet and that is for my own ... so I can be better. So now, now it isn’t the same, the diet that I have now to the one I had before, that is, yes it has changed but for me, for my own good.” (EM005:136-139)

However, several of the other participants elaborated on the importance of both diet and exercise: One participant said: “Um, well, I was told that it was basically a diet and exercise and that was what I had to start with” (EM004:50-51). Another participant shared: “Yes, the diet has

helped me a lot, a lot. I believe a diet is the most important thing. I don't know if it is better than exercise or if you have to do both" (EM008:186-187).

Exercise. Several of the participants stated their lifestyle modification incorporated exercise and some expressed that exercising was a new behavior introduced since being informed of their high blood sugar: One participant responded: "Well, um the, the changes since I started with diabetes, to be a diabetic, well my change was exercise. I started exercising because I hadn't exercise for 10 years" (EM005: 161-162). Another participant said: "For example, I didn't like to exercise before and now I teach an aerobics class and a zumba one ... and I walk in the park with the ladies from my community, because I made a flyer inviting them to walk one or two times a week around the park" (EM006: 202-220).

Monitoring blood sugar. Several study participants mentioned that they monitor their blood sugar as a behavior change for the management of high blood sugar. An example includes the response of one participant: "Fasting, I usually try to do it fasting in the morning before having a meal; before breakfast, I try to do it at that time" (EM004:178-179). Another participant stated she does faithfully monitor her blood sugar but the cost of the strips is a barrier for her so she has limited the number of times she checks her levels: "Yes, I do that [monitor sugars]. I don't do it four times a day anymore. I used to do it before breakfast after breakfast before lunch after lunch and midmorning snack and right before I go to bed. And I would mark it down so I could see where I was at...well your fingers get sore and it's too much and the strips are too expensive..." (EM002: 385). Another participant explained that he no longer monitors his blood sugar due to not experiencing symptoms: "No, I was checking it but I have like a year that I don't do it because I haven't felt like that [when he was hospitalized]..." (EM008: 107-108).

One participant expressed that the regimen included monitoring her blood sugar in conjunction with diet and exercise:

“I also started doing my diet, with medication and to check my sugar level, nothing more but since now it isn’t, I don’t have my sugar high then I don’t check it every day, because I know, I know when I’m controlling it on my own. Do you understand? But when, like when I eat something that I shouldn’t have ... then I get worried and it is then when I check it but I already know that it will be a little because I ate, like if I went to a party and I overate. You understand? Um, but everything’s normal, very normal.” (EM005: 162-167)

Medication. Several of the participants identified medication as a treatment for diabetes but three had not been prescribed medications. One stopped taking medication because of his understanding of not needing it any more following his discharge from the hospital, and he claimed he felt better:

“I didn’t go because the doctor at the hospital told me that if I continued feeling bad to go to my doctor or, or try this medicine for a month. He gave me medicine for a month and told me if you feel you need more go with your doctor or something and if not, well, stay like that.” (EM008: 154-156)

Furthermore, some of the study participants mentioned that the doctors initially did not place them on medications. An example is the response of a participant:

“Well, at the beginning, well, it was high [blood sugar]. She [doctor] told me that, that it wasn’t too high, that well, just to take care of myself. She then ordered a diet, exercise, everything else. Well that was what the doctor ordered me to do at the beginning. She told me that she wasn’t going to give me medication, that I did not need it because it was not that high.” (EM003: 146-149).

Resources Used to Support Behavior Change to Control High Blood Sugar. Another subcategory supporting Taking Control of High Blood Sugar, emerged from the data analysis is Resources Used to Support Behavior Change to Control High Blood Sugar. During the interviews, the study participants provided information regarding various

resources that they have utilized for managing their high blood sugar. The most commonly mentioned resources that were extracted from the participants' responses were: 1) Doctors; 2) Education Programs; 3) Internet; and 4) Home Remedies.

Doctors. The majority of the participants expressed that they accessed care from a health care provider/doctor. Visits were done in clinics and/or doctor's offices and consisted of primary care practitioners to an endocrinologist. One participant stated: "I see an endocrinologist and uh I told him too but he, he did the same he ordered a blood work for me also" (EM001:216-217).

Another participant discussed the positive aspects of the doctor:

"...the doctor has offered a lot of help and she pays attention to my case. Even due to this they installed a new resource where the doctor pays close attention to the patient when they are not attend their medical appointments or if they miss any or something. They are paying attention and they are calling them at home by phone to remind them." (EM006: 270-273)

Educational programs. Several study participants state they have utilized various education programs. One participant said: "Oh, yes well I have attended workshops..." (EM005:182). Another participant explained: "Um, I took some classes about nutrition at the school and others at the, the, what is it called? At the.... clinic to learn more about diabetes and nutrition" (EM006:238-239). Other educational materials identified by participants include: "...magazines, books, umm at the clinic they give you papers, pamphlets to help you do things that prevent that [diabetes]" (EM003: 153-154).

Internet. Several of the participants identified using the internet as a resource for their high blood sugar. The use of the Internet was mentioned for looking up recipes, for educational material, and to purchase glucose monitors: "Yes, when I needed to buy my little machine and

all, there is a program in the internet where they help a person of low income to buy their machines to check their...the glucose in the blood every day, free.” (EM006: 245-247)

Another participant said:

“I’m sure if I take myself serious and do it I’m bound to find something on the internet, whether it’s a recipe or ... maybe there is a group like I had mentioned. There might even be something and I don’t know but I think that that to me would be the best resource for me, If I could get into something like that.” (002:574-579)

Home remedies. Home Remedies emerged when discussing Resources Used to Support Behavior Change to Control High Blood Sugar. The participants of the current study mentioned the use of cinnamon, birdseeds and herbal teas to help lower their blood sugar. One participant stated: “I have seen home remedies. Um I also found out that drinking cinnamon, I would make my cinnamon teas too, that is also good, I also started taking the birdseed. I took it for some time” (EM005:182-184). Furthermore, one participant mentioned the concept to self-medicate when discussing Resources Used to Support Behavior Change to Control High Blood Sugar. She elaborated on this:

“The majority self-medicate because they don’t have the means to pay a doctor so they use alternative medicine a lot. My grandma told me to ‘drink this tea, to drink this little herb and it’s going to go away with that [tea]!’ So we base it a lot in faith not in reality, I mean ‘oh no, I’m drinking this juice and I’m going to get cured with it and I don’t need the medication!’” (EM006: 288-292).

Challenges to Taking Control

Through the abstraction process of analyzing data, the subcategory of Challenges to Taking Control and supports the overarching domain of Response to Being Informed of High Blood Sugar. Data extracted from a participant’s interview highly influenced the generation of this subcategory. Through the iterative process of analyzing the data the participants discussed the Challenges to Taking Control of their high blood sugar in terms of No Willpower.

No willpower. The subcategory of No Willpower emerged frequently throughout the interviews. The participants applied the concept directly to being unable to refrain from an unhealthy diet. The participants expressed how having no willpower contributed to eating foods they knew would contribute to their high blood sugar levels. One participant shared:

“I’ve tried to cut back instead of having dinner and having a Pepsi you know or Root beer ... a glass of ice cold water with a lil’ bit of lemon is a good sub....I really don’t like the taste of it but I’ll try the diet Pepsi or diet Dr. Pepper and then sometimes again I fall off because you taste it and it leaves a...it has a different taste to it and I thought I’d rather drink water you know but if I feel like a soda...a Pepsi now you know it’s not gonna kill me ‘cause I’ve been good so I can go off, uhuh, trying to do little things in moderation. I’m not real strict but I have tried to watch and then I slide because I figured a lil’ bit isn’t gonna kill me.” (450-459)

Another study participant stated, “...I don’t have the strength to say no. I love tortillas and the pastas and the, anything that is fatty and greasy and salty and that’s, that’s me” (EM002: 38-52) and “So it’s up to me. To me, now I know where I am and it’s up to me and again I repeat it’s my will power I’m stubborn and I don’t have the will power to say ‘no... I’m not gonna eat that.’ So it’s up to me” (EM002: 321-324).

