

Abstract

LABOY, JOHANNE IVONNE. Irrational Health Beliefs and Diabetes Type 2: Their Source, Nature, and Impact in the Hispanic Community. (Under the direction of Dr. Kama Kosenko and Dr. Kenneth Zagacki.)

Health disparities are determined by a complex range of influences, including socio-economic, biological, environmental, cultural, and behavioral factors. Among cultural and behavioral factors, the attitudes and beliefs that individuals hold about health and disease play an important role in medical care and public health. This study aims to investigate irrational health beliefs (IHBs). IHBs are opinions, attitudes, and thoughts about health that defy scientific evidence; they may contribute to poor self-care and medical decision-making. They may also impact an individual's capacity "to obtain, process, and understand basic health information" and to adhere to medical treatments (HHS, 2010). Given the potential for IHBs to affect disease prevention and management, a study of IHBs is significantly relevant to public health and health communication.

This investigation addresses IHBs within a specific disease and cultural context—diabetes among Hispanics. Diabetes is a pressing public health issue for ethnic and racial minorities, especially Hispanics who have a higher prevalence of diabetes than non-Hispanic Whites (CDC, 2011). Anecdotal evidence indicates that Hispanics hold various IHBs about diabetes. Little is known, however, about what these IHBs are, where they come from, and if or how they impact behavior.

Thus, the broad objectives of this exploratory study include: (1) documenting IHBs that Hispanics hold about diabetes, (2) identifying the sources of those beliefs, (3) examining how IHBs impact health behavior, and (4) isolating social and cultural factors that strengthen those beliefs.

Informed by health behavior theories, this investigation aimed to answer the following research questions: (a) What diabetes-related beliefs that defy scientific evidence are common among Hispanics in the United States?; (b) Where do those beliefs originate?; (c) What communication sources are involved in the dissemination of IHBs?; and, (d) What cultural factors play a role in the dissemination of IHBs? In addition, this study tested the following hypotheses: H1: Hispanics who endorse more diabetes-related IHBs will be: (a) less likely to seek regular medical care; (b) less likely to seek health information from medical sources; (c) more likely to seek information from non-medical sources; and, (d) more likely to follow a poor nutritional regimen. H2: Hispanics with diabetes who endorse more diabetes-related IHBs will be: (a) less likely to report exercising regularly; (b) less likely to adhere to medical recommendations; and, (c) more likely to have comorbid conditions.

First, qualitative research methods, including 10 individual interviews, four focus groups with members of the Hispanic community, and six interviews with health promoters, were employed to gather in-depth information from the participants. Then, quantitative methods were used to determine if a relationship exists between IHBs and behavior. Items measuring IHBs, information seeking, diet, exercise, medication adherence, and co-morbid conditions were included in the questionnaire for hypothesis testing.

The study seeks to fill a gap in the diabetes literature, increase awareness of IHBs, influence patients' health literacy, help enhance intervention programs and health communication campaigns, improve medication and treatment seeking, and help providers develop cultural competence.

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Irrational Health Beliefs and Diabetes Type 2: Their Source, Nature, and Impact
in the Hispanic Community

by
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Dedication

First, I dedicate this work to my parents, David Laboy and Sonia Solis, who shaped my core values and beliefs, who instilled in me a love for learning, and who made many financial and personal sacrifices so that I could enjoy a well-rounded education. Second, to my two children, Austin and Alexabelle, because thanks to them I have a deeper understanding of humanity and the world around us. Last, but certainly not least, to my best friend and remarkably patient husband, Carl Schick, for his relentless encouragement and love during our 24 years of marriage, and especially for serving as my rock and most solid pillar during the past four years. His outstanding support made this journey possible. Let's all go make a difference!

Biography

Johanne Laboy holds a B.A. in Mass Communication with concentrations in public relations and advertising, and an MBA with concentrations in international business and marketing, both from the University of the South Florida, in Tampa. She completed her Ph.D. in the Communication, Rhetoric, & Digital Media program at North Carolina State University. Johanne has 20 years of experience in marketing and communication. Her research interests include exploring the intersection of communication, digital media and the health sciences in marginalized populations, especially low-income Hispanics. She has been published in *Communication Studies*, the *Journal of Loss and Trauma*, the *International Journal of Information Management*, *The Journal of Business and Technical Communication*, the *Encyclopedia of Health Communication*, and the *Encyclopedia of Human Services and Diversity*. She has also served as a participant in several local and national academic conferences.

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Chapter 1

Introduction

Health disparities or inequities in health status occur when members of particular groups in the population do not receive the same opportunities for health care as other groups. Reducing health disparities in the United States (U.S.) is a central concern of various national health organizations, including the Department of Health and Human Services (HHS), the Centers for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH). For example, the NIH has been working to identify the causes of health disparities in the U.S. and to pinpoint how they can be eliminated (NIH, Health Disparities Fact Sheet, 2010). Researchers have found that health disparities are determined by a complex range of influences, including socio-economic, biological, environmental, cultural, and behavioral factors. The proposed dissertation study addresses these reciprocal influences within a specific disease and cultural context—diabetes among Hispanics. Specifically, this study centers on the irrational health beliefs (IHBs) that Hispanics hold about type 2 diabetes and the effects of those beliefs on health behavior.

IHBs –opinions, attitudes, and thoughts about health that defy scientific evidence –may impact an individual’s capacity to acquire, process, and comprehend basic health information as well as his or her ability to seek medical care and adhere to medical treatments (Fulton, Marcus, & Merkey, 2011; HHS, 2011). Anecdotal evidence from clinicians indicates that Hispanics hold a range of IHBs about

diabetes. Because Hispanics are twice as likely as non-Hispanic whites to develop diabetes (CDC, 2011), an investigation on IHBs about diabetes in the Hispanic community can provide insight into their potential to hinder disease prevention and management. This could have great conceptual, methodological, and practical significance, given that few studies, if any, address the nature and impact of diabetes-related IHBs among Hispanics.

An empirical investigation focusing on the IHBs that the Hispanic population holds about the disease will help fill this gap in the literature and improve scientific knowledge and understanding of diabetes-related beliefs and behaviors. In addition, this investigation may assist clinicians, public health practitioners and health communicators with the following tasks:

- increase cultural competence of health care providers
- design communication campaigns that focus on mitigating irrational beliefs and their negative impact
- develop intervention programs to combat irrational beliefs and to improve medication and treatment adherence
- identify any methodological or technological improvements needed to strengthen research in this area

Thus, this investigation is a descriptive, exploratory study designed to answer the following research questions: (a) What diabetes-related beliefs that defy scientific evidence are common among Hispanics in the United States?; (b) Where do those beliefs originate?; (c) What communication sources are involved in the

dissemination of IHBs?; and, (d) What cultural factors play a role in the dissemination of IHBs?

In addition, this study tested the following hypotheses: H1: Hispanics who endorse more diabetes-related IHBs will be: (a) less likely to seek regular medical care; (b) less likely to seek health information from medical sources; (c) more likely to seek information from non-medical sources; and, (d) more likely to follow a poor nutritional regimen. H2: Hispanics with diabetes who endorse more diabetes-related IHBs will be: (a) less likely to report exercising regularly; (b) less likely to adhere to medical recommendations; and, (c) more likely to have comorbid conditions.

This chapter reviews the contextual and conceptual underpinnings of the present investigation, including diabetes mellitus, Hispanics and diabetes disparities, socio cultural aspects, irrational health beliefs and health behaviors, and health beliefs and communication. It begins with an overview of diabetes mellitus, its global and national impact, and its incidence in the Hispanic population.

Diabetes Mellitus

Diabetes mellitus is a chronic condition caused by the body's inability to regulate blood glucose levels. The World Health Organization (WHO) describes diabetes as a disease of pandemic-like characteristics and estimates that it affects more than 180 million individuals worldwide—a number expected to double by 2030 (World Health Organization, Diabetes Mellitus Control, n.d.). The disease is divided into three main types: (a) type 2 diabetes, which constitutes 90-95% of all cases in the U.S. and is preventable and treatable (HHS, Diabetes Overview, 2008); (b) type 1

diabetes, which accounts for 10% of all cases and is not preventable but is treatable (HHS, Diabetes Overview, 2008); and, (c) gestational diabetes, a treatable, acute condition that affects 2-10% of women during pregnancy (CDC, National Diabetes Fact Sheet, 2010). Gestational diabetes is characterized by high levels of sugar in the blood of pregnant women. This type of diabetes disappears after pregnancy in women who follow a recommended nutritional diet; however, pregnant women who develop gestational diabetes have a 35-60% chance of developing diabetes later in life (National Diabetes Education Program, 2011).

Other variants of the disease include latent autoimmune diabetes of adults (LADA) and prediabetes. LADA, also called diabetes type 1.5, is considered a subset of type 1 diabetes in adults. As Ola, Gigante, and Leslie (2006) explain, LADA is genetically and immunologically similar to type 1 diabetes but metabolically similar to type 2 diabetes. This interesting clinical characteristic makes it challenging to diagnose and treat (Hosszufalusi et al., 2006). Individuals with LADA are sometimes believed to have type 2 diabetes because they are between 20-40 when diabetes symptoms begin to show (Tuomi et al., 2013). Besides LADA, individuals can also be diagnosed with prediabetes. It is estimated that 79 million people in the United States suffer from the condition (CDC, National Diabetes Fact Sheet, 2011). Prediabetes is characterized by higher than normal levels of sugar in the blood that do not reach the levels necessary for a type 2 diabetes diagnosis.

Complications from diabetes, including retinopathy, neuropathy, nephropathy, cardiovascular disease, gangrene, and blindness, are damaging and

can be life-threatening. In fact, the disease was among the top ten leading causes of death in the United States as recorded on death certificates in 1997 (CDC, National Diabetes Fact Sheet, 2011). In addition to costing people their lives, diabetes prevention and treatment cost a considerable amount of money. Costs related to diabetes in the United States amount to approximately \$174 billion annually (Dall et al., 2013). The growing numbers of people affected by diabetes and the rising cost of diabetes care have led scientists to inquire about why some develop the disease and others do not. Age, excess weight, high blood pressure, inactive lifestyle, family history, and ethnicity are among the risk factors for type 2 diabetes (HHS, 2008)—the focus of this investigation. For brevity's sake, I use the term, *diabetes*, throughout this manuscript in reference to type 2 diabetes.

Diabetes has been a health issue for centuries. Descriptions of the disease have been found in papyrus dating back to 1500 BC (Dods , 2010). Zajac, Shrestha, Patel, and Poretsky (2010) explain that almost 3,000 years passed before diabetes was identified and treatment was developed by Banting and Best in 1921. Before 1921, individuals with diabetes would die within one or two years of their diagnosis. Advances in technology make it possible today for patients born with diabetes to live into their early 80s (Zajac et al., 2010). Since the 1920s, most diabetes research has been concerned with the prevention, treatment, management, and cure of the disease. The most significant finding in recent years has been the identification of diet and exercise as important factors in diabetes prevention and control (HHS, Diabetes Overview, 2008).

In the early 2000s, research conducted by the National Institutes of Health's Diabetes Prevention Program demonstrated that diet and exercise reduced blood glucose levels and decreased depression symptoms in patients with diabetes (HSS, Diabetes Overview, 2008). This had significant consequences for two main reasons. First, it demonstrated that diabetes could be prevented or delayed in people with prediabetes and controlled in people with diabetes. Second, it identified health behaviors that can be promoted and changed through public health efforts. So, social scientists can have an impact on the prevention of diabetes type 2 (unlike diabetes type 1, which is unrelated to one's behavior).

Besides advancements in prevention and management, diabetes research has made significant strides in disease treatment (Fonseca, Kirkman, Darsow, & Ratner, 2012). Researchers are continuously attempting to develop faster acting insulin as well as better insulin pumps and glucose meters (Yeh et al., 2012). Besides technological improvements, research in this area is also advancing understanding of the relationship between diabetes and its comorbid conditions, especially cardiovascular disease, which is the main cause of death for patients with diabetes. Despite all this progress, diabetes still stands as one of the main disparity concerns in the United States. The following section provides an overview of these health disparities and their impact in the Hispanic population.

Hispanics and Diabetes Disparities

Despite the Diabetes Prevention Program's findings demonstrating that diabetes could be prevented and managed through diet and exercise, diabetes

prevention and management continues to be a complicated process for many individuals and their health care providers. The disease is particularly problematic within ethnic minority communities and represents a health disparity concern. Health disparities refer to “differences in incidence, prevalence, mortality and burden of disease and other adverse health conditions that exist among specific population groups in the United States” (Braveman, 2006). The NIH notes that racial and ethnic minorities continue to experience a “disproportionate burden of illness, disability, and premature death due to cancer, cardiovascular disease and stroke, diabetes, HIV/AIDS, infectious diseases, infant mortality, and other diseases” (HHS, Fiscal Year Budget Request, 2005, p. 3). Reports from the CDC clearly illustrate these disparities:

Compared to non-Hispanic white adults, the risk of diagnosed diabetes was 18% higher among Asian Americans, 66% higher among Hispanics, and 77% higher among non-Hispanic blacks. Among Hispanics compared to non-Hispanic white adults, the risk of diagnosed diabetes was about the same for Cubans and for Central and South Americans, 87% higher for Mexican Americans, and 94% higher for Puerto Ricans. (CDC, National Diabetes Fact Sheet, 2011)

Diabetes disparities are particularly pronounced within the Hispanic community. In fact, Allen and Easley (2006) explain that even when income, access, and insurance factors are controlled, Hispanics and other racial minorities still experience more disparities across the board. Hispanics constitute one of the largest

ethnic minorities in the United States. Approximately 56 million Hispanics live in the country. The National Institutes of Health identify Hispanic minorities as people from México, Puerto Rico, Cuba, Central and South America, and members of the Spanish culture. The Census explains that origin can refer to nationality, heritage, lineage, or the country of origin of an individual's ancestors before arriving to the U.S. People of Hispanic origin can be of any race. Puerto Ricans, for example, originate from three main ethnic groups: Africans, Spaniards, and Taino Indians (indigenous people from the Caribbean). Mexicans comprise the biggest group of Hispanics in the United States with an estimated 34.5 million people or 64% of the total Hispanic population.

In addition to the term *Hispanic*, the term *Latino* is utilized by the Census Bureau as well as by other organizations. Although the terms *Hispanics* and *Latinos* are used interchangeably in academic reports, there is a distinction between the two. The term *Latino* is more inclusive, and it encompasses people from Brazil and Portugal, where Portuguese is spoken (Caballero, 2005). Because the proposed investigation centers on Spanish-speaking individuals or individuals of Spanish-speaking ethnicity or origin, only the term *Hispanic* was employed.

Hispanics and other racial and ethnic minorities in the U.S. experience a variety of complex and enduring health disparities, including HIV, cancer, heart disease, unintentional injuries, access to health care, and diabetes (CDC, Morbidity and Mortality Report, 2013). Diabetes is one of the most significant health disparity concerns for the Hispanic population. Findings from the 2013 CDC Health

Disparities and Inequalities Report indicate that Hispanics are 1.6 times as likely as non-Hispanic whites to develop the disease (People, 2013). Hispanics are also more likely than non-Hispanic whites to develop certain complications from diabetes. The U.S. Department of Health and Human Services (2013) reports that, in 2008, Hispanics were 1.6 times “as likely” than non-Hispanic whites to need treatment for diabetes-related end-stage renal disease and 1.5 times as likely to die from diabetes. In addition, a study by Lefebvre and Lavery (2011), who analyzed data on disparities in amputation, demonstrated that Hispanics and blacks with diabetes and peripheral arterial disease had a greater risk of amputation than non-Hispanic whites.