One participant expressed the challenge she has had in changing her diet:

“...not medicine...only walking, drinking lots of water and avoiding sweet things that I like a lot...but I try. I don’t stop eating completely because it is impossible for me, but I do try to eat less. If I ate two before now, I only take one.” (EM004:53-56)

Another participant expressed that even though she knows certain foods are not healthy she was not going to give them up:

“Like I says, I try to eat as healthy as I can but I’m not gonna give up somethings I enjoy. You know I had chorizo this morning. ‘Is that healthy for me?’ I don’t know...I don’t care...I LIKE IT!...there are certain things that I will not give up...because I enjoy them but if there’s other things I can eliminate...you see I’m almost identifying my own remedy verses someone else telling me but then I’m

kinda stubborn about certain foods because I really enjoy ‘em.” (EM001: 227-233)

Despite knowing which foods should be eliminated or eaten in moderation, the study participants express their lack of will power say no. This results in Feeling Guilty as expressed by one participant: “And I feel, I feel...guilty but not strong enough to do something about it because my will, I don’t have any will power (EM002: 36) and she also stated that she was:

“disappointed with myself, that I’m not stronger as I had mentioned before to, to stay on a strict diet. I’ve cut back a lil’ bit of this and a lil’ bit of that but it’s not enough. And I know it and that’s, that makes me feel bad about myself but um not enough to get up and do it. See so what does it take to make me serious?” (EM002: 284-288)

The concept of ‘Love my food!’ emerged several times throughout the interviews. The majority of the participants express how their love for food and how their delicious cultural foods are a barrier to taking control of their high blood sugar. Another participant said: “...I’m kinda stubborn about certain foods because I really enjoy ‘em. ... I not gonna give them up ‘cause I’ll just limit my intake...if I can... (EM001) She also stated, “You know, and I love chocolate that’s another thing, I will not give up...I eat maybe three of four little pieces of chocolate every day.... I’m not gonna eliminate... you know stuff that I love...I’m just gonna ... eat less of it” (EM001). Therefore, loving their food is a barrier for these participants adhering to the recommended diet for controlling high blood sugar.

The following statement elicited from a participant’s interview summarized the domain of Taking Control and the cultural barriers of a healthy diet. One participant shared: “Well sometimes yes, I feel like I need to stop my diet, ‘why?’ because our Mexican food is very delicious. I don’t eat the same amounts but...I don’t stop tasting it...because it’s something that I like” (EM006: 131-138). She further elaborated:

“Well, I think you have to work in the problem of diabetes long term. Why? Because you have to modify that way you eat, because of the bad habits that you learn since being a little girl, for example, I’m of Mexican origin and the bad habits were learned since I was a little girl because we really liked fried foods and then, now that they found out I have diabetes because I only went to participate in a study and they told that my levels of sugar were really high. Then that’s when I started to be aware and to change my nutrition habits and now I’m taking medication and following a diet.” (EM006: 20-26)

Aim III: Facilitators and Barriers to Seeking Care

The purpose of aim three was to explore the facilitators, barriers, and gaps the participants experienced from being newly informed of high blood sugar. Throughout the process of analyzing the interviews, the domain Facilitators and Barriers to Seeking Care was abstracted. Three categories emerged from this process: 1) Facilitators to Seeking Care; 2) Barriers to Seeking Care; and 3) Gaps to Seeking Care (Figure 3).

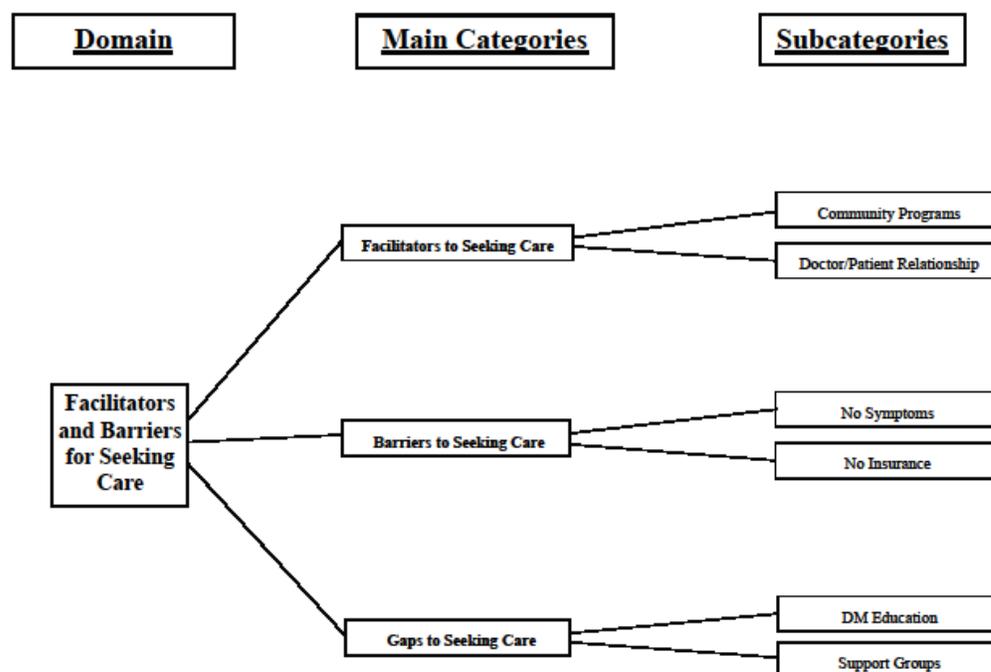


FIGURE 3. Aim III: Explore Experiences of Facilitators and Barriers to Seeking Care for High Blood Sugar

Facilitators to Seeking Care

The raw data of the interviews were carefully reviewed to extract the subcategory the participants identified as the Facilitators to Seeking Care. The subcategories that were elicited included: 1) Community Programs and 2) Doctor/Patient Relationship.

Community programs. Study participants shared that learning of community programs/clinics allowed them to access care for their high blood sugar: One participant stated: “...I was told that uh there was a program um Family, Family ...but anyways ... it’s assistance

and they have um doctors there for everything and dentists and they have a pharmacy and what not, so I was able to get in that because of my income, I'm retired and because of my income they accepted it..." (EM002: 417-430) and "...I finally got on a program with a lil' bit of assistance so that my office visits and my meds aren't as expensive cuz I don't have insurance and so with the doctor herself. And uh this doctor gave me meds" (EM002: 304-309). One participant shared information about services she received at a community clinic: "I went to that clinic...and they helped me for five months, five months, I attended these talks there about nutrition for diabetics. They tested me there and they checked my eyes. I had a dentist to see if I had any problems with my teeth" (EM005: 171-173). Another participant said: "I took some classes about nutrition at the school and others at the, what is it called? At the...clinic to learn more about diabetes and nutrition." (EM006: 238-239)

Doctor/Patient relationship. Doctor/Patient Relationship is a critical component of patient satisfaction with care, which could ultimately influence how a patient responds and/or seeks care to address their high blood sugar. A study participant expressed that her physician took the time to listen to her. She elaborated on the care he provided and that this was important to her and her family: "I love that doctor (PCP). He's been our family doctor for forever" (EM002: 433-435); "...I love him (PCP) but he's too far to go to. And then you sit and you talk to him and he listens and you can see the care in his eyes. Ah he's just a marvelous, marvelous doctor. I love him but he's too far, so I have to be practical." (EM002: 437-440)

The participants discussed how health care providers worked collaboratively with them to promote optimal health. One participant stated: "...the doctor has offered a lot of help and she pays attention to my case" (EM006: 270). Another participant expressed the importance of the

patient to become involved and educated in their disease management: "...you have to research, you have to do your own research, you know the doctors can only give you so much information." (EM001:137-138)

One participant shared how the doctor worked with her to her medication: "I don't have insurance and so with the doctor herself. And uh this doctor gave me meds" (EM002: 304-309) and how her collaborative efforts with her doctor seem be affective:

"I'm ready to go back and see the doctor to renew to make sure that where I'm at. I think that what she gots me on is working. You know uh she might wanna give me something a lil' stronger for my sugar but I don't think it's so much the med as it is me not staying you know...uptight with my food. I need to really watch that." (EM002:427-428)

Barriers to Seeking Care

As a result of the iterative data analysis process, the main category Barriers to Seeking Care emerged. Several thematic units were extracted identifying the barriers the study participants experienced while seeking health care for high blood sugar. Through further analysis of the data, three subcategories emerged which include: 1) No Symptoms and 2) No Insurance

No symptoms. No Symptoms was a concept that emerged from the interviews supporting Barriers to Seeking Care. One participant stated: "possibly I have had it for a while [diabetes] and just don't even realize it because I don't feel it, you don't feel it you know." (EM002: 267-269)

One participant identified not experience any symptoms. She further discussed the potential negative impact of not having symptoms and being unaware of having elevated blood sugar:

"Because I didn't feel bad, I didn't have any problem... I didn't have any of the normal symptoms that are being very thirsty, feeling dizzy, I mean there is a

series of symptoms that identifies people when they have diabetes; however, when I went, I went to participate in the study and at the study I was informed that my levels of sugar were very high, I went and visited the doctor and the doctor told me that indeed they were high and I was at the brink of going to a hospital ... of having a brain hemorrhage or having mayor consequences and that my diabetes was the worst kind because I didn't have any symptoms...so many times we don't have the symptoms but that doesn't mean that we don't have high sugar levels, so prevention is always very important.” (EM006:37-45)

No insurance. One participant stated: “It was hard at the beginning because I didn't have the resources or a health insurance and like I tell you it is very expensive” (EM006: 256-259). She expressed that having a low income made it hard “...to pay for the high cost of medications, I mean in my case it was more expensive to pay for my medication and to go to the doctor's appointments than it was to make my house payment” (EM006: 258-259). Another participant explained he did not seek care due to not having insurance and having a limited income: “...right now my work is very scarce...and that is also one of the reasons that I haven't gotten medical attention because all that is very expensive.” (EM007:119-121)

A participant shared that she does not have insurance and “there have been times that I don't make the appointment because I don't have the money to pay for the visit and that is what stops me (EM005: 232-233). Another participant stated: “Didn't have insurance so I have been trying to put it off and put it off and uh possibly I have had it for a while [diabetes].” (EM002: 267-268)

Another participant states she does not have insurance but often “...think about going here [United States] or to be a patient in a clinic here but it is easier to say well I'll go to Mexico and I will get help there” (EM004: 253-254). She explains that she does go to Mexico occasionally for her health care but care is limited to when she is able to go to Mexico.

Gaps to Seeking Care

During the interviews, the main category of Gaps to Seeking Care emerged as the study participants were asked “What resources do you need to help you take care of/control your blood sugar?” Supporting subcategories emerged from the data analysis which are: 1) DM Education and 2) Support Groups.

DM education. The participants provided several suggestions to resources they felt would be beneficial. One participant stated that it would be beneficial for providers to provide an orientation for individuals who are newly informed of having diabetes:

“Well I would like...to give them orientation... Tell them how they can get help or how they can try to help themselves doing that. Get information about everything, get information about diabetes and stop doing the things that we do.” (EM003: 198-201)

Another participant expressed that it would be beneficial to learn how to operate a computer access resources on-line: “for something in the future, maybe ... go to classes to learn how to run the computer or go to class maybe there should be a class where they teach you to prepare ... proper foods so that it looks appealing to you and you’re working with other people who have your problem and were there taking classes and lectures together and maybe between all of you.” (EM002: 149-154)

Participants provided suggestions for prevention education classes. One participant suggested incorporating diabetes prevention during pregnancy so mothers will be educated regarding proper nutrition and to help reduce the risk of diabetes and obesity: “We cook it, it’s there, he’s hefty, he’s a big boy. So you see what I’m saying if we prepared our foods healthier my grandson would be a lot healthier. So I think that’s what I’d like to share with you that might

be introduced to other people higher up and maybe in the future there would be you take the Lamaze you take the nutritional courses as well.” (EM002: 625-629)

Support group. One participant stated the importance of having family involved in the education provided for the management of high blood sugar: “So, for me it is important to help the children also not only us. That is, not only to inform yourself but the children also. Most of all, your partner because together you understand things. But it is not the same for children. They don’t understand the same. So that is why we should first talk to the children and explain the changes we will have as a family” (EM004). One participant expressed the need for a program to follow the same concept as a Weight Watchers program: “It could be like a weight watcher diabetic diet, something... You know that’s an idea. A weight watcher’s fer ...and they do have something like that but it cost a bunch of money. You know it cost a bunch of money and I don’t have a bunch of money to spend so I’ll come up with my own diet in hopes that um it helps me out.” (EM001: 299-306)

Summary

This chapter provided a comprehensive overview of the analysis of data from a demographic questionnaire and participant interviews. Through an inductive process of abstraction, domains, major categories and subcategories emerged to explain the phenomenon of this study. Three overarching domains emerged through the abstraction of the data describing the experiences adults of Mexican origin have of being newly informed of hyperglycemic levels in the range of diabetes: 1) EM of High Blood Sugar; 2) Response to Being Informed of High Blood Sugar; and 3) Facilitators and Barriers to Seeking Care. Four main categories; Causes of High Blood Sugar; 1) High Blood Sugar Affects Me; 2) Expected Results 3) Stay in Control; and

4) Diabetes Scares Me were generated to describe the EM of adults of Mexican origin who were newly informed of having elevated glucose levels in the diabetes range. An overarching domain emerged to describe the response participants had of being informed of having elevated glucose levels and the main categories were discussed: 1) Initial and Subsequent Response to High Blood Sugar; 2) Taking Control of High Blood Sugar; and 3) Challenges to Taking Control. A discussion regarding the emergent subcategories supporting the main categories of Barriers, Facilitators, and Gaps to Seeking care for high blood sugar was also discussed.

CHAPTER 5: DISCUSSION AND IMPLICATIONS

Diabetes is a rapidly growing global health care concern that is estimated to affect approximately 333 million individuals by 2025 (Diaz et al., 2010). Hispanics are the fastest growing and largest population in the United States and are disproportionately affected by diabetes. Individuals of Mexican origin are the largest subpopulation of Hispanics and have a 13.3% prevalence of diabetes (CDC, 2011). Mexicans with diabetes have a higher mortality risk than non-Hispanic White counterparts (Hunt et al., 2011). There is urgency for culturally relevant interventions promoting healthy lifestyle behaviors to improve health outcomes for adults of Mexican origin with diabetes. This chapter discusses the findings of this descriptive qualitative study in relation to the research questions. Also included is a discussion regarding the implications for nursing practice. The strengths and limitations of the study and recommendations for future research are also discussed.

Discussion Related to the Research Questions

This section includes a detailed discussion regarding the domains, main categories, subcategories, and themes that emerged from the data analysis. The following three research aims guided the inquiry for this qualitative study: 1) Explore the EM that adults of Mexican origin have of high blood sugar, 2) Explore the response participants have to being informed of having high blood sugar, and 3) Explore participants' experiences of facilitators and barriers to seeking care for high blood sugar. The three overarching domains describing the experiences adults of Mexican origin have of being newly informed of having high blood glucose in the range of diabetes are: 1) EM of High Blood Sugar; 2) Response to Being Informed of High Blood Sugar; and 3) Facilitators and Barriers to Seeking Care.

Aim 1: Explore the EM that Adults of Mexican Origin Have of High Blood Sugar

Research aim one was to explore the EM that adults of Mexican origin have of high blood sugar. Four categories emerged during data analysis, which help elucidate the explanatory model of high blood sugar in this population. These categories are: 1) Cause of Elevated Blood sugar; 2) High Blood Sugar Affects Me; 3) Diabetes Scares Me; and 4) Expected Results: Stay in Control. A discussion of each category and its subcategories will follow. Through further abstraction the domain titled Explanatory Model of High Blood Sugar emerged.