Socio-Cultural Aspects

The National Partnership for Action to End Health Disparities (NPA) – a national, community-driven organization initiated by Department of Health and Human services to combat health disparities and achieve health equity – identifies biological, social, behavioral, and environmental factors as upstream determinants of health disparities (Beadle & Graham, 2011). Biological determinants include genetics, family history of the disease, and ethnicity. Environmental factors include unsafe living conditions, unsafe work environment, and exposure to toxins and other chemicals. Behavioral determinants take into account lifestyle, diet, exercise, and the use of illicit drugs, such as tobacco or alcohol. The social determinants of health include socio-economic status, educational attainment, employment, transportation, religion, technology, language, and political/legal factors.

Diabetes disparities are determined by specific biological, behavioral, environmental, and socio-cultural factors. For example, being Hispanic or of Hispanic ethnicity, a biological factor, increases one's chances of developing diabetes (National Diabetes Information Clearing House, 2003). Although a genetic component is suspected of causing the disease, researchers are still trying to identify and make sense of the gene abnormalities responsible (Dean & McEntyre, 2004). In addition, the National Institutes of Diabetes and Digestive and Kidney Diseases (2013) indicate that environmental factors may interact with genes to cause diabetes. Behavioral patterns, such as physical inactivity and obesity, are also considered significant factors in diabetes among Hispanics and other racial and ethnic groups (Dickerson, Smith, Sosa, McKyer, & Ori, 2011; Office of Minority (OMH), 2013).

Although biological factors are thought to play a crucial role in diabetes risk among Hispanics, social determinants also are of importance since they greatly affect treatment and outcomes. Social determinants, such as economic status, educational attainment, transportation, and the physical environment, can impact the decisions that people make about their health choices. People who have access to educational and job opportunities, health care services, and transportation options, for example, will experience an enhanced quality of life. Improved quality of life can, in-turn, can lead to better-informed decisions about health or to adequate resources for medical care. Individuals who are exposed to crime, poverty, and discrimination, on the other hand, will experience a diminished quality of life that can lead to poor decisions about health or a lack of resources to make appropriate decisions about medical

treatment and care (HealthyPeople.gov, 2014). Consequently, the social determinants of quality of life can also impact health status and health outcomes.

Other social factors, such as state, federal, and local laws, play important roles in health disparities (HHS, National Prevention Strategy, 2011). Public and governmental policies can have pronounced health implications. For example, laws that prohibit non-documented immigrants from obtaining a driver's license can affect the ability of that segment of the population to seek medical care and treatment, especially since public transportation in many towns and cities in rural areas in the US is basically non-existent. Because a large number of non-documented immigrants are of Hispanic origin, this factor is significant to this investigation.

Cultural determinants of diabetes disparities also have been addressed in the literature (e.g., Caballero, 2005; Hatcher & Whitemore, 2007; Millan-Ferro & Caballero, 2009; Oomen, Owen, & Suggs, 1999; Weller et al., 2012). Caballero (2005) developed a list of the major cultural factors influencing diabetes outcomes and behaviors among individuals of Hispanic or Latino ethnicity. The author separates the list into three main categories: patient issues, provider issues, and health care system issues. Among patient issues, Caballero lists family orientation/*familismo*, *personalismo*, *fatalismo*, faith/religion, lifestyle, acculturation, and language. *Familismo* denotes patients' tendencies to place the needs of family members ahead of their own. *Personalismo* refers to the patient's need to establish a warm and close relationship with his or her health care providers. Finally, *fatalismo* appertains to patients' beliefs about their inability to control

destiny. Fatalism has been observed in other cultures and contexts but seems to be prevalent in Hispanic culture (Caballero, 2005). The author also lists cultural competence as the provider's main issue and affordability and cultural orientation as the health care system's main concerns.

Two health promoters or *promotoras* interviewed as part of a pilot study for this investigation validated Caballero's cultural assessment of patient issues. The *promotoras* are part of the Mexican Consulate's health program, a service that assists approximately 200 individuals per day and disseminates information on health issues from cancer to diabetes to STDs and AIDS. The *promotoras* concurred with Caballero's argument about familismo, confirming that the patient's commitment to other family members supplants the patient's own needs. In addition, the *promotoras* indicated that personalismo was a factor affecting an individual's decision to seek health care. They indicated that many individuals disliked spending such a short time with their doctors, especially since many had transportation issues that made it difficult to make their appointments. In addition, the *promotoras* mentioned that the doctors' terse demeanors discouraged individuals from seeking regular care. The health promoters also confirmed that fatalismo, as well as religion and faith, played a role, not only in diabetes treatment and care, but also in the treatment of other conditions, such as cancer and heart disease. The health promoters explained that fatalismo, or the belief that negative health outcomes cannot be reversed because they are a mandate of God or of destiny, dissuaded individuals from seeking the appropriate medical care.

Like patients, health care providers are affected by cultural factors, such as linguistic differences and cultural competence. Linguistic differences occur when the patient and health care provider do not share the same main language. Cultural competence refers to the health care provider's ability to interact effectively and efficiently with people of a different cultural and socio-economic backgrounds (Hunt, 2001). Researchers, however, disagree about the impact of linguistics and culture when treating Hispanics with diabetes. Some (e.g., Caballero, 2005; Millan-Ferro & Caballero, 2009; Zeh, Sandhu, Cannaby, & Sturt, 2012) argue that cultural competence and linguistic differences can impact the quality of care received by Hispanic patients. Cabellero (2005), for example, explains that the beliefs, attitudes, culture, and traditions of racial and ethnic groups impact the way people in those groups perceive, interpret, and understand disease and treatment. The author posits that developing sensitivity to those issues may remove barriers to understanding and may create opportunities for improved diabetes care. Weller and colleagues (2012), on the other hand, argue that patient-provider issues in the U.S. shouldn't be attributed strictly to cultural-linguistic differences or a lack of cultural competence. The authors led a study on diabetes beliefs and their prevalence among physicians, people with diabetes, and the community in general. The study was conducted in both the U.S. and México, and it assessed each cultural setting separately. Findings indicated that discrepancies in beliefs were higher between Mexican diabetes patients and their Mexican physicians, even though they both spoke the same language and shared the same culture. The findings of that study also indicated that

educational attainment was more influential in diabetes beliefs and knowledge than other factors. In addition, the investigation suggested that diabetes patients' knowledge about diabetes was more similar to the general community's understanding of the disease than to their physician's knowledge of the disease.

Another factor that can impact diabetes prevention and treatment is patient and provider beliefs about the disease. The literature indicates that people of different cultures hold differing beliefs about diabetes (Aponte et al., 2012; Smith, 2012). A study of European migrants, for example, found that migrant women from the Middle East were less concerned about gestational diabetes and suffered more complications for which they did not seek treatment. The women were contrasted to Swedish patients who were more concerned about the potential of developing type 2 diabetes and were proactive about treatment and care (Hjelm, Bard, & Apelqvist, 2012). Researchers who conducted interviews with Somalian immigrants living in Sweden found that some participants in their sample believed that God was ultimately responsible for the outcome of their diabetes (Wallin & Ahlström, 2010). Smith (2012), who interviewed Afro-Caribbean women in southwest Florida for a study on the influence of cultural beliefs on diabetes, found that participants believed traditional Caribbean medicines were effective treatments for type 2 diabetes. Similarly, Sullivan, Hicks, & Salazar (2010), who conducted an evaluation of perceived barriers to diabetes control among monolingual Hispanics in rural Colorado, found that 30 percent of their sample relied on home remedies "to help their blood sugar" (p. 387).

A small but growing body of research on diabetes disparities suggests that Hispanics hold certain beliefs about diabetes that could interfere with disease prevention and management and, thus, could account for high prevalence rates in this community. For example, research on Mexicans living with diabetes in the U.S. indicated that study participants believed that fright causes diabetes (Palmquist, Wilkinson, Sandoval, & Koehly, 2012). Likewise, a study of urban first-generation and second-generation Mexican immigrants in the U.S. found that 73% percent of the sample believed that *coraje* or anger caused diabetes and 60% of the sample believed that *susto* or fright caused diabetes (Mendenhall et al., 2012). In addition, 33% of participants believed that abuse contributed to the onset of diabetes. Believing that fright, anger, and abuse can cause diabetes are examples of irrational health beliefs (IHBs).

Irrational Health Beliefs

The volume of literature on health beliefs is large. A recent search in the Summon database with the descriptor phrase “health beliefs” returned more than 41,000 results. A second search with the descriptor phrase “health beliefs about...” returned 629,000 results about cancer, 14,400 results about cardiovascular disease, and 39,100 results about diabetes. However, this investigation is dealing specifically with IHBs. When the same searches were conducted with the descriptor “irrational health beliefs about...” only 30 results were returned in Summon, and no exact matches were available on Google. The section that follows describes the limited body of research on irrational health beliefs.

Irrational health beliefs are a type of irrational belief. Some efforts have taken place to apply the irrational beliefs concept in health contexts, but presently there is not a clear definition of the term, *irrational health beliefs*. David, Lynn, & Ellis (2010) defined *irrational beliefs* as illogical opinions, attitudes, and thoughts that lack empirical support or pragmatism and lead to maladaptive and unhealthy consequences. The authors explain that, when applied specifically to health contexts, these illogical thoughts are called *irrational health beliefs*. Fulton et al. (2011) described IHBs as “beliefs about health and illness that are so irrational that they are believed to play a role in poor self-care and medical decision making” (p. 527). Although this statement from Fulton and colleagues could be used as the conceptual definition for *irrational health beliefs*, it assumes certain effects of IHBs that haven’t been empirically established and, thus, has limited utility. A discussion of the definition of IHBs would be incomplete without a consideration of the connotations of the term. Some individuals could find the term, *irrational health beliefs*, problematic because of its strong association with mental health. It is important to clarify that the term refers to beliefs and not to the individuals who hold them. Many IHBs are rooted in cultural traditions and have been accepted as facts by those cultures. The people who hold these beliefs cannot be labeled as irrational since they are simply adhering to cultural conventions. Although it’s not clearly defined in the literature, *IHB* is the scientific term that best describes and represents the phenomenon under study and, thus, has been chosen for this investigation.

Despite the lack of a clear conceptual definition of the term, *irrational health beliefs*, several researchers have documented their existence. David and colleagues (2010) list several examples of IHBs, including thinking that ambiguous symptoms or untreated illness will result in catastrophic outcomes, that a healthy body is a symptom-free body, that serious illness is more prevalent than it is, and that a disease cannot be controlled if it runs in the family. Other IHBs identified in the literature include believing that wearing glasses will worsen eyesight, that pregnancy can never occur on the first sexual encounter, and that influenza is caused by the influenza vaccine (Rocha et al., 1997; Zimmerman, Santibanez, Janosky, Fine, & Raymond, 2003). Anecdotal reports from clinicians indicate that IHBs about diabetes are particularly prevalent among Hispanics; however, there is not enough empirical evidence of diabetes IHBs to support or refute clinicians' claims. This might be due to the lack of a clear conceptual or operational definition of the term. The proposed investigation, with its focus on diabetes IHBs, requires a clear working definition of the term.

Defining Irrational Health Beliefs

Identifying a working definition of the term IHB requires investigating its origins and prior uses and a clarification of the terms *irrational beliefs* and *irrational health beliefs*. The *irrational beliefs* construct has received ample coverage in the literature since the late 1950s, when a series of influential theorists abandoned psychotherapy in favor of cognitive therapy (CT) and rational emotive behavior therapy (REBT) (Dobson, Beck, & Beck, 2005). These forms of treatment

differed from the standard psychotherapy, which focused on finding the root of psychological issues within the mind. Beck (1979) and Ellis (1958) independently argued that problems should be approached through the identification of distorted thinking, behavior modification, and behavior change. The irrational beliefs construct was born out of that philosophical trend.

The irrational beliefs concept has been widely discussed in the psychology field and has been extensively covered in academic journals, books, and book chapters (e.g., Caryk, 1986; Forman & Forman, 1978; Nelson, 1977; Ruderman, 1986; Samar, Walton, McDermut, & Wilson, 2013; Solomon & Ray, 1984). The concept is associated with specific behaviors, such as the tendencies of individuals to catastrophize, awfullize, overgeneralize, and personalize (David et al., 2010). Individuals can hold irrational beliefs about a variety of issues, in diverse instances, and various social contexts.

After the development of cognitive therapy and rational emotive behavior therapy, a series of developments led behavioral scientists to recognize that irrational beliefs played a role in health, and the term, *irrational health beliefs*, was first used. As explained by Fulton et al. (2011), *irrational health beliefs* are cognitions specifically about health that impact medical decisions and self-care. For this investigation David et al.'s definition of irrational beliefs and Fulton and colleague's description of IHBs have been amalgamated to provide a more comprehensive definition of the concept. Thus, this study refers to IHBs as opinions, ideas, and thoughts about health that lack empirical support and pragmatism, defy

scientific evidence, and might impact self-care and medical decision making. In addition, this study bifurcates *irrational health beliefs* into those referring to health behaviors and those that refer to health concepts. For this investigation, IHBs referring to health behavior denote an individual's approach to diabetes prevention and management. For example, the statement "smoking and eating too much isn't a problem for me because it wasn't for my parents" characterizes a behavior-related IHB. Conversely, IHBs referring to a health concept denote an individual's views about the disease, itself. The statement "type 2 diabetes is curable," for instance, exemplifies a concept-related IHB. Unlike the *irrational beliefs* concept, IHBs have not received much attention from researchers and have not been adequately reviewed in the literature. The following section reviews the small body of research on the effects of IHBs on health behavior.

Linking IHBs and Health Behaviors

Individuals experiencing irrational health beliefs may have difficulty acquiring and processing health information, seeking medical care, and adhering to medical regimens or treatments--behaviors that considerably influence a patient's involvement in and success with primary and secondary disease prevention. Lack of proactive behaviors may lead to inadequate medical decisions and self-care. This, in turn, may lead to unfavorable disease outcomes that can be costly, life threatening, and disparate. Studying the nature and impact of IHBs represents an important opportunity for targeting barriers to successful diabetes prevention and management in the Hispanic community (Mann, Ponieman, Leventhal & Halm, 2009).

A few studies have demonstrated a relationship between irrational health beliefs and health behaviors or health outcomes. Richardson, DeWitt, & Fields (2004), who investigated prostate cancer disparities, found that beliefs about prostate cancer affected the detection, diagnosis, and treatment of the disease in African-American males. Participants in that study believed that prostate cancer would entail a series of symptoms, including reduced sex drive, painful urination, and penis paralysis. Study participants were not only misconstruing the symptoms but also anticipating them before deciding to screen for the condition, even though prostate cancer is asymptomatic during its early stages. The participants also believed that prostate cancer treatment would involve testicular removal, a belief that may prevent men with prostate cancer from seeking medical care. Silverglade, Tosi, Wise, and D'Acosta (1994), who conducted a study on the impact of irrational beliefs on asthmatic adolescents, found a relationship between IHBs and the disease severity of asthma patients. Similarly, Papageorgiou et al. (2006) established a relationship between high levels of IHBs and cardiovascular disease.