Causes of Elevated Blood Sugar

Participants noted that causes of high blood sugar stem from hereditary factors, not taking care of oneself and preocupaciones or worrying. All eight participants identified having a family history of diabetes. The concept of “It Runs in the Family” emerged several times throughout the interviews. The study participants used family in context of a cause of their high blood sugars. This is consistent with findings of a qualitative study by Everett (2011) in which the EM of Mexican adults with T2DM living in Mexico was elicited. That study found that the participants also included family history in their EM of diabetes. Furthermore, the participants of this study discussed the cause of high blood sugar as being hereditary. This is congruent with the findings from studies conducted by Hatcher and Whittemore (2007) and Jezewski and Poss (2002), in which Hispanics identified hereditary factors as a cause of diabetes. In the study conducted by Everett (2011), Mexicans from Oaxaca Mexico also included diabetes runs in the family when discussing their EM and discussed this in terms of “herencia” (p. 1782). Some participants used the term “genes” to discuss the cause of high blood sugar. Cusi and Campos (2011) also

supported the understanding that genetic and cultural factors have influenced the higher prevalence of T2DM in Hispanics compared to non-Hispanic whites.

The participants of this study also discussed the causes of high blood sugar in terms of not taking care of self and not having the willpower to say no to the foods that they loved despite knowing that they would affect blood sugar. The majority of the participants identified not eating a healthy diet as a cause of their high blood sugar and some identified the combination of poor diet and lack of exercise was a cause of their high blood sugar. They especially experienced challenges eliminated foods rich in the Hispanic and Mexican culture. These findings are consistent with several studies that reported Latinos describing their difficulties in following a healthful diet and preferring to eat high fat traditional foods and few vegetables with developing diabetes (Caballero, 2012; Mainous et al., 2008). According to Jezewski and Poss (2002), the Mexican participants in their study also identified “lack of exercise” (p. 848) and their diet (consisting of high amounts of fat and sweets) to be causal factors of diabetes. Waldstein (2010) reported women from Mexico claimed they knew which foods were healthy and which to avoid but still ate poorly in the United States. This is consistent with the findings in the current study.

Participants from the current study also mentioned preocupaciones as precipitators for diabetes. Preocupaciones is a term to identify a worry or concern. From the literature review that this researcher conducted, the concept of preocupacion as a precipitating factor for diabetes was limited. One study was found, Long et al. (2012), reported participants identifying worry or stress as a potential cause of diabetes. Interestingly, in the current study, the concept of “preocupacion” was utilized not only to express a causal factor of high blood sugar but several of participants used it in the context to explain that elevated blood sugar caused them to worry.

In this study, preocupacion is used in a similar context as susto (Jezewski & Poss, 2002). Susto is the term identified frequently in the literature as a causal factor of diabetes for Hispanics and/or Mexicans and MAs. Traditional or Folk beliefs such as susto have been incorporated in EMs of Mexicans and/or Hispanics (Eid & Kraemer, 1998; Everett, 2011; Hatcher & Whittemore, 2007; Jezewski & Poss, 2002) and susto has been reported to be a main cause of diabetes for Hispanics (Eid & Kraemer, 1998). Participants for the study conducted by Hatcher and Whittemore (2007) also incorporated susto as part of their EM. Though these studies reported that several of their participants identified susto as a precipitating factor to their high blood sugar, only two of participants of the current study utilized susto in their EMs. Interestingly, neither of these two participants mentioned lifestyle behaviors as precipitating factors for high blood sugar.

High Blood Sugar Affects Me

The EM of High Blood Sugar was also supported by the category of High Blood Sugar Affects Me. The participants expressed several ways the high blood sugar has affected them in terms of 1) Symptoms; 2) I Could Worry Myself to Death; 3) Coraje.

Participants identified various symptoms such as changing vision, organ damage, increase thirst, dry lips, dizziness, fatigue and no desire to do anything when discussing how high blood sugar has affected them. These symptoms are similar with those reported in Coronado, Thompson, Tejada and Godina (2004) and from the studies discussed in Arcury et al. (2004). According to a study conducted by Coffman et al. (2012), the MA women with T2DM considered diabetes to be absent or in control if the symptoms were not apparent. This is consistent with the findings of this study in which study participants did not seek care or

continue with prescribed medications due to not having symptoms. Coffman et al. stated that MA with T2DM may misinterpret serious symptoms of diabetes as benign and may result in delay of seeking health care.

The subcategory of “I could worry myself to death” emerged when the participants were asked how high blood sugar affects them. They expressed worrying in regards to something happening to their family or to themselves and delayed healing of cuts which could lead to amputations. These findings are consistent with the complications of diabetes reported in Alcozer (2000).

Coraje was another concept that emerged while eliciting the EM of high blood sugar for adults of Mexican origin in this study. Study participants expressed that they were angered more easily now that they have high blood sugar. The concept of anger was also mentioned in the article by Eid and Kraemer (1998). However, the participants from that study experienced “Anger” (p. 393) due to being unable to drink alcohol and unable eat the foods they enjoyed. In Everett (2011), Mexican participants discussed coraje in relation to their diabetes but identified experiencing events causing coraje (strong anger) or having a bad temper as causative factors of diabetes.

Diabetes Scares Me

“Diabetes Scares Me” is another main category that emerged from the data analysis and the supporting subcategories were discussed: 1) Losses and 2) Intruding in My Life. Participants discussed Losses in terms of: 1) fearing the loss of family due to death and 2) losing body function or parts. Eid and Kraemer (1998) also reported that some of the participants from their study “had fear of losing body parts or functions and fear of death” (p. 393). Interestingly,

though these individuals have seen the complications up close and experienced losing loved ones but maintaining a healthy lifestyle remains challenging. Participant also expressed the loss of body parts would impact their ability to perform activities as normal and further expressed that they did not want to be a burden to their families. MA women from the study conducted by Alcozer (2000) reported to fear diabetes due to the large number of family members who experienced complication or death as a result of diabetes. Coranado et al. (2004) reported that MA participants view diabetes as a “life threatening illness” (p. 579) and could potentially to kill you. This was consistent with the findings from Hatcher and Whittemore (2007). They reported that Hispanic participants identified diabetes as a sad and ugly disease and they too feared it due to its “life-threatening” (p. 539) nature.

The subcategory “Intruding in My Life” emerged from the participants expressing how having high blood sugar is life altering and inconvenient. This is consistent with the findings from the study conducted by Hatcher and Whittemore (2007). These Hispanic participants reported that diabetes altered their social life and impact how they interacted with others. They also reported having mood changes and experienced fatigue. The participants the current study also identified feeling fatigued and not having energy to do things. The burden of having high blood sugar could potentially have a negative impact on mental health status and this would prompt screening for depression and recommend support. Colon et al. (2013) support incorporating depression education and screening into diabetes interventions. The participants from the current study expressed taking care of their high blood sugar was a burden in terms of having to check blood sugar, monitor diet, and find time to exercise. Therefore, interventions

should include time management and organizational skills so participants can reduce the feeling of being burdened by high blood sugar

Expected Results: Stay in Control

Expected Results: Stay in Control was another main category that was elicited when exploring the EM of the study population and was discussed in terms of 1) I Won't Have it Anymore: Cured and 2) Not Have to Start Insulin.

Several study participants felt that they would not have high blood sugars long term if they could control it. The majority of the participants felt that they could control their high blood sugar with diet and others expressed that it was a combination of eating a healthy diet and exercising. This is consistent with studies discussed in Arcury et al. (2004) and Hatcher and Whittemore (2007). The participants correlated insulin with negative consequences of not maintaining control of their high blood sugar. Hatcher and Whittemore (2007) also reported Hispanics from that study had negative attitudes about insulin and they expressed use of insulin indicated an advance in their diabetes. They also associated insulin with amputations. The negative perception of insulin needs to be addressed and education should incorporate the discussion of changing perception of insulin use and that doctors are prescribing insulin sooner to reduction of complications of not maintaining glucose control. Furthermore, Arcury et al. proposes that EMs can be influenced by entering the healthcare system after receiving the diagnosis of diabetes.

Aim II: Response to Being Informed of High Blood Sugar

The purpose of research aim two was to explore the response participants have to being informed of having high blood sugar. Emergent categories supporting the overarching domain

include: 1) Initial and Subsequent Response to High Blood Sugar; 2) Taking Control of High Blood Sugar; and 3) Challenges to Taking Control and these categories happened in a cyclic manner. The participants responded to being informed of high blood sugar in a temporal order. Adults of Mexican origin newly informed of high blood sugar initially recognizing their potential risk for high blood sugar: Initial & Subsequent Response to High Blood Sugar. However, despite knowing their potential risk, many individuals give it [diabetes] no thought. Therefore, when they receive the diagnosis of diabetes they will experience depression or acceptance (supporting subcategories). Usually they will initially ask “Why me?”, are in disbelief and may experience depression (the degree will vary among individuals). Several of the participants expressed that they did not have the energy to do things or felt fatigued. Colon, Giachello, McIver, Pacheco and Vela (2013) discussed that Hispanics with depression lack motivation to do normal activities. This is consistent with the findings reported by Eid and Kraemer (1998) that the MAs in the study experienced a “sense of hopelessness at the initial diagnosis...” (p. 39) which then leads to sense of control by eating a healthy diet, exercise and taking medications. This is consistent with the order of this current study: They come to an acceptance of having high blood sugar and try to modify lifestyle behaviors in attempt to Take Control of High Blood Sugar.

Participants of this study discussed family in context of encouraging them to take control of their high blood sugar. However, some shared that family members attempted to assume control by dictating what the participants should and should not eat. Some participants also discussed the challenge of complying with a healthy diet by being tempted by the culture foods. This is consistent with the findings from Vincent (2008). The MAs in this study shared that

family members provided support for changing lifestyle behaviors to address T2DM, however, they also posed challenges by partaking in unhealthy behaviors. Hatcher and Whittemore (2007) also reported that Hispanic adult with T2DM identified family support as an important factor for adhering to healthy lifestyle behaviors.

Participants of the current study expressed using bird seeds, cinnamon and teas for high blood sugar. Home remedies have traditionally been used by Mexicans with diabetes (Waldstein, 2010). Hatcher and Whittemore (2007) reported that Hispanics in their study used herbal treatment (prickly pear cactus, aloe vera, silk cottonwood tree) in conjunction with other interventions (diet, exercise, weight control) for controlling T2DM. Poss et al. (2003) also reported the MAs in their study used various homes remedies which included: Te Diabetil, Diabe Cure, Te Malabar, Nopal and Sabila.

Several of the current study participants also discussed utilizing the internet to help them control their high blood sugar. This is consistent with a study that was conducted by the Pew Hispanic Center and Robert Wood Johnson Foundation (Livingston, Minushkin & Cohn, 2008). They conducted a survey on 4,013 Hispanics and reported that 83% of the participants received health information from “television, radio, newspapers, magazines or the Internet” (p. 8).

Unfortunately, despite their efforts to control high blood sugar, the participants of the current study expressed they experience Challenges to Taking Control of high blood sugar and several of the participants discussed barriers in terms of No Willpower. The participants from the study conduct by Hunt et al. (1998) also discussed not having willpower to take control of their diabetes. Participants from the current study expressed feeling guilty or depressed due to their lack of willpower. This process is repeated in a cyclic manner. The analysis of this study

identified some interesting findings, however, it is evident that there is still much work needed to be done to reduce or eliminate high blood sugar in adults of Mexican-origin.

Aim III: Facilitators and Barriers to Seeking Care of High Blood Sugar

The third research aim explored participants' experiences of Facilitators and Barriers to Seeking Care of High Blood Sugar and this concept is identified as the overarching domain for this aim. This is supported by the categories of 1) Facilitators to Seeking Care; 2) Barriers to Seeking Care; and 3) Gaps to Seeking Care.

The discussion regarding Facilitators to Seeking Care elicited the subcategories: 1) Community Programs and 2) Doctor/Patient Relationship. Through further analysis of the thematic units the themes of 'Listens' and 'We Work Together' emerged. The participants expressed that their doctor took the time to listen to them and worked collaboratively with the participants to ensure adherence to regimen.

People with diabetes often experience few to no symptoms until late in its course, many participants were not aware they had the disease and this was a barrier to seeking care for high blood sugar. Some of the participants expressed they were naïve about their high blood sugar since they did not experience any symptoms. This is consistent with the findings from the study conducted by Alcozer (2000); the participants described diabetes as silent or not having any symptoms.

Another barrier to self-care included lack of insurance coverage. Five of the study participants (62.5%) stated they did not have health insurance and viewed this as a barrier to seeking care. They mentioned they did not have health insurance and the cost for medications, blood glucose strips, and office visits posed a barrier for seeking care for high blood sugar. These

findings were congruent with the findings from the study conducted by Eid and Kraemer (1998): participants without insurance also had concerns of the costs for office visits, medicine, and supplies. The barrier of cost was also mentioned in the study by Cusi and Ocampos (2001) and they also mentioned language as a barrier to seeking care or achieving treatment goals. Other studies have mentioned language as a barrier for seek care of diabetes (Alicia-Alvarez, 2012; Pearson et al., 2008). Interestingly, despite 87.5% of the participant of the current study selecting Spanish as preferred language, none identified language as a barrier to seeking care for high blood sugar.

The participants identified Gaps to Seeking Care for their high blood sugar. Study participants suggested the development of support groups which they could have a place to share their experiences with others with high blood sugar. Some study participants expressed need for educational classes incorporating family members, especially their children. They expressed the importance of starting them at a young age. Several participants stated the need for education regarding an adequate diet to help them control high blood sugar. This is consistent with the finding from the study conducted by Vaccaro et al. (2012). They reported that one-third of the participants ($n=10,149$) reported not receiving information regarding appropriate diet, losing weight or increasing physical activity. One participant suggested that a mandated “Lamaze” type educational class be introduced to all pregnant women. She further discussed the barriers/challenges to modifying lifestyle behaviors, and starting with teaching the mother healthy behaviors would prevent the child from learning the bad habits.

Strengths and Limitations

The strength of this study included the accessibility of the participants through the parent project at ASU. The researcher had developed a therapeutic and trusting relationship with these participants. Hence these individuals were willing to participate in this study. Another strength of the study is that the researcher conducting the study was bilingual and bicultural. This allowed for the researcher to become fully immersed in the data and ensure data were being presented in a naturalistic setting and remaining true to the language used by the participants.

A limitation of this study included the sample was recruited from a registry developed from a large community-based diabetes project in which the participants were invited to participate in a biorepository and be contacted for future research. Participants were also asked if they had a family history of diabetes. Therefore, it is unknown if participation in the project was a confounding factor for participants recognizing “It Runs in the Family” as a cause of their high blood sugar. Everett (2012) proposes that the concept of genetic predisposition and family history risk for diabetes may be influenced by public and health entities and the media. Another limitation of the current study is the inclusion of all adults of Mexican origin. Though it was not prominent in this study, literature has identified that Mexicans from Mexico and Mexican Americans can have several differences in barriers for accessing health care.