In patients with diabetes, IHBs about the illness, including the belief that medication is only necessary when glucose levels are high, have been associated with decreased medication adherence. In a study of low-income minorities with diabetes, Mann and colleagues (2009) demonstrated that even long-time patients with diabetes held irrational beliefs about the disease. The study revealed that one-third of patients expected to be cured of diabetes – a life-long chronic disease. In addition,

patients believed that diabetes had negligible consequences and symptoms when, in fact, diabetes may cause diabetic retinopathy, nephropathy, and heart disease.

Another study speaks to the negative influence of these and other diabetes-related IHBs. For example, when testing the irrational health beliefs scale, Christensen and colleagues (1999) found that higher levels of IHBs were associated with poor medical treatment adherence in patients with Type 1 diabetes. Similarly, in a study of Mexican Americans, Hunt, Valenzuela, and Pugh (1998) reported that stories and beliefs about diabetes hindered self-care. Despite these examples, the literature is greatly lacking in studies that explore and establish the relationship between diabetes-related IHBs, health behaviors, and health outcomes. As Christensen and colleagues (1999) stated, “Further work is clearly necessary before firm conclusions about the relation of the IHBs to health behavior can be drawn” (p. 174).

Most of the information that we have about IHBs comes from clinicians’ accounts and anecdotes, but, as David, Lynn, and Ellis (2010) argue, empirical research is needed to support the clinician’s casual observations. Through scientific research, we could best establish if a relationship exists between IHBs, health behaviors, and health disparities. In addition, more research is needed to establish the role of communication in the development of IHBs and in their dissemination. The following section provides an overview of the literature on communication and health beliefs.

Health Beliefs and Communication

Within the communication literature, research on diabetes, Hispanics with diabetes, health disparities, and health beliefs is mostly situated under message processing and message production. This literature covers a wide range of issues concerning diabetes, including sources of uncertainty (e.g., Middleton, LaVoie, & Brown, 2012), family communication (e.g., Herge et al., 2012), coping with the disease (e.g., Goering, & Matthias, 2010), technology and social networks (e.g., Kim, Moran, Wilkin, & Ball-Rokeach, 2011; Wright, Sparks, & O'Hair, 2008), patient-provider communication (e.g., Bundesmann, & Kaplowitz, 2011; Koenig, Wingard, Sabee, Olsher, & Vandergriff, 2014), health literacy (e.g., Osborn et al., 2011; Shaw, Armin, Torres, Orzech, & Vivian, 2012), and communication competence (e.g., Parchman, Flannagan, Ferrer, & Matamoras, 2009). A smaller number of articles can be found in the communication literature on health disparity concerns. Studies have been conducted on the impact of race in diabetes forums (e.g., Case et al., 2009), on the significance of conversations between diabetic African-American mothers and their adult daughters (e.g., Cooke-Jackson, 2011), and on the health literacy needs of immigrant populations (e.g., Zanchetta, & Poureslami, 2006).

The extant communication literature, however, makes no mention of irrational health beliefs about diabetes and how those beliefs are communicated and disseminated. Thus, this investigation seeks to fill a gap in the diabetes and communication literatures by examining the origin and sources of IHBs and the social and cultural factors that aid in their dissemination. To comprehend the role of

communication in the dissemination of IHBs, it is necessary to identify the relationship between beliefs and communication. The following paragraphs summarize and explain the various ways in which beliefs and communication intersect.

The literatures in psychology, sociology, and anthropology offer various definitions of the *belief* concept. Rokeach (1972) defines beliefs as “inferences made by an observer about underlying states of expectancy” (p. 2). Similarly, Fishbein and Ajzen (1975) define beliefs as “a person’s subjective probability judgments concerning some discriminable aspect of his world” (p. 131). In communication, beliefs have been defined as “assignments of phenomena to positions on personal constructs” (Cronen, 1978, p. 20). These definitions suggest that beliefs are formed through observation/experience, inference, and information acquisition—all of which could be considered communicative processes (Fishbein & Ajzen, 1980). As Ruesch and Bateson (2009) argue, “all actions and events have communicative aspects as soon as they are perceived by a human being” (p. 6).

The formation of beliefs via observation, experience, inference, and information acquisition is in part effectuated through communication dynamics. Internal communication, or communication with oneself – also known as private speech, inner speech, or self-talk – is often employed, for example, during observation and inference (Brinthaup, Hein, & Kramer, 2009). Individuals who are attempting to make sense of what they have just observed or experienced may use inner speech, take notes, or even speak aloud to themselves (Brinthaup, Hein, &

Kramer, 2009; Honeycut, Zagacki, & Edwards, 1987). In addition, individuals may doodle or make gestures to assist with memory and concentration (Andrade, 2010). These common practices illustrate the centrality of communication to the belief formation process.

Interpersonal communication is also thought to affect belief formation. Fishbein & Azjen, (1975) explain that people can sometimes form beliefs by accepting information from an outside source. For instance, a Hispanic patient may learn from a trusted friend that *tibico* or kefir is good for controlling blood sugar. As the receiver of this information, the patient may choose to believe the proposition and accept it as being true. Or the receiver may choose not to believe that kefir is good for controlling diabetes. As Hoyer and Sheluga (1987) describe it, additional communication with family, friends, neighbors, and sales personnel may influence the individuals' decision to believe or not in the health properties of *tibico*.

Besides assisting with belief formation, communication is the primary way in which individuals demonstrate their beliefs. It is common in many societies to manifest or expose beliefs (e.g., political, religious, and medical) through communication in the form of words, signs, symbols, body language, or clothing choices. In politics, for example, citizens convey their opinions, ideas, or thoughts about issues, including candidates, congress, taxation, and war. Political demonstration can take place through vocal protests, signs, or particular behaviors. Similarly, it is common for individuals to share their notions about health with family, friends, and even strangers. Health beliefs can be shared through verbal

communication (oral or written) as well as non-verbal communication (appearance, body language, and behavior). Sharing health information is not an exclusive task of patients. Clinicians in health care environments are also sharing, circulating, and promulgating health beliefs. As Dewing, McCormack, and Tichen (2014) argue, beliefs are defined, demonstrated, and shared in health care settings.

In addition to assisting with the formation and demonstration of beliefs, communication is used to disseminate and promulgate beliefs. Interpersonal communication and mass communication sources are common venues for the transmission of health notions. For example, interpersonal health communication often involves sharing health information and beliefs with family, friends, acquaintances, and even strangers. Koehly and colleagues (2009), who study the impact of health information gatherers and disseminators within families, found that parents played a significant role in this process. The authors argued that parents were “often the gate-keepers to the health information of older and more distant family members for their children” (p. 5). This and other studies in interpersonal health communication demonstrate the importance of communication in the dissemination of health beliefs.

Mass communication sources also play a significant role in the dissemination and promulgation of health beliefs. Beliefs can be disseminated or acquired through the Internet, “newspapers, books, magazines, radio and television, and lectures” (Ajzen & Fishbein, 1975, p. 133). Individuals use the Internet, for example, to communicate with health care providers, to engage in illness support groups, to

organize and manage health information, to purchase health-related products and services, and to share their opinions and knowledge via chat rooms or blogospheres (Shaw, McTavish, Hawkins, Gustafson, & Pingree, 2000; Wright, Sparks, & O’Hair, 2008).

Brodie and colleagues (2001) noted that media are common sources of health information and that health care providers have reported patients’ increased interest in health issues seen on television shows. As DuPré (2005) explained, it is difficult to judge the impact of media sources on health outcomes, but it is believed that media messages have a “significant influence,” especially in developed countries where people incorporate media in their daily routines (p. 305). Brown and Walsh-Childers (2002), who wrote about the impact of mass media on personal and public health, argued that mass media have a plethora of “images and messages” that can affect individuals’ physiological and psychological states (p. 453). The authors highlighted tobacco, alcohol, over-the-counter and prescription drugs, substance use and abuse, food and nutrition, sexuality, and mental health as some critical health issues that are regularly addressed by mass media outlets.

In review, communication is central to the formation, demonstration, and dissemination of beliefs, in general, and health beliefs, in particular. Although the literature on health beliefs is quite vast and includes thousands of academic articles and books, there is comparatively little research on irrational health beliefs (Lynn & Ellis, 2010), and, to my knowledge, there are no studies that address the topic from a communication perspective. Additional research is needed to determine the role of

communication in the formation, demonstration, and dissemination of irrational health beliefs.

This section reviewed the main subject areas pertaining to this investigation: diabetes, irrational health beliefs, health disparities, and communication. The subsequent chapter probes the theoretical frameworks that would best inform a study of this nature.

Chapter 2

Theoretical Frameworks Concerning Health

The key concepts for this study include diabetes, irrational health beliefs, Hispanics, and health disparities. When investigated jointly, these concepts may impact theory, research, and practice in both the public health and health communication fields. The impact on theory could be the most substantial, given that no current theoretical framework exists that can completely explain or describe these subjects and their relationship. Although no theoretical frameworks could be found that accounted for the formation and dissemination of irrational health beliefs (as pertinent to RQ2a and RQ2b), several theories could help explain the impact of these beliefs on behavior (as related to H1 and H2). Within communication studies, four different theoretical frameworks offer insight into the belief-behavior relationship and, as such, were considered for this investigation: the theory of reasoned action (TRA), the theory of planned behavior (TPB), the health belief model (HBM), and the ecological models of health behavior (EMHB). Before discussing each particular framework, it is necessary to discuss the difference between theories, models, perspectives, and approaches.

Understanding Theoretical Labels

When studying theory, academics encounter a variety of terms assigned to groups of philosophical constructs, such as *theory*, *model*, *perspective*, and *approach*. Examples of *theories* include attribution theory, inoculation theory, and expectancy violation theory. Some examples of communication *models* include the elaboration likelihood model and the heuristic systemic model. Common *perspectives* include positivism, post positivism, and constructivism; whereas, *approaches* is used alongside terms such as *qualitative* or *quantitative*. It can sometimes be challenging to navigate between the terms because they are on occasion used interchangeably. Understanding how philosophical labels differ or relate to each other can assist in using the terminology appropriately and in recognizing the breadth or scope of a particular theoretical framework.

A theory is defined as a set of informed, systematic ideas about the ways things operate (West & Turner, 2007). Theories must be methodical and thorough, and they must specify the relationship between multiple ideas, not just one idea. Theories can serve as nets, maps, and lenses (Miller, 2005). They are compared to nets because they can help capture a phenomenon and the ideas related to it; they can help organize and group those ideas; and, they can help connect those ideas in a way that assists in understanding other theories. Theories are also compared to maps because they help navigate an unfamiliar phenomena; they provide a better picture of problems; and, they assist in charting the process to achieve research goals. In addition, theories are compared to lenses because they assist in providing

clarity to research issues or problems. In sum, theories help scholars analyze the way people think, navigate unfamiliar phenomena, and evaluate people, places, actions and things in different ways (West & Turner, 2007).

Theories are thought to reside within or emerge from the broader umbrella of perspectives or worldviews. Worldviews or intellectual perspectives help locate theories or models within particular research philosophies. They refer to the assumptions that individuals make about reality or the nature of reality and influence the way researchers ask questions and look at problems. Positivism, constructivism, and pragmatism are all examples of theoretical or ontological perspectives (Miller, 2005). Although these perspectives are all boxed into individual categories, they really exist on a continuum. The initial stages of this investigation, for example, would align with a constructivist perspective. Later in the project, however, this study could be aligned with pragmatism as ways to incorporate the findings into solutions are sought.

Theories and perspectives attempt to be comprehensive. Conversely, models are simple ways to demonstrate complex relationships and concepts. They can be generated before theory or after theory. Models can be visual, verbal, or mathematical representations of concepts or processes. They present the researcher's view of how concepts or processes relate. Ordinarily, models are used to explain a general concept, not a particular research study. Like theory, models are not necessarily proven. In communication theory, some examples include the linear,

the interactional, and the transactional models of communication. Models can be used as guides for theory formulation (Corcoran, 2007).

Approach refers to the method used for inquiring, exploring, examining, or investigating a phenomenon. Approach and method differ in that the word *approach* is used to describe an overall idea or style, while the word *method* is employed to describe the specific steps and procedures used. Qualitative, quantitative, and mixed-methods are examples of research approaches. Approaches also correspond to worldviews. In summary, worldviews provide a broader conceptual framework that house corresponding theories or models. These theories or models employ a methodological approach that should also correspond to a particular worldview or perspective.

Theories and Models of Health Behavior

The following section reviews some of the major theoretical frameworks of health behavior and provides an indication of how they could assist with the proposed investigation. Two theories and two models have been chosen for this purpose.

Theory of Reasoned Action

Developed by Fishbein and Ajzen (1967), the theory of reasoned action (TRA) proposes that behavioral intentions determine the likelihood that an individual will perform a specific behavior. The theory seeks to explain behavioral intentions, a crucial concept in a study of irrational health beliefs about diabetes, since the beliefs that people hold about diabetes may influence their intentions to engage in health

behaviors such as healthy diet and exercise. Two main assumptions apply to this theory: that individuals are rational and consider the consequences of their actions before they decide to engage in a particular behavior and that human behavior is not controlled by unconscious motives or desires. The major components of the TRA include beliefs, attitudes, behaviors, and subjective norms. Each of these concepts and their relevance to the proposed dissertation study are described more fully below.

Beliefs. Ajzen and Fishbein (1975) defined beliefs as the information that “links an object to some attribute” (p. 12). For example, the belief “diabetes is curable” links the object “diabetes” to the attribute “curable.” The authors also explained that salient beliefs, the small number of beliefs that a person “can attend to...at any given moment,” determined a person’s attitude towards a particular behavior (Fishbein & Ajzen, 1980, p. 63). According to the TRA, salient beliefs must be elicited before attitudes can be understood. Once beliefs are identified, then attitudinal change can be pursued by producing changes in beliefs. In this investigation, the TRA would require that we elicit Hispanics’ salient beliefs about diabetes in order to understand the attitudes that they hold about the disease. If a high percentage of Hispanic participants in this study, for example, were to believe that “diabetes is curable” (diabetes is actually treatable, but not curable), then, according to the TRA, that should have a direct impact on those participants’ attitudes toward diabetes and its treatments. Also, if the participant’s belief is negatively affecting their attitude towards seeking treatment or care, then we know

that changing or modifying this belief could potentially also change behavior related to treatment or care.

Attitudes. While beliefs are defined as information that links objects to attributes, attitudes are defined as a “person’s favorable or unfavorable evaluations of an object” (Fishbein & Ajzen, 1975, p. 12). Rokeach (1972) clearly states that “an attitude is a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner” (p. 112). As previously mentioned, attitudes are determined by a person’s belief. In order to predict behavior, we must assess a person’s attitude. For example, let us consider the beliefs of a Hispanic woman regarding diabetes and exercise/diet. If she associates diet and exercise with positive consequences in diabetes treatment, she will have a positive attitude towards those behaviors. But if she associates diet and exercise with negative consequences, she will have negative attitudes towards the behaviors. This component, therefore, explains how the attitudes that Hispanics hold about diabetes will determine their likelihood to engage in a particular behavior. Because attitudes lead to action (or inaction), identifying attitudes is necessary to predict behavior (Fishbein & Ajzen, 1980).