Implications for Nursing Practice

Explanatory models are very beneficial for gaining a better understanding of a phenomenon. This study provided an insight of the EM adults of Mexican origin have of high blood sugar and how they respond to being newly informed of having high blood sugar. Providers should take into consideration the losses adults of Mexican origin may experience

when newly informed of having high blood sugar. Also the negative perception of insulin needs to be addressed and education should incorporate the discussion that doctors are prescribing insulin sooner to reduce complication of uncontrolled high blood sugar. This information will prompt the development and implementation of culturally appropriate care ultimately enhancing diabetes self-management (Arcury et al., 2004). Adults of Mexican origin in the current study responded to being newly informed of high blood sugar in temporal order. This information was very informative since identifying the stage of the temporal order an individual is experiencing is very useful in determining the appropriate recommended intervention. Since the participants of this study expressed initially experiencing depression when being informed of high blood sugar, then standard of care practice for newly informed diabetes could incorporate a depression screening at a follow up visit. This could determine if the participant is experiencing depression which could limit the lack of motivation to partake in healthy lifestyle behaviors (Colon et al., 2013).

Culturally tailored interventions can be developed and adapted to meet the personal needs of the individual, as each participant may experience Challenges to Taking Care of High Blood Sugar at different times and have different needs. Culturally appropriate and individualized care will help promote optimal health of the individual and the family. Participants of this study expressed the need for diabetes education which includes “orientation” to diabetes and incorporates the family. Participants of this study expressed they take control of high blood sugar by collaborating with friends and family; they tend to make suggestions regarding the participant’s diet. Therefore, this researcher is suggesting that interventions are multigenerational and participants should be encouraged to invite family and friends. Findings from the study

conducted by Vincent (2008) identified that MAs participating in a focus group found value to having family members participate in their diabetes management. They also expressed the need to start diabetes prevention education as young as possible to avoid learned cultural behaviors.

One participant of the current study described this concept as a “Lamaze” class to prevent diabetes. Furthermore, the participants of this study expressed the need for support groups to assist with the controlling their high blood sugar. Time management and organizational skills should also be incorporated in interventions to reduce the feeling of being burdened due to having high blood sugar. Participants discussed utilizing the internet to obtain health information regarding high blood sugar therefore incorporating diabetes educational programs via the internet may be beneficial for this population. This is invaluable information that could guide the development of culturally appropriate programs to reduce diabetes prevalence and complications in this disproportionately affected population.

Recommendations for Future Research

Recommendations for future research include conducting a study to determine if there is a difference of facilitators and barriers to accessing health care for diabetes experienced by foreign born Mexicans and MAs (levels of acculturation) who are newly informed of having high blood sugar. Another area for future research is to explore participant motivation for making and sustaining healthy lifestyle behaviors. Results of the data analysis suggest that participants understood the consequences of high blood sugar yet they continued to have difficulties in making healthy behaviors changes and stated they lacked willpower to do so. Therefore, efforts must focus on research to determine if increasing ‘willpower’ will promote positive health outcomes. There is abundance of literature supporting culturally appropriate diabetes

interventions for Hispanics (Ockene et al.; Vincent, 2008; Whittemore, 2007). However, literature addressing depression and its impact on diabetes self-management in Hispanics especially individuals of Mexican origin is scarce. There is a need for research studying the relationship of depression and diabetes in individuals of Mexican origin.

This study also identified that the two male participants identified ‘susto’ or ‘preocupacion’ as a causal factor. They made no mention of their lifestyle behaviors potentially precipitating their high blood sugar. They both also mentioned they stopped taking their medication once they felt that their sugar was controlled. Future research would be helpful to gain greater insight regarding the EM of high blood sugar of male participants of Mexican origin. Arcury et al. (2004) also identified the lack of Latinos’ EMs of diabetes to determine if there are gender differences. Furthermore, throughout the literature review it was identified that there is a further need to define ‘newly diagnosed’ diabetes.

Conclusion

Diabetes continues to rise at an astonishing rapid rate despite all the efforts put forth to abate this disease. By 2025, it is estimated that 380 million individuals will have diabetes (Esposito et al., 2009). Hispanics continue to be disproportionately affected and Mexico born and Mexican Americans with diabetes have a higher mortality risk than non-Hispanic White counterparts (Hunt et al., 2011). Having a greater knowledge of their experience of having high blood sugars will promote culturally appropriate and individualized care. Through the analysis of in-depth interviews, an EM of high blood sugar adults of Mexican origin have was elicited. The temporal order of how these participants respond to being newly informed of high blood sugar is beneficial for identifying the current needs of the individual for the development of culturally

relevant interventions. Furthermore, the discussion of the barriers, facilitators, and gaps to seek health care also provides greater insight to help improve access to health care for these individuals ultimately reducing complications of high blood sugar and promoting optimal health for this population.

APPENDIX A:
SUMMARY OF ARTICLES

REFERENCE	DESIGN	SAMPLE	DEFINITION
Al-Hunayan et al., (2007)	Face-to-face interviews	323 men with newly diagnosed type 2 DM, aged 21–65 years	Diagnosis of type 2 DM within 1 year from the time of the interview conducted
Bao et al., (2010)	8 week randomized open-label active-comparator trial	46 newly diagnosed T2DM patients, age 30–70 years with A1c (HbA1c) 7.0–10.0%; and no prior use of hypoglycaemic medications	No definition for newly diagnosed diabetes
Barnett et al., (2010)	Observational cohort study, longitudinal design	10 532 people over the age of 35 years who were diagnosed with T2DM between 1993 and 2004	Participants were newly diagnosed between 1993 and 2004 but were followed for up to 12 yrs to assess mortality
Bolinder et al., (2005)	Recruitment from an annual cohort of the DISS, Registry to assess measurements of proinsulin and/or proinsulin split products	396 patients age 15–34 years with newly diagnosed diabetes mellitus with or without the presence of at least two serological markers of autoimmune diabetes.	Time of clinical onset of diabetes and 3–4 months after
Buscemi et al., (2010)	Three group study assessing endothelial function measured by using brachial artery flow-mediated dilation.	86 overweight or obese subjects ages 30–65 years, BMI > 25 kg/m ²	No definition for newly diagnosed diabetes
Burge et al., (2000)	Follow up survey	118 patients with newly identified DM	No definition provided but participants completed follow up survey 9.2 months following initial diagnosis of diabetes (range 2-24 months)
Dyson et al., (2010)	Small pilot study randomized controlled trial investigating the effects of video education on outcomes	42 newly diagnosed type 2 diabetic over 18 years of age	T2DM diagnosed within the previous 6 months
Esposito et al., (2009)	Single-center, randomized trial	215 overweight people with newly diagnosed T2DM who were never been treated with anti-hyperglycemic drugs and had hemoglobin A1c (HbA1c) levels less than 11%.	No definition for newly diagnosed diabetes

Latham & Calvillo (2009)	Longitudinal study Data collection at three time points included chart review and laboratory results Use of Hispanic Health Protection Model (HHPM)	240 participants age 18-80 of Mexican or North Central American ancestry diagnosed with T2DM	Within the first 6 months of diabetes care
Kazlauskaitė et al., (2010)	Retrospective cross-sectional study	Individuals newly diagnosed with diabetes or history of T2DM <2yrs but untreated for 2 months referred to diabetes clinic	No definition for newly diagnosed diabetes
Lawton et al., (2005)	Qualitative study utilizing in-depth interviews	40 patients newly diagnosed with Type 2 diabetes	Diagnosed as having T2DM within the previous 6 months
Liao et al., (2010)		46 Chinese T2DM patients; Fifty-one control subjects were randomly chosen from the community residents who took health examinations in the hospital.	
Li et al., (2010)	Randomized control study	60 newly diagnosed T2DM outpatients, 30 and 65 years old	No definition for newly diagnosed diabetes
Mitchell et al., (2009)	Population-based survey, face-to-face examinations	3654 participants 49 years or older	No definition for newly diagnosed diabetes
Newton & Raskin (2004)	Retrospective review of admissions	176 admissions of patients with moderate-to-severe DKA in patients with type 1 or T2DM based on treatment history and/or autoantibody status.	No definition for newly diagnosed diabetes
de Fine Olivarius et al., (2008)	Longitudinal study	1381 patients newly diagnosed between March 1989 and February 1992, based on hyperglycemic symptoms and/or hyperglycemia, and aged aged ≥ 40 years.	No definition for newly diagnosed diabetes was identified however discussion done regarding weight measurements taken at 30 days and 60 days from diagnosis