Behavior. As Fishbein and Ajzen explain, a behavior is a single act performed by an individual. Behavioral categories involve sets of actions. Behavioral categories usually relate to a general category. For example, the general category, medication adherence, would include behavioral categories such as buying insulin, injecting the medication, monitoring blood glucose, etc. Ajzen and Fishbein argue

that behaviors should be observable so that multiple researchers can validate what is being observed. This makes a study more reliable. Behaviors include their own components (action, target, context, and time). As such, studying behavior requires attending to multiple facets, such as the action involved, the target of the action, the context(s) in which the action might occur, and the timing of the event. A Hispanic man, for instance, may not seem interested in diabetes information seeking at the endocrinologist's office. But, he may seek information from family members at home or from friends at work, or he may conduct an online search to find information about the disease. A researcher observing health information-seeking behaviors at the doctor's office may erroneously infer that that man was not interested in information seeking, when in fact he was. Thus, context was a facet of behavior that played a significant role in this particular scenario.

The theory of reasoned action is mostly used to study behavioral intentions instead of actual behavior. The literature features a large number of studies using the theory of reasoned action to predict a wide range of intentions to perform behaviors, such as condom use (e.g., Sheeran & Taylor, 1999), exercise (e.g., Hausenblas, Carron, & Mack, 1997), abstinence, HIV testing, and practicing safe sex (e.g., Fisher, Fisher, & Rye, 1995), and the use of nicotine replacement patches (e.g., Curtis, 2012). Behavioral intentions, however, are not always an accurate indicator of actual behavior (Miller, 2005). Thus, a study informed by the theory of reasoned action would be more productive in terms of assessing actual behavior, even if the behavior

is self-reported. The theory of reasoned action was chosen for this study in order to measure actual behaviors rather than behavioral intentions.

Normative Beliefs. The *normative beliefs* component indicates that individuals take into account the opinions and thoughts of family and friends when deciding to perform or not perform a particular behavior. For instance, if a study participant thinks that a highly regarded friend would approve of the use of herbs for diabetes treatment, the study participant may be more motivated to consider *aloe vera* in lieu of medication. Normative beliefs contribute to subjective norms. (Ajzen & Fishbein, 1980).

Subjective Norm. This component refers to the individual's perceptions about a specific behavior, which are influenced by people important to him or her. Normative beliefs comprise the subjective norm. Like attitudes, the subjective norm is thought to have a direct impact on behavioral intentions. Using the example from the above component, individuals with diabetes may feel pressured to use herbs for diabetes treatment if they believe that most of the people important to them expect them to do so. The subjective norm differs from normative beliefs in that normative beliefs are the opinions of particular individuals, while the subjective norm refers to the pressure that an individual feels to comply with the combined opinions of all those important to him or her (Ajzen & Fishbein, 1980).

In 1985, responding to criticism that the theory of reasoned action lacked a self-efficacy component, Icek Ajzen extended the theory of reasoned action and

developed the theory of planned behavior. The following is a description of that extension.

Theory of Planned Behavior

The theory of planned behavior (TPB) is an extension of the theory of reasoned action with the added component of behavioral control. This component was added by Ajzen (1985) to account for the fact that people's perceptions about their self-efficacy would also influence behavior. Behavioral control was separated into perceived behavioral control, control beliefs, and actual behavioral control. *Perceived behavioral control* refers to people's perceptions of their ability to perform a given behavior. *Control beliefs* focus on the factors that may facilitate or impede the performance of the behavior. *Actual behavioral control* refers to the extent to which the person has the skills, resources, and other prerequisites needed to perform the behavior. For example, an individual may decide to control diabetes through diet and exercise. This person perceives that he/she can control diabetes. This individual begins planning his/her diabetes-related activities and starts thinking that his/her work schedule will make it difficult to exercise and eat properly (control beliefs). In addition, the individual determines that the lack of nearby supermarkets offering fresh fruits and vegetables as well as the lack of sidewalks and affordable fitness centers are going to make it nearly impossible to switch eating and exercise patterns (actual behavioral control).

These components are important to this investigation because they assist in explaining and understanding the impact of self-efficacy on behaviors. In addition,

these three components are also composed of beliefs. A Hispanic woman with low literacy skills may find diabetes treatment overwhelming if she has limited English ability and cannot understand the oral or written instructions provided by her physician. Even if her intention is to comply with the doctor's recommendations, her perceived behavioral control, or her beliefs about what she can or cannot accomplish, may dissuade her from doing so.

Although the theory of reasoned action and the theory of planned behavior are used for behavioral explanations and predictions, other theories are more commonly used for studies of behavior change. What follows is a description of one of these frameworks: the health belief model.

The Health Belief Model

The health belief model (Rosenstock, 1966) has been analyzed extensively in health communication, and it has been used to study a variety of diseases and health issues, including osteoporosis (e.g., Gammage & Klentrou, 2011), nutrition (e.g., Chew, Palmer, & Kim, 1998), inoculation (e.g., D'Souza, Zyngier, Robinson, Schlotterlein & Sullivan-Mort, 2011), steroid use (e.g., Quick, 2008), HIV (e.g., Mattson, 1999), and cancer (e.g., Agurto, Bishop, Sánchez, Betancourt, & Robles, 2004). The model is based on the principle that before individuals are motivated to engage in a specific behavior they need to be mentally ready to do so. Thus, the model's two main variables are psychological readiness and the perceived benefits of reducing health threats. This framework assumes that individuals will take health-related action if:

- the health threat can be avoided,
- they believe that the action will prevent the threat,
- they believe they can be effective at taking action against the threat.

The major components of the health belief model include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Rosenstock, 1966). The following paragraphs summarize the components of the health belief model as explained by Rosenstock (1966) and relate those components to a diabetes context.

Perceived susceptibility. This component refers to the individual's perceptions about the likelihood that a particular health threat will affect him or her. A young adult woman who has a parent or an older sibling with diabetes may believe that she is more likely to be affected by the disease than someone who does not have any close family members affected by the disease.

Perceived severity. Severity refers to an individual's perceptions of the seriousness of a health threat. A Hispanic man in his mid-50s, who just watched his own father die of renal failure due to diabetes, may perceive diabetes as a grave health threat.

Perceived benefits. This component refers to the individual's perceived resources and alternatives to reduce the health threat, and to the positive consequences of performing the particular action. Having access to an excellent endocrinologist and health insurance plan, working for an understanding employer, and having the support of family and friends could be considered perceived benefits

for a patient with diabetes. A person with diabetes would be more likely to engage in diet or exercise, for example, if he or she believes that those actions will have desired results, such as weight loss or an improved self-image.

Perceived barriers. When considering health threats, individuals may think of factors that may impede the reduction of the health threat. For many low-income Hispanics, lack of transportation and access to health insurance could be considered barriers in dealing with diabetes treatment and care.

Cues to action. The various events that can incite someone to take action against a health threat are considered cues to action. Individuals may be motivated to comply with diabetes medication adherence if they see an advertisement discussing the possible outcomes of non-adherence. Or, they may be motivated to act if they have experienced through family or friends the negative consequences of non-adherence.

Self-efficacy. This component refers to the individual's belief that he or she can perform the action or behavior required to reduce the health threat.

The health belief model, the theory of reasoned action, and the theory of planned behavior have demonstrated to be effective at explaining behavior change and behavioral intentions, respectively. Their lack of environmental and cultural components, however, limits their scope (Corcoran, 2007). Some researchers believe that health should be considered within an environmental context because health and health behaviors are intertwined with the environment (Simons-Morton, 2012).

The population at risk does not exist in isolation. Thus, these researchers turn to the ecological models of health behavior.

Ecological Models of Health Behavior

The ecological models of health behavior (EMHBs) are frameworks indicating that the health behavior of individuals is influenced by their environments. These models have their roots in the work of Urie Bronfenbrenner (1979) and his research on human ecology. Although various ecological models of health behavior are discussed in the literature (e.g. Cegala, 2011; Moore, Wright, & Bernard, 2009; Street, 2003) most are based on the idea that an individual's health is influenced by the environment, which includes intrapersonal, interpersonal, institutional, community, and public policy factors (Glanz, Rimer, & Lewis, 2002). The following paragraphs summarize the principal elements of the ecological models of health behavior as explained by Glanz and colleagues (2002) and place those elements into a diabetes context.

Intrapersonal influences refer to the knowledge, attitudes, and behaviors of individuals. These include the belief systems that shape people's ideas and thoughts about the world around them. In a study of IHBs, diabetes, and Hispanics, the intrapersonal influences would include a person's attitude towards the disease, their likelihood of adhering to medical treatments or seeking medical care, and their beliefs about diabetes prevention and management.

Interpersonal factors refer to the environment immediately outside the individual and the groups with which the individual has direct contact. These include

nuclear and extended family, formal and informal groups, social networks, colleagues, and other social support systems. Because Hispanics are highly connected and dependent on interpersonal influences, the interpersonal component could have a strong impact on diabetes beliefs and behaviors. It has been observed, for instance, that many Hispanics obtain health information from family, friends, churches, or social groups (Livingston, 2008).

The *institutional environment* refers to the social institutions, organizations, and other settings within which individuals function. These institutions provide a connection between the interpersonal environment and the world outside the home. These institutions include educational, governmental, medical, cultural, and religious organizations. Institutions are critical to a study on IHBs about diabetes, given that low income Hispanics may have difficulty navigating the healthcare environment due to communication or cultural differences.

Community influences refer to the social structures that connect institutions, organizations, and groups. This environment encompasses the cultural customs, values, and beliefs in a specific place. Because culture is highly relevant to this investigation, it is important to keep track of these community influences. In addition, statistics describing the community at large, such as measures of poverty, income, wealth, and health literacy levels, are necessary to assess their impact on and relationship to diabetes disparities.

Public policy factors include community efforts as well as the local, state, and federal laws that may impact health care concerns. Public policy is important for this

investigation because it affects many aspects of life that influence health. Housing, safe affordable food, job opportunities, and active-living opportunities influence health and conversely are also influenced by public policy issues. A diabetic without access to safe, affordable food or a safe place to go for a walk may not be able to engage in activities that can improve his/her health status. Groups, such as the National Health Council, encourage community members to gather collective power for a variety of issues, including support for health research, speedier development of new medications, and access to effective and affordable health care.

The following section compares and contrasts the constructs from the theories discussed above so that we can understand how these constructs interrelate, and how they are significant in a study of diabetes and IHBs.

Comparing and Contrasting Theoretical Frameworks

The theory of reasoned action, the theory of planned behavior, and the health belief model form part of what Chung, Barnett, Kim and Lakaff (2013) call the health communication theory subset in their analysis of communication theory and the communication discipline. These frameworks are also some of the most widely used in health communication research (Noar & Zimmerman, 2005). When analyzing their main components, as well as those of the ecological models of health behavior, it is evident that these frameworks are overlapping and complementary of each other.

Noar and Zimmerman (2005) explain that overlapping components sometimes occur when theories originate in different fields or philosophical

traditions. This justification does not apply to this subset given that these four theoretical frameworks all originated in the field of social psychology. Overlapping components among these frameworks may be imperceptible due to differences in terminology. Attitudinal beliefs, also known as the attitudes that people have toward a behavior, for example, are present in both the TRA and the TPB, as *behavioral beliefs*. The concept is also present in the HBM as the *benefits/barrier* component, which indicates an individual's perceptions of the positive or negative aspects involved in avoiding a health threat. Attitudinal beliefs, behavioral beliefs, and benefits/barrier components are similar in that all take into account the expectations that individuals have when deciding to engage in or avoid a particular behavior.

Because it is not considered a framework of individual health behavior (Glanz et al., 2002), the ecological models of health behavior do not include an attitudinal belief component. The models, however, do assume that attitudes toward a behavior are influenced by intrapersonal, sociocultural, political, and physical-environmental factors. The concept of *self-efficacy* in the HBM is labeled perceived behavioral control in the theory of reasoned action and the theory of planned behavior. The self-efficacy component was added to the theory of reasoned action after 1985 (Ajzen, 1985). Finally, the concept related to standard societal behavioral influences is labeled "cues to action" in the HBM and "normative beliefs" in the TRA and the TPB (Ajzen & Fishbein, 1980).

Despite these overlapping concepts, the theories accomplish different goals. The TRA and the TPB are used to identify and predict behavioral intentions.

Although it is also used to explain and predict behavior, the health belief model is more useful for those attempting to understand behavioral change. Therefore, it seems logical that health communicators and public health officials would use the TRA to identify behavioral intentions, and later apply the HBM to inform health behavior interventions and health campaigns. Neither the TRA/TPB nor the HBM takes into consideration environmental settings. This is problematic, especially for health interventions and health campaigns that attempt to effect change on the public or institutional levels. Components of the ecological models of health behavior could be used to offset this limitation. Besides lacking environmental considerations, most of these theoretical frameworks lack an adequate cultural component. This is a major drawback because many health interventions and health campaigns are directed at racial and ethnic minority groups (Randolph, & Viswanath, 2004).

Comparing and contrasting the health communication theory subset helped identify concepts that are present in the various theoretical perspectives and that can be of importance in a study of IHBs and diabetes. Similarly, it is important to consider how communication fits into these theories and to determine which communication constructs are of relevance to this study. The following section identifies the communication constructs within these theories and highlights how they are pertinent to this investigation.

Communication Components in Health Frameworks

Although the theories and frameworks described above are used in health communication research and practice, they originate in the field of psychology.

Communication, nonetheless, plays a significant role in these frameworks. In the theory of reasoned action and the theory of planned behavior, the beliefs and subjective norm components are significantly related to communication practices. Fishbein and Ajzen (1980) argue that, in order to change behaviors, we must change people's beliefs. They also argue that beliefs are modified through communication. As they explain, the main role of "persuasive communication is to change the primary beliefs that underlie one or more behaviors" (p. 225). In addition, normative beliefs and the subjective norm are shaped by communication. It is through the communication process that individuals become aware of the opinions that others have about certain behaviors and through which normative influences are exerted and felt.

Communication is also a significant factor in the *cues to action* component of the HBM. Cues to action are triggers that motivate individuals to act against a health threat or adopt healthy behaviors (Rosenstock, 1966). Internal cues to act in the case of diabetes (e.g., sudden weight loss, unusual thirst) are generally based on physical symptoms. But, external cues are generally communication-related. They involve conversations with friends and family, information provided by health care providers, health campaigns, and other communication efforts designed to promote positive health behaviors. Individuals with diabetes, for example, may learn about the disease while conversing with others about their symptoms. In her reconceptualization of elements in the HBM, Mattson (2009) argued that cues to action deserved a central focus within the HBM because "beliefs and perceptions

about health and illness are socially constructed and contingent upon social interaction,” (p. 243). It is through interpersonal communication that individuals may acquire information that could possibly lead them to change behavior. Some individuals with diabetes may decide to adopt a healthier lifestyle because of the cues to action communicated by their health care providers or even by the individual’s support network. Cues to action may be the factor that bridges the beliefs that people have formed about the disease with their ultimate decision to act upon them or not.