Pan et al., (2010)		3 Groups: 46 patients with impaired glucose regulation (IGR), 55 patients with newly diagnosed and untreated type T2DM, and 50 subjects with normal glucose tolerance (NGT)	No definition for newly diagnosed diabetes
Papakonstantinou et al., (2010)	Crossover design	17 obese individuals with T2DM 30–65 years old	No definition for newly diagnosed diabetes
Shi et al., (2005)	Randomized, double-blind, placebo-controlled trial		Recently diagnosed ≤ 6 mo
van den Berg et al., (2008)	Screening study	2820 participants from the Dutch Monitoring Project for Cardiovascular Diseases	No definition for newly diagnosed diabetes
Xu et al., (2010)		565 patients with newly diagnosed T2DM, 36–75 years old	No definition for newly diagnosed diabetes

APPENDIX B:
A TALK (PLATICA) ABOUT YOUR HEALTH

**Experiences and Perceptions of Adults of Mexican Origin Newly Informed of Having
Hyperglycemic Values that Exceeds the Threshold of Diabetes**

A TALK (PLATICA) ABOUT YOUR HEALTH

DATE: _____ START TIME: _____ END TIME: _____

I am doing this study to gain a better understanding of what adults of Mexican origin experience when they are newly informed of having blood glucose values that are in the range of diabetes. I would like to get your honest response for the following questions to better understand your experience and what it means to you to have high glucose levels. Your views are very valuable so it is very important for you to answer these questions as honestly as possible. There is no right or wrong answer. You also have the right to refuse to answer a question if it makes you feel too uncomfortable.

(A) To explore the EM that adults of Mexican origin have of being newly informed they have high blood sugar

(A-1) What do you think has caused your high blood sugar?

(A-2) Why do you think it started when it did?

(A-3) What do you think your high blood sugar does to you? How does it work?

(A-4) How severe is your high blood sugar? Will it have a short or long course?

(A-5) What kind of treatment do you think you should receive?

(A-6) What are the most important results you hope to receive from this treatment?

(A-7) What are the main problems your high blood sugar has caused for you?

(A-8) What do you fear most about your high blood sugar?

(B) To explore the response participants have to being informed of having high blood sugar.

(B-1) How did you feel when you were told you have high blood sugar?

(B-2) How do you feel about yourself now that you have high blood sugar? Has this information changed how you feel about yourself?

(B-3) Who did you share this information with? (Family, Friends, Spouse/Significant other, Healthcare Providers) How did they respond to this information?

(B-4) How has your life changed since you were told you have high blood sugar?

(B-5) Have your relationships changed since you were told you have high blood sugar? (Family, Friends, Spouse/Significant other) If so How?

(B-6) Do you think there is something you can do to control your blood sugar? (If yes, explain)

(B-7) What health behaviors have you changed (if any)? (Diet, exercise, monitor blood sugar, medication, etc...)

To explore participants' perceptions and experiences of facilitators and barriers to seeking care

(C-1) Where did you go to receive help for your high blood sugar? Probe if not mention- Do you have a primary care physician (a regular doctor)?

(C-2) What resources have you used to help you with your high blood sugar?

(C-3) How easy was it to find health care to address your high blood sugar? What made it easy (facilitators) to find health care for your high blood sugar?

(C-4) How hard was it to find health care to address your high blood sugar? What made it hard (barriers) to find health care for your high blood sugar?

5) What resources do you need to help you take care of/control your blood sugar?

Is there anything else you would like to share with me that you feel would be helpful for me to understand your experience of having high blood sugar in the range of diabetes?

Is there any advice or suggestions you would like to share with other individuals who are newly informed of having high blood sugar in the range of diabetes?

Your participation in this study is greatly appreciated and I would like to thank you for allowing us to learn more about you and your personal experience of having elevated blood glucose levels.

Thank you!

Interviewers Notes/Observations:

Revised 9-15-11

APPENDIX C:
RECRUITMENT SCRIPT

**Experiences and Perceptions of Adults of Mexican Origin Newly Informed of
Having Hyperglycemic Values that Exceeds the Threshold of Diabetes**

PHONE RECRUITMENT SCRIPT

Hello _____ :

You recently participated in the Maricopa County Insulin Resistance Initiative (MCIRI) to learn about your diabetes risk factors. As part of that study you consented to be part of a registry which you gave permission to be contacted for future research studies.

I am contacting you to invite you to participate in a study that will explore the experiences adults of Mexican origin have when they are told they have high blood sugar. If you agree to participate in this study you will be asked to do an interview about your views and experience of having high blood sugar and how you responded to receiving this information.

The interview will be conducted in person and you will be asked to do an interview at a location convenient for you. The total visit will last about 2 hours. The interview will be done in your preferred language (English or Spanish). This will be audio-recorded with your permission. A brief questionnaire will also be completed which will include questions about your age, gender, place of birth, preferred language, and income. All study information will be kept locked in Dr. Shaibi's private office and will remain confidential. Your identity will not be revealed.

Your participation in this study is strictly voluntary and confidential. There is no cost for to participate. You will receive a \$25 compensation for participating in this study. You may withdraw from the study at any time.

If you are interested in participating in this study we can schedule an appointment. If you have any questions, please contact me at (480)231-9277.

APPENDIX D:
RECRUITMENT LETTER

**Experiences and Perceptions of Adults of Mexican Origin Newly Informed of
Having Hyperglycemic Values that Exceeds the Threshold of Diabetes**

RECRUITMENT LETTER

Dear _____ :

You recently participated in the Maricopa County Insulin Resistance Initiative (MCIRI) to learn about your diabetes risk factors. As part of that study you consented to be part of a registry which you gave permission to be contacted for future research studies.

I am a PhD student in the college of Nursing at University of Arizona and working with Arizona State University to complete my dissertation. I am contacting you to invite you to participate in a study I am conducting. This study will explore the experiences of adults of Mexican origin have when they receive information of having high blood sugar levels in the range of diabetes. The participants will be interviewed about their views and experience of having blood sugar values in the range of diabetes, how they responded to this information, and barriers/facilitators for seeking resources after they received the information of having high blood sugar levels.

The interview will be conducted in person and participants will be asked to do an interview at a location convenient for you. The total visit will last about 2 hours and this will include an interview that will be done in your preferred language (English or Spanish). This will be audio-recorded with your permission. A brief questionnaire will also be completed which will include questions about your age, gender, place of birth, preferred language, and income. All study information will be kept locked in Dr. Shaibi's private office (from ASU) and will remain confidential. Your identity will not be revealed.

Your participation in this study is strictly voluntary and confidential. There is no cost to participate. You will receive a \$25 compensation for participating in this study. You may withdraw from the study at any time. If you are interested in participating in this study or have any questions please contact me at (480)231-9277.

Sincerely,

Veronica Vital, RN, PhD Candidate

APPENDIX E:
DEFERRAL OF IRB OVERSIGHT



Human Subjects
Protection Program

1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://www.spr.arizona.edu/irb>

HSPP Correspondence Form

Date: 05/17/11

Investigator: Veronica Vital, PhD candidate

Department: Nursing

Advisor: Deborah Vincent, PhD, RN

Project No./Title: 11-0384-12 Experiences and Perceptions of Adults of Mexican Origin Newly Informed of Having Hyperglycemic Values that Exceeds the Threshold of Diabetes

Current Period of Approval: N/A

IRB Committee Information

Administrative Action

Administrative Review – Deferral of IRB Oversight

FWA Number: FWA00004218

Documents Reviewed Concurrently	Status
F204: Application for Deferral of IRB Oversight (dated 04/18/11; received 05/12/11)	Appr
F107: VOIF (received 05/12/11)	Appr
Vital's Summary for Deferral of IRB Oversight (revised 05/09/11)	Ack
ASU Social Behavioral Application Human Subjects	Ack
ASU Approval Letters (dated 03/01/11, 04/18/11)	Ack
English and Spanish Consent Forms (version 04/09/11)	Ack
Study Documents	Ack
CV - Vital	Ack

Determination

ASU Designated the IRB of Record: When ASU is the designated IRB of record, then the UA IRB will not review the project. The University of Arizona agrees that it will rely on the review, approval, and continuing oversight by the ASU IRB of those protocols approved by ASU pursuant to the terms of the Institutional Review Board Authorization Agreement.