As Glanz, Rimer, and Lewis (2002) explain, the ecological models of health behavior center on people’s relationships with their physical and socio-cultural environments. When discussing the human ecology framework, Bronfenbrenner (1979) highlights several communication concepts. Some of these concepts include intersetting communication, one-way communication, bidirectional communication, and communication channels. Intersetting communication refers “to messages transmitted from one setting to the other with the express intent of providing specific information to persons in the other setting” (Bronfenbrenner, 1979, p. 210). As Bronfenbrenner explains, these messages can be transmitted in a variety of ways, including face-to-face communication, telephone interaction, written messages, or via networks. Bronfenbrenner clarifies that messages can be one-directional or bidirectional, but the author emphasizes that bidirectional communication, where messages flow between two settings, is more effective because it provides two parties the opportunity to build mutual trust, build goal consensus, and exercise balance of powers. In addition to these communication concepts, Bronfenbrenner argues that

social networks serve an important role as communication channels when a direct channel is not available to the individual. A non-documented Hispanic immigrant with diabetes, for example, may acquire information from a cousin who studies nursing rather than directly from a physician.

Although communication constructs exist within the philosophical frameworks explored for this investigation, explicit communication components are not found in any of the theories discussed, a result, perhaps, of the fact that the theories did not originate in the communication field. This shortcoming, however, has not been sufficiently addressed in the literature and is not preventing communication scholars from using these theories in health promotion and health campaign development. In fact, the theories are widely used in health communication research (e.g. Corcoran, 2007; Goodson, 2010; Griffin, Neuwirth, & Dunwoody, 1995; Luca, & Suggs, 2013; Middleton, LaVoie, & Brown, 2012; Stokols, 1996). These theories have also been used in research concerning diabetes and health disparities. The subsequent section demonstrates how the theory of reasoned action, the theory of planned behavior, the health belief model, and the ecological models of health behavior have been utilized in prior studies involving some of the major subject areas of this investigation.

Theory, Diabetes, and Disparities

The theoretical frameworks that I have chosen to explore have been widely used in diabetes and health disparity research. The theory of reasoned action and the theory of planned behavior have been used to identify diabetes-related cognitions

and behavioral intentions (e.g., Blue, 2007), to examine the impact of health-risk messages (e.g., Griffin, Neuwirth, & Dunwoody, 1995), and to determine the importance of self-care behaviors (e.g., Didarloo et al., 2011). Blue (2007) used the theory of planned behavior, for example, to inform a mail-in questionnaire that examined certain diabetes-related behavioral relationships. The author sought to identify the beliefs of patients with diabetes about exercise and to identify their intentions to adopt a healthy diet. The investigation found that, unlike in other studies about diet and exercise, the subjective norm component was related to both physical activity beliefs and healthy-eating intentions. The authors hypothesized that the influence of family, friends, and significant others may be more important in the decisions of people with diabetes to eat healthy and exercise than in people without the disease.

In addition to the theory of reasoned action and the theory of planned behavior, the health belief model has been used to examine a variety of behaviors related to diabetes treatment and care. In a study of diabetes in at-risk Appalachia, Della (2010), utilized the HBM to identify thoughts that influence health decision making. The notion that diabetes could be treated through dietary self-management was common among the participants in this study and was seen by the author as a reflection of the participants' low perceived severity of the disease. Lujan and colleagues (2007) used the HBM to assess the impact of an intervention program on health beliefs and knowledge of diabetes among Mexican Americans. The authors found that divine fatalism and the belief in an outside locus of control may have

affected the participants' individual self-efficacy in disease management and, therefore, their ability to take action.

Researchers have also employed the HBM to predict adherence with complex, ongoing diabetes regimens (e.g., Bond, Aiken, & Somerville, 1992), to determine the importance of patients' beliefs about self-care behaviors (e.g., Harvey & Lawson, 2009), and to test the relationship between health beliefs and compliance with insulin administration (e.g., Cerkoney & Hart, 1980). Harvey and Lawson (2009) reviewed a series of health belief theories and models utilized to help explain patient behavior and the influence of behavior in diabetes management. The authors found that theoretical frameworks, including the HBM, the TRA, and the TPB, have helped clarify how health beliefs and other illness representations are related to the patient's self-management of diabetes. Nonetheless, the authors argued that patient interventions have not been effective at producing behavior change. As they explained, research studies must recognize and assess the value of identifying diabetes beliefs. Once beliefs are identified, intervention approaches should be developed to specifically counter beliefs that may hinder health behavior.

A number of studies have also employed the HBM to explore the relationship between cultural beliefs and self-care (e.g., Hjelm, Bard, Nyberg, & Apelqvist, 2005; Poss, 2001; Rubel & Garro, 1992). An individual's cultural background can significantly influence his or her perceptions of benefits, barriers, and efficacy. The HBM's perceived benefits and perceived barriers constructs can be helpful in explaining how health beliefs driven by culture can affect the patient's ability to

make rational decisions about health. Hjelm, Bard, Nyberg, and Apelqvist (2005) used the model to determine how the health beliefs held by ethnic men living with diabetes in Sweden affected their self-care and care-seeking behaviors. The authors found that cultural proclivities became barriers to treatment. Ethnic participants in that study, for example, believed that stress, relationship conflicts, and supernatural phenomena were responsible for disease causation. They were also more likely to feel that nothing could be done about the disease. This external locus of control prevented the ethnic participants from engaging in proactive behaviors for disease management.

Rubel and Garro (1992) have questioned, however, the use of the HBM for studies involving cultural elements. The authors argue that the HBM is inadequate for predicting behavior in a wide range of cultural contexts because it lacks a culturally-specific construct. As a response, Poss (2001) proposed a modified version that combined the HBM and the theory of reasoned action. But, none of these options addresses cultural issues as well as ecological models of health behavior.

The ecological models of health behavior have been employed to study obesity (e.g., Davison, Jurkowski, & Lawson, 2012; Egger & Swinburn, 1997; Swinburn, Egger, & Raza, 1999), to identify health communication behaviors in Latinos (e.g., Katz, Ang, & Suro, 2012), to better health promotion programs (e.g., Simons-Morton, 2012), to improve health disparity research (e.g., Reifsnider, Gallagher, & Forgione, 2005), and to understand the association between ecological factors and diabetes (e.g., Chang et al., 2013). In an examination of the impact of ecology on

parents' knowledge and behaviors regarding their children's diets, physical activity, and screening behaviors, Davison and colleagues found that educational, cultural, organizational, and community factors all played a role in the parents' decision making. Similarly, in a study on the impact of ecological factors on health information access, Katz, Ang, and Suro (2012) found that informal health communication ecologies were associated with access to health care and health outcomes in Hispanic immigrants. In that investigation, informal health communication ecologies were defined as the health information gathered from a network of family, friends, media outlets, churches, and other community organizations. The authors found that Hispanics with a higher education, income, and social status retained a diverse, informal health communication ecology, which was in turn associated with greater health care access and better health outcomes.

The ecological models have also been used to study diabetes. Chang and colleagues (2013), who investigated the social-ecological contributions to diabetes within Hispanics, found a relationship between diabetes and structural, cultural, behavioral, and biological factors. The study indicated that, when all those factors were taken into account, "older age, greater BMI (>30), greater waist-to-hip ratio as well as lower fruit and vegetable consumption were significantly related to increased likelihood of diabetes" (p. 3217).

As demonstrated in this section, ample evidence exists to support the application of these theoretical frameworks in the particular context of the proposed investigation. In addition to this substantiation, specific criteria can be used to

determine the usefulness and appropriateness of the suggested frameworks for a study on IHBs, diabetes, and health disparities. A description of these criteria follows.

Theory Assessment

West and Turner (2007) list seven criteria for evaluating communication theory: scope, logical consistency, parsimony, utility, testability, heurism, and time. *Scope* highlights the breadth of the information provided and the number of behaviors included. *Logical consistency* refers to how well explained and clear the theory seems. *Parsimony* denotes the frugality of the theory with respect to the number of concepts included. *Utility* indicates the theory's applicability (i.e., how much it tells us about communication behavior). *Testability* refers to the theory's accuracy and replicability. *Heurism* points to the additional research that is generated by the theory. Finally, the *test of time* refers to the theory's permanence and lastingness.

Based on the criteria for evaluation, all of the theoretical frameworks explored for this study are worthy of consideration. They are all well explained and are easy to understand. Except for the large number of concepts in the EMHBs, most of the frameworks are simple with no more than 10 main components. In addition, they have been greatly utilized and tested. The theory of reasoned action and the theory of planned behavior have been frequently employed to predict health and consumer behavior. Glanz, Rimer, and Lewis (2002) describe the HBM as one of the "most widely used conceptual frameworks in health behavior." As they explain, the model

has been widely tested and used in the health care field to develop successful behavior change interventions, including efforts at promoting mammography screening and AIDS protective behaviors (Downing-Matibag, & Geisinger, 2009; Hyman, Baker, Ephraim, Moadel, Philip, 1994; Paraska, 2012).

Despite their acceptance and prominence, the discussed theoretical frameworks could not completely inform the proposed investigation. Nonetheless, because they would best inform the part of the study focused on the impact of IHBs, the theories of reasoned action and planned behavior stand out as the most useful for this study. Of all the surveyed theories, the TRA and the TPB can best explain the belief component of this investigation and its potential impact on behavioral intentions.

Philosophically, the TRA and TPB could inform research based on either positivist or constructivist worldviews. Ontologically, these theories acknowledge that human beliefs have an impact on society through individual actions. In addition, these theories can help researchers explore the relativism of the world by providing a framework that centers on understanding the beliefs, attitudes, and behaviors of individuals. Epistemologically, the TRA/TPB can also inform questions that fall in both the empirical and interpretive traditions. Both theories try to explain behavior and probe the relativism of behavior. Besides the versatility of their underpinnings, some components of these theories can be used to inform both a qualitative research approach and a quantitative research approach. The beliefs component can help

inform the qualitative part, and the behavioral intentions component can help inform the quantitative part of this investigation.

Nevertheless, the theories of reasoned action and planned behavior lack components that would be essential in a study of this kind, including the cultural, social, and environmental constructs addressed by the ecological models of health behavior. Thus, it would be appropriate to investigate further if, and how, the theoretical frameworks discussed in this section could be combined to best serve this investigation. Although a “cafeteria” approach is rarely recommended in theoretical decision making, it is sometimes a necessary recourse for exploratory or descriptive investigations with scant theoretical precedent. Perhaps, the concepts of the theory of reasoned action, the theory of planned behavior, the health belief model, and the ecological models of health behavior could be coalesced to develop a model that best suits the unique nature of this investigation.

The frameworks may be utilized simultaneously in a study of this kind by considering how their individual components can assist in providing a better depiction of the phenomena under investigation. First, the ecological models of health behavior can help situate the study within the larger environmental and cultural context. Because the EMHB considers the links between individuals and interpersonal, sociocultural, political and environmental influences, it can assist in explaining the sources of IHBs, diabetes, and disparities. In addition, it can help isolate social or cultural factors that strengthen or counter IHBs. Second, once the environmental and cultural influences are identified, components of the theory of

reasoned action and the theory of planned behavior can be employed to investigate factors concerning the actions of individuals. More specifically, these theories can assist in identifying behavioral intentions and the impact of IHBs on health behavior. Finally, information gathered via the first three frameworks can inform the development of health interventions or health campaigns utilizing the HBM as a theoretical base. All the frameworks can work more effectively because together they take into account the environment, the individual, behavioral intentions, and behavior change.

Now that we have established the suitability of the proposed theoretical frameworks, it would be practical to discuss the potential theoretical implications of this study. The subsequent section discusses the potential impact of this study to theory and practice.

Potential Theoretical Implications or Contributions

Only a few studies have addressed the subject of irrational health beliefs about diabetes and their impact in the Hispanic community. The proposed investigation may help inform extant theories on health behavior by adding knowledge about IHBs and their relationship to the Hispanic population, health disparities, and technology. Because of the interrelated subjects that it covers, this investigation may contribute to the four theoretical perspectives of health communication outlined by Chung, Barnett, Kim, and Lackaff (2013): health promotion and interventions, risk communication, information technology, and delivery of health care.

Although this investigation is not an intervention study, diabetes interventions and campaigns could benefit from a study on IHBs about diabetes. Through health interventions, health communication practitioners and public health officials seek to promote behaviors that lead to a healthy lifestyle and counter or discourage those behaviors that do not. Encouraging individuals to exercise, to keep healthy diets, to consume alcohol in moderation, or to stop smoking are typical foci of health interventions (e.g., Foster, Cavill, Crombie, & Naidoo, 2004; Kaner, Heather, Mcavoy, Lock, & Gilvarry, 1999; Ockene, 1987; WHO, 2009). Health campaigns involve efforts to promote behavioral change via mass media channels. Major health campaigns in the U.S. have included “This is your brain on drugs,” “World AIDS day,” “Don’t quit quitting,” and “Eat Right” (Academy of Nutrition and Dietetics, 2014; Bowtell, 2010; Cutler, & Thomas, 1994; Goldman & Glantz, 1998). Recognizing the common IHBs that Hispanics hold about the disease and learning where IHBs originate and how they affect health behavior can provide valuable insight in health intervention and behavior change efforts.

The literature indicates that people’s health behaviors are an important contributor to morbidity and mortality (e.g., Bécares et al., 2012; Burke et al., 2007; Singh & Siahpush, 2002). The way individuals respond or act toward disease and disease management will have a significant impact on their health outcomes. To be effective, therefore, health intervention and campaign developers must be able to accurately assess health problems, the reactions of affected individuals, and the appropriate messages required to incite behavior change. Consequently, theoretical

models and frameworks should be central in health intervention and campaign conception. As Corcoran (2007) explains, theories can assist health communicators in understanding the factors that influence health behavior and predicting the outcomes of those behaviors.

Once the study is completed, findings can be employed to better develop messages that are most appropriate for the Hispanic community. For example, if it is discovered that Hispanics believe that insulin causes blindness, practitioners can develop messages specific to this particular IHB. Messages may be delivered orally through clinician-provider interaction, through health promoters, or through text messaging campaigns, for example. In addition, study findings may be used to identify factors that later may be examined thorough the HBM. For instance, imagine that we find that transportation and access to health care are considered barriers to diabetes treatment and care. These findings may be examined through the lens of the HBM. The model may be employed to help predict behavioral outcomes and to determine the most appropriate steps to follow to produce behavior change.

Health behavior and behavioral influences are affected by the environment in which the individual lives. Therefore, the ecological model of health behavior serves as an appropriate framework to employ when environmental considerations play a significant role. The ecological models of health behavior may be considered when behavior requires changes at multiple levels in the community. A pilot study recently conducted for the purposes of this project indicated that the IHB “diabetes is

curable” was disseminated online predominantly by individuals claiming to be health care professionals. These individuals were marketing herbal supplements as definite cures of the disease. The phenomenon was observed in both Spanish and English language websites. This type of finding would require the researcher to recommend action against false advertisements directed to diabetes patients. The ecological models of health behavior would serve as an appropriate framework for investigating this type of issue and deciding how to develop campaigns that require changes at multiple societal levels (from the interpersonal level all the way to the policy/governmental level).

Although theory is helpful for interventions and campaign development, Corcoran advises that practitioners use it as a guide for understanding behavior and “not as a rigid model that should be followed” (2007, p.11). Citing Tones and Green (2004), Corcoran argues that theory “objectifies human experience...This means that a person is seen as someone who can be measured, analyzed, adjusted or directed. This process opposes the idea of the person being seen as a holistic whole, and is reductionist in nature” (p. 11). Because we hope for this study to inform diabetes campaign development in the future, it is important to recognize this important limitation. Theory may help with generalizations about the population under study. Clinicians and health communication practitioners, however, must consider research results carefully, bearing in mind that each individual is a unique entity to whom research findings may or may not apply. Besides making a contribution to theory through the subject areas, the proposed research may make a contribution to belief

theory. Currently, none of the theories explored for this project, or any other available theories, adequately address belief formation.

Having reviewed the theoretical frameworks and models most appropriate for this study, we will follow the progress of the proposed investigation with a review of the most suitable methods for data collection and analysis. This review includes a summary of available literature on data collection methods utilized in diabetes, health disparities, and health beliefs studies, as well as the extant but scant literature on the data collection methods utilized in studies of IHBs.

Chapter 3

Research Design and Methods

This investigation centers on the irrational health beliefs (IHBs) that Hispanics have about diabetes and the effects of those beliefs on diabetes prevention and management. Irrational health beliefs – the opinions, attitudes, and thoughts that people have about health that defy scientific evidence – may impact an individual’s capacity to obtain, process, and understand basic health information as well as their ability to seek care and adhere to medical treatments (Fulton, Marcus, & Merkey, 2011; HHS, 2011). Given the potential for IHBs to hinder disease prevention and management, studying their nature and impact is of the utmost importance.

Surprisingly, not much research has been conducted on the irrational beliefs that low-income Hispanics hold about diabetes. As a result, little is known about the types of IHBs that exist, where these beliefs originate, and how they impact health behavior. Thus, the proposed investigation aimed to answer the subsequent questions and test the following hypotheses.

Research Questions and Hypothesis

Informed by multiple health behavior theories, this investigation proposed to answer the following research questions: (a) What diabetes-related beliefs that defy scientific evidence are common among Hispanics in the United States?; (b) Where do those beliefs originate?; (c) What communication sources are involved in the

dissemination of IHBs?; and, (d) What cultural factors play a role in the dissemination of IHBs?

In addition, this study tested the following hypotheses: H1: Hispanics who endorse more diabetes-related IHBs will be: (a) less likely to seek health information from health professionals; (b) more likely to seek information from non-medical sources; (c) more likely to follow a poor nutritional regimen. H2: Hispanics with diabetes who endorse more diabetes-related IHBs will be: (a) less likely to report exercising regularly; (b) less likely to adhere to medical recommendations; and, (c) more likely to have comorbid conditions.

Because the proposed investigation was descriptive and exploratory in nature, and because it also sought to find relationships between concepts, a two-part, qualitative and quantitative research study was utilized. The qualitative part of the study was necessary to gather first-hand data on the irrational beliefs that exist among the Hispanic community, and the quantitative part of the study helped identify if a relationship existed between IHBs about diabetes and health behaviors. The following sections provide a justification for and explanation of the chosen methods for this study.

Qualitative Research

In the social sciences, researchers employ different approaches to data collection, which typically fall into one of four categories: theoretical, qualitative, quantitative, and mixed. These research approaches refer to the techniques used for inquiring, exploring, examining, or investigating a phenomenon (Tashakkori &

Teddlie, 2003). Depending on the approach, the researcher will gather a different type of data. The qualitative research approach, for example, will yield qualitative data, and a quantitative research approach will yield quantitative data (Johnson & Turner, 2003). A mixed methods approach combines the qualitative and quantitative approaches to offset the weaknesses of each approach (Creswell, 2014).

Tashakkori and Teddlie (2013) describe qualitative research as an inductive, exploratory, free-flowing, unstructured, naturalistic, and open-ended way of collecting information. The authors explain that this way of collecting information will yield qualitative data. As they describe it, the main goal of qualitative research is to answer researchers' questions related to the meaning and interpretation of society and its constructs. Qualitative research should be employed when the researcher seeks to compile as much information as possible to explain and describe a particular phenomenon; to consider the opinions, beliefs and thoughts that individuals hold about the phenomenon; to understand what humans do that drive the phenomenon; and, to consider how the environment affects the phenomenon. Given that this study will attempt to describe and explain the nature and sources of diabetes-related IHBs, a qualitative approach seems warranted.

The choice of a qualitative research component is appropriate for a descriptive or exploratory study about irrational health beliefs. The applicability of qualitative research to this investigation is best described through three noteworthy elements listed by Tracy (2010): proximity, trust/rapport, and multivocality. *Proximity* refers to the researcher's closeness to the participants. Being in close proximity helps the

researcher keep track of cultural and contextual factors that may influence the participants' responses. *Rapport* and *trust* are necessary to build a pleasant relationship with the participants, to understand their ideas, and to effectively communicate with them. Rapport and trust are important as they help the participants open up and engage in more meaningful discussions. These meaningful discussions can lead to more in-depth information about the phenomenon. Finally, as Tracy explains, *multivocality* refers to the diverse voices, opinions, and thoughts of the participants. Tracy (2010) argues that multivocality not only contributes to “empathic understanding” but also “contributes to a variety of opinions” (p. 844), which, as she explains, helps the author include differing ideas and demonstrate cultural awareness. In addition, multivocality helps increase the credibility of an investigation because it addresses “differences in race, class, gender, age, or sexuality” (Tracy, 2010, p. 844).

Quantitative Research

Quantitative research has been described as a confirmatory, deductive, structured, closed-ended, controlled, and linear approach to collecting information (Tashakkori & Teddlie, 2013). This approach should yield quantitative data. The main goal of quantitative research is to test hypotheses. Researchers employ the quantitative research approach to determine the relationship between variables, to find out how many and how often (Jonker & Pennink, 2010), and to measure a target audience's behaviors, behavioral intentions, attitudes, and knowledge (Fishbein & Ajzen, 1980).

Typically, health research has centered on the quantitative research approach (Polit, & Hungler, 1995; Santy & Kneale, 1998). Santy and Kneale (1998) explain that quantitative research uses “a structured procedure and methods to collect information under controlled conditions and emphasizes objectivity through statistical analysis” (p. 78). Although qualitative research has been characteristically utilized for theory generation, quantitative research has been typically utilized for theory verification (Tashakkori & Teddlie, 2013). However, some researchers (e.g., Punch, 1998; Tashakkori & Teddlie, 2013) have argued that both quantitative and qualitative techniques could be used for either purpose.

The choice of a quantitative research component was suitable for this study for several reasons. First, it provided the researcher the opportunity to gather data to corroborate the findings of the qualitative study and test the validity of the study. Second, it allowed the researcher to determine associations between variables. Corroboration alone provides a compelling reason for using quantitative methods. Quantitative data collection tools, such as surveys or questionnaires, serve as appropriate methods for corroborating the information provided in qualitative studies because surveys are designed to reach a larger sample. As Casebeer and Verhoef (1997) explain, “in the context of a qualitative study, both sample size and method are inadequate to test the validity of any apparent distinctions. Only quantitative study can test these findings with sufficient and appropriate sampling” (para. 25).

A fair number of studies suggest that individual interviews, focus groups, and surveys can be used conjointly in mixed methods research for corroboration and other purposes, such as increasing response rates. Berry and colleagues (2009), for example, used mixed methods to evaluate advertisements from a health campaign that promoted physical activity and healthy eating among adults between 50-70 years of age. The campaign was evaluated using telephone surveys and focus group interviews. The surveys were used to monitor the participants' intentions and health behaviors after the televised campaign ended. The interviews were used to gather participants' impressions and comments on the campaign. The authors argued that the qualitative data gathered from the focus group interviews helped better explain the findings from the survey—that the campaign was not successful at changing behavior or intentions among the target audience.

Inversely, Herge et al. (2011) employed a 24-h interview in a mostly quantitative study to corroborate survey findings. The 24-h interview is a specific data collection technique that requires the interviewers to keep track of the participants' health-related behaviors for a period of 24 hours (Gibson, 2005). This can be accomplished through journaling, through face-to-face sessions where the interviewers query participants about their activities for the previous day, or through electronic devices that participants can employ to keep track of their activities. The authors used a variety of quantitative measures and scales including a family environment scale, a diabetes self-efficacy scale, and a diabetes behavior rating scale to assess the association between family organization and adolescent self-

management of diabetes. The 24-h interview was administered to both the adolescents and their parents to corroborate the information provided in the surveys. Because it helps track behaviors and involves corroborating evidence, a combination of a 24-h interview and questionnaires may constitute an appropriate method for answering questions about diabetes health behaviors and their relationship to IHBs.

In addition to corroboration, a combination of methods can be used for development purposes. Smith (2012) employed a combination of qualitative and quantitative methods to explore the cultural beliefs about type 2 diabetes among Afro-Caribbean women in southwest Florida. During the first phase of her study, Smith and her research assistants administered a “free list questionnaire” to 20 participants to gather information on the participants’ knowledge about the prevention, causes, symptoms, and treatment of diabetes. After the team had gathered the pertinent information, it proceeded to conduct individual, semi-structured interviews with 10 diabetic participants to gather further information about their diagnosis, diet, coping strategies, and medical care. The data gathered from this qualitative approach was then used to design a cultural consensus questionnaire. The questionnaire contained 53 items derived from the free lists and interviews. This example illustrates how a mixed methods approach was employed for *development* purposes in a mostly qualitative-oriented study.

De Leeuw and Hox (2008) argued that face-to-face interviews could be utilized with surveys to reduce non-response rates. The authors pointed out that the

increased use of Internet-based data collection methods is unintentionally discounting some segments of the population including the elderly, minorities, and individuals of low socio-economic status. Face-to-face interviews provide researchers the opportunity to reach out to individuals who were not included in the original sample or who were not able to respond because they lacked the necessary technology. The authors warned that, although effective at reducing non-response rates, interviews could be costly, especially if the research involved an international sample or a sample that crossed national boundaries. Nonetheless, they contended that face-to-face interviews could be the best choice when a solid sampling frame with contact information was not available. In that case, the researchers should use a face-to-face approach at onsite locations to conduct interviews and at the same time collect base-line data and contact information. Researchers then use that information to follow up via less expensive methods such as paper surveys or telephone interviews.

Determining statistical relationships or differences is also a suitable reason for using quantitative research, especially when the research involves hypothesis testing. Although the qualitative component in this exploratory study was designed specifically to answer the research questions, the quantitative component was necessary to test two hypotheses. The quantitative analysis indicated the type of association between diabetes-related irrational health beliefs and health behaviors. Finally, quantitative research was employed to assess the study's validity.

Because both qualitative and quantitative methods were necessary for this study, a mixed methods approach was employed. Mixed methods required that the researcher took careful, systematic steps in preparing and executing the research design. The following section provides an explanation of the use of mixed methods in this study.

Mixed Methods

Extant literature (e.g., Creswell, 2014) indicates that researchers through most of the 20th century typically applied quantitative methods for their research studies, mostly due to positivism being the most accepted philosophical view. During the last two decades of the century, however, the popularity of constructivism prompted a surge in qualitative studies (Teddlie & Tashakkori, 2002). In the 21st century, a combination of both methods seems to be emerging as the new research direction not only in communication studies but in a variety of other disciplines and fields (Hesse-Beiber, 2010). Teddlie and Tashkkori (2002) called mixed methods the “third methodological movement” and argued that the approach has its own views, terminology, and procedures.

Creswell (2014) defines mixed methods as “an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks” (p. 4). Although the mixed methods approach was employed as early as 1959, its use only began to gain momentum in the mid-1980s (Creswell, 2011). Bergman (2008) attributed the increased popularity of mixed methods to

several factors, including the number of researchers engaging in mixed methods research, the surge in the number of articles written about the subject, the advent of the *Journal of Mixed Methods Research*, and the number of professional development workshops dealing with the subject. In addition, Hesse-Biber (2010) explained that the availability of computer-assisted qualitative data analysis software programs to generate quantitative measures from qualitative data has made it easier to employ mixed methods. The author also argued that mixed methods are necessary to address the complexity of new theoretical contributions from those studying feminism, post-colonialism, postmodernism, and critical theories.

As Creswell (2014) explained, the realization that a combination of both qualitative and quantitative methods could balance the weaknesses of each approach continues to be the principal motive for using mixed methods. Bergman (2008), however, argued that the mixed methods approach is complex and can cause researchers with strong opinions about either method to develop even greater biases about the other. He also argued that mixed methods is considered by many researchers as a trend to which they must conform in order to increase the probability of success of their proposal or project. He went on to say that the trend might lead researchers to engage in “quasi” mixed methods practices. This would include, for example, outsourcing the qualitative part of a mostly quantitative research project to a researcher who may conduct a couple of interviews and would never become part of the main research project for which he/she has been hired. Although Bergman’s arguments may have some validity, other authors (e.g., Greene,

Caracelli, & Graham, 1989) argued that researchers are interested in mixed methods, not necessarily for its marketability, but for the approach's ability to enhance the overall research experience.

Greene and colleagues (1989) identified five key reasons for employing a mixed methods approach: triangulation, complementarity, development, initiation, and expansion. Triangulation seeks to corroborate, complementarity to elaborate, development to inform or develop, initiation to incite new research, and expansion to increase the scope. For this investigation, mixed methods served three main functions: development, triangulation, and complementarity. Development took place when the qualitative part of the study was used to inform the quantitative part – a questionnaire was developed based on the responses received from the individual interviews and focus groups. Triangulation occurred when the quantitative part of the project was utilized to corroborate the information gathered during the individual interviews and focus groups. Finally, complementarity was achieved when the survey instrument was utilized to elaborate on the relationship between beliefs and health behaviors.

These key elements provide a solid rationale for the use of mixed methods and clarify why researchers across disciplines are gravitating towards the approach. This includes research in the fields of public health, communication, and medicine where articles and publications featuring mixed methods studies have become increasingly prevalent. In addition, a mixed methods foundation provides a framework for the incorporation of individual interviews, focus groups, and questionnaires in this

study. The subsequent section explains the purpose and specific objectives of this investigation.

Purpose of the Study

This study aimed to accomplish the following goals: (1) document diabetes-related irrational health beliefs held by Hispanics, (2) identify the source(s) of these irrational health beliefs, (3) isolate social and cultural factors that strengthen/counter those beliefs, and (4) examine how irrational health beliefs impact health behavior. To accomplish these goals, I conducted a two-part, mixed methods study. What follows is a description of both parts of the study, including strategies for recruitment, data collection, and data analysis.

Qualitative Research Design

The qualitative part of the project helped accomplish aims 1-3. As aforementioned, the choice of a qualitative research component was suitable for three main reasons. First, it allowed me to get as close as possible to the people being studied. Second, the qualitative approach helped me gather in-depth information from a variety of people and proved useful in assembling a comprehensive typology of diabetes-related irrational beliefs. Third, qualitative research was the most appropriate approach because little was known about the topic (Tracy, 2010). Given the lack of extant research on diabetes-related IHBs, qualitative research was warranted.

For this investigation, individual and focus group interviews with members of the Hispanic community were audio recorded and analyzed using latent content

analysis and constant comparative analysis. The goal of these interviews was to gather information about Hispanics' diabetes-related IHBs, the sources of those beliefs, and the social and cultural factors that surround those beliefs (i.e., aims 1-3). Interview data was used to inform the development of a scale for use in part two of the project, which was addressed in aim four.

Sampling, Recruitment and Recruitment Locations

Sampling. To maximize resources and diversity in the sample, this investigation used both maximum variation and opportunistic sampling techniques. First, maximum variation sampling, defined as an approach that maximizes differences and identifies patterns in the sample, was used to help recruit a diverse sample (Creswell, 2013). This sampling approach influenced the selection of the two recruitment sites, which were chosen because they serve/reach different groups of Hispanic individuals, and the development of the selection criteria questionnaire, which was used to assess inclusion and exclusion criteria. Opportunistic sampling was considered for this investigation in order to maximize limited resources. This strategy allowed me to pursue new leads and take advantage of unexpected available resources, such as an additional pool of Hispanic participants (Creswell, 2013).