By signing this form, I attest that I do not have a conflict of interest with this project and do not need to recuse myself from review.

Wendy R. Tate

Wendy R. Tate, PSM, CIP
Assistant Director, Compliance
Human Subjects Protection Program
The University of Arizona

WT

cc: Unit Reviewer

cc: Susan Metrosky, Arizona State University

Reminders: No changes to a project may be made prior to IRB approval except to eliminate apparent immediate hazard to subjects.

Arizona's First University - Since 1885

Form version: 10/01/2010

APPENDIX F:
TRANSFERABLE DATA FORM

MIOGTT ID # _____

ID # _____

TRANSFERABLE DATA

DATE OF PARTICIPATION IN MCIRI STUDY: _____

SELF IDENTIFIED AS BEING OF MEXICAN ORIGIN: YES NOA1C VALUE: _____ ($\geq 6.5\%$)FASTING BLOOD GLUCOSE: _____ [$\geq 126\text{mg/dl}$ (7.0 mmol/l)]TWO HOUR BLOOD GLUCOSE VALUE: _____ [$\geq 200\text{mg/dl}$ (11.1 mmol/l)]**Participant must meet at least one of the above criteria for exceeding the threshold of diagnostic diabetes according to ADA (2010).**ELIGIBLE FOR STUDY: YES NO

APPENDIX G:
INFORMED CONSENT

ID# _____

CONSENT FORM**Experiences and Perceptions of Adults of Mexican Origin Newly Informed of Having Hyperglycemic Values that Exceeds the Threshold of Diabetes****INTRODUCTION**

The purpose of this form is to provide you information that may affect your choice about participating in this research and to record your consent if you agree to be involved in the research study.

RESEARCHERS

Gabriel Shaibi, PhD, Arizona State University; Veronica Vital, PhD-C, University of Arizona; Deborah Vincent, PhD, University of Arizona; Kathleen May, PhD, University of Arizona; and Marylyn McEwen, PhD, University of Arizona have invited your participation in a research study.

STUDY PURPOSE

The purpose of the research is to explore the experience of adults of Mexican origin after being informed of having high blood sugar.

DESCRIPTION OF RESEARCH STUDY

You have been invited to participate in this study because you participated in the *Maricopa County Insulin Resistance Initiative (MCIRI)* and were informed that you have high blood sugar values.

If you agree to participate in this study, then you will be scheduled for a single visit. This will include completing a short questionnaire about some personal and cultural information such as age, gender, education, economics, language, birth place, and marital status. During this time you will also participate in a *TALK/PLATICA* which will involve answering questions about your health beliefs and understanding about your high blood sugar levels. It will also include questions about behavior, social and economic issues about your health. It will be audio-recorded with your permission to allow the research team to listen to your answers later to make sure we did not miss anything. The audio-recordings will be kept in a password protected computer. The consents and questionnaires will be kept locked up in Dr. Shaibi's private office and only the research team will have access to your information.

You can skip any question(s) you do not want to answer and you can stop the study at any time.

If you say YES, then your participation will last about 2 hours at a location that is most convenient for you: such as your home or a community location (library, park, restaurant, community center, universities or schools). Approximately 15 subjects will be participating in this study.

RISKS

There are no known risks from taking part in this study, but in any research, there is some possibility that you may be subject to risks that have not yet been identified. There are no physical risks for your participation in this study but there may be some psychological risks due to the discomfort of answering certain questions.

BENEFITS

There is no direct benefit for the participation in this study. However, the results of this study will provide researchers with a better understanding of how adults of Mexican origin feel about having high blood sugar. This information may be used to develop programs for adults of Mexican origin with high blood sugar.

Participants Initials _____
10-18-2011

ID# _____

CONFIDENTIALITY

All information obtained in this study is strictly confidential. The results of this research study may be used in reports, presentations, and publications, but the researchers will not identify you. In order to maintain confidentiality of your records, the research team will assign you a unique study identification number and this number will be used on documents instead of your personal information. Your personal information (signature) will only be collected on this form and on the "Payment Form" which will be kept separately in a locked cabinet located in Dr. Shaibi's offices (Phoenix Downtown NHI 1 rooms 358-B & D). Audio-recordings, transcribed data and demographic information will be entered into a password protected database in a password protected computer. This information will not include any identifiable information. Fieldnotes will also be labeled with your study ID number and kept where the de-identified materials will be stored in the locked cabinet. Paper documents will be shredded; audio-recordings and electronic files will be erased when the study is completed. Only the research team will have access to your information.

WITHDRAWAL PRIVILEGE

Participation in this study is completely voluntary. It is ok for you to say no. Even if you say yes now, you are free to say no later, and withdraw from the study at any time. If you choose to withdraw from the study any information we have gathered will be destroyed (documents shredded; audio-recordings and electronic files erased) and not used for this study.

COSTS AND PAYMENTS

The researchers want your decision about participating in the study to be absolutely voluntary. Yet they recognize that your participation may pose some inconvenience since you will be commuting to one of the locations and requires a 2 hour time commitment. In order to offset costs you will receive compensation of \$25 cash at the completion of your visit.

VOLUNTARY CONSENT

Any questions concerning the research study or your participation in the study, before or after your consent, will be answered by Veronica Vital, PO Box 873704, Tempe AZ, 85287-3704, (480)231-9277.

If you have questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk; you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 480-965 6788.

This form explains the nature, demands, benefits and any risk of the project. By signing this form you agree knowingly to assume any risks involved. Remember, your participation is voluntary. You may choose not to participate or to withdraw your consent and discontinue participation at any time without penalty or loss of benefit. In signing this consent form, you are not waiving any legal claims, rights, or remedies. A copy of this consent form will be given (offered) to you.

Your signature below indicates you agree to participate in the above study. By signing below you give the researchers permission to audio-tape the interview and it for presenting or publishing this research.

Subject's Signature_____
Printed Name_____
Date**INVESTIGATOR'S STATEMENT**

"I certify that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature. These elements of Informed Consent conform to the Assurance given by Arizona State University to the Office for Human Research Protections to protect the rights of human subjects. I have provided (offered) the subject/participant a copy of this signed consent document."

Signature of Investigator _____ Date _____

Participant initials
10-18-2011

APPENDIX H:
DESCRIPTIVE DATA QUESTIONNAIRE

Participant ID # _____

**Experiences and Perceptions of Adults of Mexican Origin Newly Informed of
Having Hyperglycemic Values that Exceeds the Threshold of Diabetes****DESCRIPTIVE DATA QUESTIONNAIRE**

- 1) Gender:
 Male Female
- 2) What is your age? _____
- 3) What is your preferred language?
 SPANISH ENGLISH OTHER
- 4) Where were you born?
 UNITED STATES MEXICO OTHER
- 5) How long have you lived in the United States?
 ≤ 1 YRS 1-2 YRS 3-5 YRS 6-10 YRS 11-20 YRS >20 YRS
- 6) Do you have medical insurance?
 YES NO
- 7) What is highest level of education?
 NONE ELEMENTARY SOME HIGH SCHOOL SOME COLLEGE
 HIGH SCHOOL GRADUATE COLLEGE GRADUATE POST GRADUATE
- 8) What is your annual income?
 <\$5,000 \$5,000-\$9,999 \$10,000-\$14,999 \$15,000-\$19,999
 \$20,000-\$24,999 \$25,000-\$29,999 \$30,000-\$35,000 >\$35,000
- 9) Marital status:
 SINGLE MARRIED NEVER MARRIED WIDOWED PARTNER
- 10) Family history of diabetes?
 YES NO

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