Recruitment. Members of the Hispanic community were recruited to participate in one-on-one or focus group interviews, depending on their availability and preferences. Originally, three different organizations agreed to assist with recruitment, which involved the use of flyers and face-to-face solicitation. Flyers publicizing the study were written in English and Spanish and announced the study's

purpose, inclusion/exclusion criteria, compensation, and researcher contact information. Participants were offered \$25 for their participation. I planned to display flyers at three local organizations – El Pueblo, El Centro Hispano, and the Mexican Consulate. Ultimately, due to administrative changes at El Pueblo, only El Centro Hispano and the Mexican Consulate participated. Originally, I had also planned to recruit participants at various diabetes and metabolism clinics, but later realized that the target population did not frequently visit those locations. El Centro Hispano suggested that I conduct recruitment at the Durham Green Flea Market. This is where El Centro also recruits many of its program participants during the summer time. The Green Flea Market proved to be quite an effective recruitment location for face-to-face solicitation. I set up a table at the locations mentioned above, where prospective participants stopped by with questions, comments, or concerns. At that time, interested parties provided their contact information in order to be reached with more information or notified of their selection to participate in the study. Interested parties were also given a short 10-item survey that I used to screen for selection criteria.

Selection criteria took into consideration a variety of factors, including age, sex, ethnic origin, access to health services, language, and education level. Language was important to determine so that I knew whether the interview should be conducted in English or Spanish. The education level constituted a significant component since some studies (e.g., Weller et al., 2012) have identified educational attainment and economic status as important elements in patient understanding of

diabetes and in their relationship with health care providers. The participants' highest completed educational attainment was used to determine the level of vocabulary used by the interviewers and to develop sets of focus group participants. Participants with similar educational attainment were grouped together to increase their level of comfort and to reduce the possibility that some may feel intellectually intimidated by other members of the group.

Demographic homogeneity within focus groups was important for building rapport and facilitating productive conversations, whereas demographic heterogeneity between groups helped increase the diversity of perspectives (Chatman & Flynn, 2001; Elliott & Associates, 2005). As such, I made an effort to place individuals into focus groups with others of similar educational background, and, at the same time, I also strove to maximize age, ethnic, and gender differences among the focus groups.

Recruitment locations. Three locations in the Raleigh-Durham area were used for recruitment for this project. Two of these places – the Mexican Consulate in Raleigh and El Centro Hispano in Durham – were chosen for this study for their well-established health promotion programs that reach a wide range of Hispanic subgroups. The third location, the Durham Green Flea Market, was chosen as a convenience location for its large number of Hispanic vendors and visitors. The location was recommended by El Centro Hispano.

The Mexican Consulate. The Mexican Consulate offers and manages *Ventanillas de Salud* (Widows of Health) at the consulate premises. The *Ventanillas*

de Salud program was implemented by the Consulate General of México in Raleigh in conjunction with El Pueblo to serve the approximately 400 Mexican nationals that visit the consulate per day. *Ventanillas de Salud*, through El Pueblo's health promoters, provides primary disease detection and prevention services.

El Centro Hispano. El Centro Hispano's health program serves about 100 participants per day. The program works with the Hispanic community to advance overall health and well-being through health promotion and prevention, health activity programs, and access to health services.

The Durham Green Flea Market. The Durham Green Flea Market serves a large population of Hispanics, especially during the summer months. The location hosts 120 shops, of those one-third are managed by Hispanic entrepreneurs. The flea market management claims to receive about 5,000 visitors during the weekends. They estimate that 75% of visitors are of Hispanic descent. Health promoters from El Centro Hispano frequently conduct health program participant recruitment at the location.

Data Collection Procedures and Techniques

Procedures. I compiled and maintained a list of all prospects who expressed interest in participating. The participants were screened, and those who meet the selection criteria were contacted. When contacted, individuals were asked if they preferred a one-on-one or a group interview and when they were available to participate. The majority of the interviews were held at El Centro Hispano and a few were held at El Centro Hispano's health program space at the Durham Flea Market.

With the participants' consent, the open-ended, semi-structured interviews were audiotaped and transcribed. Participants were questioned about the nature and source(s) of their diabetes beliefs, their perceptions and evaluations of those sources, and factors that enable and constrain diabetes prevention and treatment. A similar procedure was followed for the focus groups.

Techniques. Data for this part of the study was collected through one-on-one and focus group interviews. First, I conducted six individual interviews with *promotoras*/health promoters to get their feedback on the study and the study materials. Gathering expert opinions about the interview schedule (Appendices C and C2) and the questionnaire strengthened this investigation. Next, I conducted 10 one-on-one interviews with health program participants at the sites mentioned above. Finally, I held four focus groups, each with five to eight participants, totaling 24 participants. These one-on-one and focus group interviews (Appendices E and E2) generated in-depth information about the nature of the participants' beliefs about diabetes. I used data collected during the interviews to create a list of commonly held diabetes-related irrational health beliefs that I then employed in the quantitative part of the study.

Data Analysis

I am fully bilingual and was able to transcribe all interviews verbatim and translate Spanish responses into English for analysis. Because of the considerable number of one-on-one and focus group interviews, a bilingual transcriptionist was hired to assist. Transcriptions were uploaded to NVivo, a software program

specifically designed for qualitative research. Once the transcriptions were uploaded, the data was analyzed via content analysis and constant comparative analysis. These strategies, which evolved from grounded theory, required that I single out data and compare it to other pieces of data to look for differences or similarities. The process was effectuated through a continuous procedure of coding, comparing, and labeling. When saturation was reached, the data were checked for triangulation. Triangulation indicates if several sources of data arrived at the same conclusion and, therefore, added credibility to the study (Tracy, 2010). Through NVivo, the coders were able to read the text, make notes, and create data codes. Two fully bilingual professionals with experience in latent content analysis and constant comparative analysis were recruited to assist with coding. In the open coding process, the first step in constant comparative analysis, the coding team independently reviewed the transcripts to identify data segments related to each research question. Then, the team convened to construct an exhaustive list of relevant data segments. During axial coding, the team returned to the data to develop codes and category systems that capture the data segments.

After meeting, discussing, and synthesizing the codes and category systems developed by each independent coder, the team engaged in selective coding to construct a typology of Hispanic participants' diabetes-related IHBs and a conceptual model that depicts the sources of those beliefs and the factors that strengthen/mitigate them. During selective coding, the research team members conducted a third independent review of the interview transcripts to assess the

exhaustiveness of the typology and model. The research team members reconvened once more to finalize the typology and model, which then was sent to four participants for feedback. In addition to conducting member checks, I used strategies, such as triangulation and peer review, to enhance the validity of study findings. The coders and my mentor conducted the peer review, and I used it to assess the face validity of the findings. Triangulating data derived from one-on-one interviews with community members, conversations with health promoters, and focus group discussions enhanced the study's content validity. Finally, using data derived from the qualitative part of the project to inform the measures used for the quantitative component enhanced the study's construct validity.

Although the coding team created a typology of Hispanic participants' diabetes-related beliefs, assessing the rationality of the beliefs was delegated to an endocrinologist. To determine which of the beliefs mentioned in the interviews and focus groups defied scientific evidence and, thus, constituted irrational beliefs, I reviewed the typology alongside an endocrinologist. The beliefs deemed rational by the endocrinologist were removed from the typology, and the result produced a comprehensive list of the diabetes-related IHBs voiced by participants. These irrational beliefs (along with some of the rational beliefs participants mentioned) were used as items in a scale, designed to assess participants' endorsement of diabetes-related IHBs. The scale was used in the quantitative part of the study and, thus, is described more fully below.

Quantitative Research Design

The fourth aim of this study warranted a quantitative approach. Quantitative data were needed to determine if and to what extent diabetes-related IHBs were linked to medical care, information-seeking, nutritional quality, exercise, adherence to medical recommendations, and comorbid conditions. More specifically, the quantitative data were used to test the following hypotheses: H1: Hispanics who endorse more diabetes-related IHBs will be: (a) less likely to seek health information from health professionals; (b) more likely to seek health information from non-medical sources; and, (c) more likely to follow a poor nutritional regimen. H2: Hispanics with diabetes who endorse more diabetes-related IHBs will be: (a) less likely to report exercising regularly; (b) less likely to adhere to medical recommendations; and, (c) more likely to have comorbid conditions.

Sampling and Recruitment

Sampling. A non-probability sample of 731 participants was recruited through various outlets including physical locations, online forums, social media sites, and online bulletin boards. These sampling techniques allowed me to reach both national and local prospective participants. The hidden nature of some subgroups of the Hispanic community, the resources needed to achieve a random sample, and the exploratory nature of the study contributed to my decision to use non-probability sampling methods. Although a minimum sample size of 380 was originally determined through the use of various online sample size calculators, I was able to obtain a much larger sample due to the strong recruitment efforts that

included intense social media outreach, and the utilization of health promoters to distribute and administer the surveys.

Recruitment. Members of the Hispanic community were recruited to complete a questionnaire. The questionnaire was available at the recruitment sites described previously. In addition, electronic study announcements were posted on non-profit diabetes-related web pages and forums, such as *diabetesforo.com*, *estudiabetes.org*, and *jaimemidulceguerror.org*. At the sponsoring sites, notices were posted to announce the questionnaire, and I was on site during specific dates and times, distributing and collecting paper surveys. The instrument was available in a paper format at the sponsoring sites to allow for individuals without access to digital technologies to complete it. Individuals who were 18 years of age or older, spoke English or Spanish, and had access to an Internet connection and computer or who were willing to fill out a paper questionnaire were able to participate. Eligibility requirements were described in all the recruitment materials.

Data Collection Procedures and Techniques

Procedures. Study announcements indicated where the paper surveys were located at the recruitment sites. The electronic announcements included a URL link, which directed participants to a website that included additional details about the study and a link to the survey. The online survey was administered on Qualtrics.com. A consent form was the first item on the online questionnaire. A forced response was assigned to this question, so that participants could not proceed with the study until they had consented to the survey. The participants had the option of printing the

consent form for their records. The paper survey also included a copy of the consent form.

Techniques. The quantitative part of the project involved a questionnaire completed by members of the Hispanic community. The survey (see Appendix G) and corresponding consent form (see Appendices F and F2) received IRB approval.

The 38-item questionnaire was administered in paper format and was also available online via Qualtrics, a web-based research application. The questionnaire posed a series of questions designed to obtain information about the participants' diabetes beliefs, as well as perceived susceptibility to health risks, tendency to seek or avoid threatening health information, diet and physical activity habits, self-reported compliance with medication adherence, sources of health information, and demographic data. In addition, participants living with diabetes were also queried about existing co-morbid conditions associated with diabetes: heart disease, retinopathy, renal disease, neuropathy, and gangrene. To gather the relevant information, I used previously validated measures including the Irrational Health Beliefs Scale, the Threatening Medical Situations Inventory, the Dietary Screener Questionnaire, and the International Physical Activities Questionnaire. Because a scale to measure diabetes irrational beliefs in particular was not available, I created one. I also developed a scale to measure existence of co-morbid conditions in participants living with diabetes.

Paper questionnaire/local administration. Five trained health promoters affiliated with El Centro Hispano were hired to administer the survey. I met with the health promoters to review the survey and to provide guidelines for its administration through two separate methods: a highly structured interview or as a self-administered questionnaire. Because it was expected that the target population had a low educational profile, the highly structured interview allowed the promotoras to administer the survey to those who found it difficult to read the copy or were not able to do so due to limited educational background. When administering the survey as a highly structured interview, the promotoras were trained to follow only the instructions in the questionnaire and to read the questions word for word. Although no rapport is necessary for this type of method, the promotoras' friendly and charismatic personalities influenced the participants' willingness to take part in the study. The promotoras also dropped off surveys with acquaintances and neighbors for self-administration. This technique sometimes resulted in the collection of incomplete surveys. Thus, the importance of reviewing the surveys' completion status was stressed and the number of incomplete questionnaires reduced.

The *promotoras* administered the questionnaire in a wide range of locations including health centers, tax preparation centers, churches, *peluquerias*/hair salons, and soccer fields. Accessibility to the health centers was possible through El Centro Hispano's already established presence there. While the health promoters targeted Hispanics in Durham (the county holds the largest population of Hispanics in North

Carolina (Census, 2010)), I concentrated on administering the survey at the Mexican consulate in Raleigh, which overseas approximately 200 visitors a day and serves 100 counties in North Carolina and 46 in South Carolina. At the consulate, I was able to administer an average of 25 questionnaires a day during a two-week period. Mexicans constitute the largest group of Hispanic origin locally and nationally. The Pew Research Center reports that of the 50.7 million Hispanics in the United States, 33 million (65%) self-identify as being of Mexican origin (Motel & Patten, 2012). It was essential to have an adequate representation of that group for this study.

Online questionnaire/national administration. The online questionnaire, available in English and Spanish, was administered through Qualtrics and was promoted through social media, selected academic institutions in Puerto Rico (University of Puerto Rico, University of El Turabo, and the Hispanic American College-Gurabo), and several online organizations, including EsTuDiabetes, Familias con Diabetes, and Jaime Mi Dulce Gurrero. In addition, I was given the opportunity to promote the questionnaire and study through En Vivo, a Spanish online program transmitted by the Diabetes Social Media Advocacy Blog Talk Radio.

I launched the online questionnaire through a mass email targeting Hispanic family and friends and requesting that they post the questionnaire's link in social media outlets such as Facebook and Twitter. The participation criteria were included in the email communiqué. In addition to social media efforts, I requested the cooperation of instructors at three different academic institutions in Puerto Rico: The University of Puerto Rico-Humacao, the University of El Turabo-Caguas, and

the Hispanic American College-Gurabo. An instructor at Wake Tech Community College teaching a course geared to Hispanic students also agreed to participate. The instructors disseminated the link and offered extra credit to students willing to complete the survey.

Measures

Measures of IHBs, information seeking, diet, exercise, adherence, and co-morbid conditions were included in the questionnaire to allow me to test these hypotheses. To determine one's endorsement of diabetes-related IHBs, I needed to include an appropriate measure; however, the lack of an existing scale meant that I needed to create one for use in this study. As previously mentioned, data from the qualitative component of the project were used to generate a typology of diabetes-related IHBs.

Overview of the DIHBS. Each item on the Diabetes Irrational Health Belief Scale (DIHBS) is comprised of an irrational or rational word or phrase describing causes, symptoms, diagnosis, treatment, and general statements made about diabetes. Participants are asked to read each statement and indicate with the dichotomous choice (yes or no), if they believe in the statement. Responses to items containing rational beliefs are reverse-coded so that higher total scores on the scale indicate greater endorsement of irrational health beliefs.

DIHBS item construction was guided by three main principles. First, each irrational statement was chosen to reflect clearly inaccurate, non-empirically endorsed information. The rational statements were chosen to reflect accurate,

scientifically-endorsed information. Second, references to health behaviors were generally avoided, and were only slightly included in the items referring to the general statements made about the disease. Third, irrational items were obtained from the qualitative part of the study, including a few from clinicians' accounts. The final item group used in the questionnaire study includes 40 items. All the DIHBS items are included in Appendix (G). However, only 37 of these items were used during data analysis, after three of the items were found confusing by survey takers.

Other scales and measures were incorporated into the questionnaire, including items from the Irrational Health Belief Scale (IHBS) (Fulton et al., 2011), the Threatening Medical Situation Inventory (TMSI) (van Zuuren, deGroot, Mulder, & Muris, 1996; van Zuuren & Muris, 1991;), the Morisky-8-item Medication Adherence Questionnaire (MAQ) (Morisky, Green, & Levine, 1986), the Dietary Screener Questionnaire (DTQ) (Thompson & Subar, 2001), the International Physical Activity Questionnaire (IPAQ) (Booth, 2000), and the CDC's Behavioral Risk Factor Surveillance System (BRFSS) (Stein, Lederman, & Shea, 1993). The TMSI was selected to assess information seeking. The MAQ was utilized to determine a participant's adherence to medical recommendations. To assess diet and exercise, the DTQ, the IPAQ, and the BRFSS were selected. Because none of the existing co-morbidity measures that I found were suitable, one was developed for this study.

These pre-existing (and pre-validated) measures featured specific versions that were culturally relevant for Hispanics or were modified to make them

appropriate for the Hispanic population. Information about the reliability and validity of these measures was readily available. The IHBS was validated by Christensen and colleagues (1999). The scale rated adequate for internal consistency ($\alpha = 0.83$), and moderately high for test-retest correlation [$.57$ ($p < .0001$)]. IHBS construct validity was also tested in terms of correlation with other scales (e.g., Internal Powerful Others, Positive Negative Affect, Neuroticism and Conscientiousness) and was found highly associated with those measures (Christensen, Moran, & Wiebe, 1999). In terms of reliability, the TMSI has been rated *good* for internal consistency and test-retest; it has also been rated *good* for construct and discriminant validity (Bijttebier, Vertommen, & Steene, 2001). A research study found the Morisky-8-item reliable ($\alpha = 0.83$), with good concurrent and predictive validity (Morisky, Ang, Krousel, Wood, & Ward, 2008). The IPAQ's reliability has been rated as very good ($\alpha = 0.83$), and the criterion validity has been called comparable to that of other self-report questionnaires (Hallal & Victora, 2004). As Hallal et al. (2010) explain, "Validation studies in Latin America suggest that the IPAQ has high reliability and moderate criteria validity" (p. 259). Multiple studies have tested the validity and reliability of independent sections of the BRFSS (e.g., Nelson, Holtzman, Bolen, Stanwyck, & Mack, 2000; Pierannunzi, Hu, & Balluz, 2013). Studies indicate that overall the BRFSS is a valid and reliable measure of physical activity (Yore et al., 2007).

Besides ascertaining the validity and reliability of the measures, steps were taken to ensure the readability of the questionnaire. The questionnaire was

developed in both English and Spanish by a native Spanish speaker. Prior to the survey's distribution, the Spanish version of the questionnaire was administered to several native Spanish speakers from Venezuela, México, Colombia, Nicaragua, and Puerto Rico to screen for Spanish idioms that may be misconstrued or misinterpreted.

Computing Scales and Scores

To test the first hypothesis, the Diabetes Irrational Health Belief Scale (DIHBS), the non-medical sources score (NMSS), and the dietary screen score were computed.

DIHBS. To measure diabetes-related IHBs, the Diabetes Irrational Health Belief Scale (DIHBS) was developed. The scale measured the level of endorsement that participants demonstrated for irrational beliefs about the causes, symptoms, diagnosis, and treatment of diabetes, as well as general statements made about the disease. The endorsement of irrational beliefs about the causes, symptoms, diagnosis, treatment, and general statements made about diabetes was measured using five sections: four “yes” or “no” sections, and one “true” or “false” section. All sections were converted from categorical into continuous data. For this conversion, we assigned a value of “0” to the rational beliefs and a value of “1” to irrational beliefs in each of the sections. The nominal values were then added to obtain a possible total score for each individual scale. The sections were called Diabetes Irrational Beliefs (DIHBs) Causes, DIHBs Symptoms, DIHBs Diagnosis, DIHBs Treatment, and DIHBs Statements.. Participants' scores across the six subscales were used to

generate a composite score on the IHB scale. That composite score was considered the independent variable. The total DIHBS had an interval value of 37. A Cronbach's alpha conducted on the DIHBS ($n=581$) indicated good internal consistency ($\alpha = .76$).

NMSS. The non-medical sources scale gather data about the frequency with which participants obtained health information from health professionals and from non-medical sources such as family, friends, homeopaths/naturists, and *curanderas*/folk healers was gathered in question 31. The frequency was measured in a 5-point scale (1= *never* to 5=*almost every day*). The items in this question that asked specifically about the frequency with which participants obtained information from non-medical sources were grouped and a scale called non-medical sources was computed. For this scale, a mean of 1.66 was obtained ($SD=.677$, $M=1.6$, $Mdn= 1.5$ and $range = 3.25$).

DSQ Score. The dietary screener (DSQ) was utilized to measure the participants' frequency of consumption of soda, whole grains, greens/vegetables, and red meats. Frequent consumption of soda and red meats was treated as an indication of unhealthy eating habits, and frequent consumption of whole grains, vegetables, and greens was treated as an indication of healthy eating habits. The frequency was measured in this 6-point scale for three of the questions (1=*never*, 2=*1 time last week*, 3=*2-3times last week*, 4=*4-5 times last week*, 5=*6-7 times last week*, to 6=*8 or more times last week*) and the following scale for two of the questions (1=*never*, 2=*1 time a day or less*, 3=*2-3times per day*, 4=*4-5 times per day*, 5=*6-7 times per*

day, to 6=eight or more times per day.) The screener was comprised of five individual questions. Three questions measured the unhealthy habits and two measured the healthy habits. The two questions measuring the healthy habits were reverse-coded (Q14 and Q15). A scale containing all five questions was computed in SPSS ($SD=.634$, $M=3.1$, $Mnd=3.2$, $Range= 3.80$). Participants with higher scores on the scale were classified as having unhealthy eating habits and participants with a low score were classified as having healthy eating habits.

Besides the scale and scores listed above, additional scales and scoring were necessary to test the second hypothesis. To determine the participants' physical activity, the short version of the IPAQ was utilized and scored. The Morisky-8 was scored to assess the participants' self-reported medication adherence, and a Comorbid Conditions Scale was created to assess the comorbidity of participants with diabetes.

IPAQ. All items in the short version of the IPAQ were included in the questionnaire. The IPAQ assessed participants' physical activity (walking, moderate-intensity workouts, and vigorous-intensity efforts) across four specific areas (leisure, domestic and gardening, general work, and transport). The IPAQ also assessed the amount of time that participants reported sitting during the weekend. To score the IPAQ, I followed the guidelines for data processing and analysis provided by the IPAQ committee. The continuous score for each physical activity category was expressed as the Metabolic Equivalent of Task (MET) per week multiplied by minutes of activity per day multiplied by days per week. The MET level was provided

by the IPAQ committee: walking = 3.3 METs, moderate intensity = 4.0 METs, and vigorous activity = 8.0 METs. The scores were combined in SPSS to form an IPAQ table.

Table 1

IPAQ Formula

Sample IPAQ Calculation

MET Levels	MET-minutes/week for 30 min/day, 5 days
Walking =3.3 METs	$3.3 * 30.5 = 495$ MET-minutes/week
Moderate Intensity = 4.0 METs	$4.0 * 30.5 = 600$ MET-minutes/week
Vigorous Intensity = 8.0 METs	$8.0 * 30.5 = 1,200$ MET-minutes/week

TOTAL 2,295 MET minutes/week

Source: IPAQ

To express results categorically, participants' scores were separated into low moderate and high intensity groups. The IPAQ table was recoded as a categorical variable using the transform option in SPSS. Following IPAQ guidelines participants reporting physical activity amounting to 3,000 METs or more were classified as High scorers. Those reporting physical activity of 600-2,999 METs were classified as moderate scorers. Finally, respondents reporting physical activity of less than 599 METs were classified as low scorers.

Morisky-8. The Morisky-8 is comprised of eight items that query participants about their self-reported medication adherence. Each item receives a score of "0" or "1". Following the Morisky-8 guidelines, participants who scored "0"

were classified as having high adherence to medications. Those who scored 1-2 were classified as having medium adherence. And those who scored 3-8 were classified as having low adherence to medication. Morisky-8 coding and scoring criteria are considered trade secrets of the owner and cannot be shared without written permission (Morisky, Ang, Krousel-Wood, & Ward, 2008).

CCS. Because none of the existing co-morbidity measures that I found were suitable, the comorbid conditions scale was developed for this study. The scale measured the number of comorbid conditions self-reported by respondents with diabetes and the number of emergency room visits associated with their diabetes. The scale also queried participants about a diabetes treatment plan. To create the scale, items that measured a series of comorbid conditions associated with diabetes were summed together with items about hospital visits and a diabetes treatment plan. The values of the variables in this section were treated as nominal. The items were coded as “0” and “1”. Items in the scale level as “don’t know” or “I don’t have a doctor” were not included. The last item in the scale referring to the diabetes treatment plan was reverse coded so that a positive response counted as 0. The scale had a possible score of 0-11. Participants who scored 11 on the computed scale were classified as having high co-morbidity. The scales and scores computed above were utilized to test the two hypotheses. The results of the hypothesis testing are described next.

Data Analysis

Three types of analysis were planned for this study. First, descriptive statistics were used to provide a description of the sample from which the data were collected. Second, to assess the DIHB scale (and the other scales used), I checked their reliability and noted Cronbach's alpha. In addition, I conducted an exploratory factor analysis to explore the DIHB scale's underlying factor structure. Third, to determine the relationship between IHBs and the various health behaviors and outcomes (i.e., information and care seeking, diet, exercise, medication adherence, and comorbid conditions), Pearson's Correlation coefficient were computed. In addition, I divided the sample into high and low endorsers of IHBs and determined if these two groups differed on any of the health behaviors under study. T-tests were conducted for this particular analysis. All tests were performed using the Statistical Product and Service Solutions package (SPSS).

Table 2

Survey Segments Requiring Measures

Survey Segment	Measure	Acronym
Diabetes Beliefs	Diabetes Irrational Health Belief Scale	DIHBS
Diet	Dietary Screener	DSQ
Physical Activity	Intl. Physical Activity Questionnaire	IPAQ
Medication Adherence	Morisky-8	MMAS
Co-Morbid Conditions	Comorbid Conditions Scale	CCS
Non-Medical Sources	Non-Medical Sources Scale	NMSS

Chapter 4

Qualitative & Quantitative Results

Qualitative Results

The qualitative portion of this investigation aimed to discover the sources and nature of irrational health beliefs that Hispanics hold about diabetes. Specifically, this study intended to identify diabetes-related beliefs that defy scientific evidence and that are common among Hispanics in the United States, learn where those beliefs originate, and pinpoint the communication sources and cultural factors involved in the dissemination of IHBs.

To address these research questions, I conducted 10 individual interviews and four focus group interviews of 5-8 participants each, totaling 24 focus group study participants. I also interviewed six health promoters. In total, I interviewed 40 individuals. On average, participants were 38.6 years old. Of the 40 participants, 6 were male, and 34 were female. All participants self-described as Hispanic. The majority were from México (55%); whereas, 15% of the sample was from Honduras, 10% from Venezuela, 5% from Puerto Rico, and the remaining 20% was comprised of participants from Colombia, El Salvador, Guatemala, and Peru. The majority (70%) had a high school degree or higher, 22.5% had completed elementary school, and 7.5% had no formal education. Approximately 27% reported having diabetes, 53% indicated that they did not have diabetes but had a family member with diabetes,

10% indicated that they did not have family with diabetes but knew someone with the disease, and 10% indicated that they did not have the disease nor knew anyone who had it.

Through these individual interviews and focus groups I was able to isolate a variety of diabetes-related irrational beliefs common to the participants in this study. Although I was not able to identify the primary foundation of those beliefs, I was able to trace current sources of origination: observation, deductive thinking/self-experience, and information gathering. In addition, I isolated interpersonal communication and mass communication as the primary sources for the dissemination of IHBs. Finally, I was able to identify cultural factors that play a role in the dissemination of diabetes related IHBs, including the participants' education, religion, and language. Each of these findings is described in detail below.

RQ1: What Diabetes-Related Beliefs That Defy Scientific Evidence Are Common Among Hispanics in the United States?

During individual and focus group interviews, participants disclosed a variety of diabetes-related irrational beliefs. Most of the IHBs were associated with the causes and treatment of diabetes. However, participants also shared a few IHBs associated with the symptoms and diagnosis of diabetes as well as with the disease in general.

Diabetes causes. IHBs about the causes of diabetes were those that participants identified as generating the condition. Along with very rational beliefs, participants also revealed a variety of IHBs about the causes of diabetes, most

notably one's emotional state and foods. Emotions, such as fright, anger, sadness, and very unpleasant or very pleasant surprises were often cited as reasons for contracting the disease. Nine of the 10 participants with diabetes believed that sudden changes in a person's emotional state caused diabetes. Moreover, when asked what they thought caused diabetes, participants living with the disease pointed to stressful situations as the culprit. Marisa, a 48-year-old mother, believed that several situations may have triggered her diabetes, including work and fright stemming from multiple unfortunate circumstances: "... I've had accidents that have scared me enough. And also accidents in my family, which have also scared me...But, my daughter was killed in México and that gave me diabetes." Tijusna, a 46-year-old also from México, echoed Marisa's sentiment. She believed that she contracted the disease after hearing bad news from her son:

I saw him just three minutes before. He said goodbye to me and three minutes later he called to tell me that he had had an accident. Then, the impact. Three days later, I began to feel very thirsty. And, from there, in like a week, I went for a check-up, and I had diabetes. I had never had diabetes. I mean, three months before I had gone for a check-up, and I was well.

Jierva, a 58-year-old from México, believed that a car accident while at work caused his diabetes. He explained, "I'd been working, went out of the road, and I think that from then on I began developing diabetes because I started feeling really thirsty and went to the bathroom a lot." One's emotional state was also the main cause stated by Delfi, a 52-year-old from El Salvador. Delfi, whose parents both died of

complications related to the disease, firmly believed that strong emotions should be avoided to prevent diabetes. He explained that individuals should avoid extreme feelings, “Yes, if the person gets scared, or is happy. You always have to act normal,” he observed.

In addition to one’s emotional state, particular foods were identified by participants as *causing* diabetes. Several of the foods the participants mentioned had been identified by science as risk factors for developing the disease. Although risk is not synonymous with causation, believing that those foods caused diabetes wasn’t considered irrational. Nonetheless, participants believed that diabetes was also caused by some foods that are not considered risk factors for the disease and have not been identified as causative factors. Jierva, who is slender and claimed to exercise and watch his diet closely, was concerned about several food items. “Milk, cheese, all foods with cream, everything with cholesterol, all that causes diabetes,” he said. Some study participants were concerned about eating foods sold on the streets. Celimarno, a 53-year-old produce vendor, believed that eating food sold on the streets caused diabetes due to contamination. “Pollution, dust and smoking. They contaminate everything,” he explained. Maira, a 42-year-old Salvadorian, shared Celimarno’s concern. When asked if eating something in particular can cause diabetes, she replied “Eating things with fat and eating things from the streets.” Tijusna, who earlier shared her experience with stress, also believed that certain foods could cause diabetes. “Eating *too much salt*,” she explained, emphasizing “Anger, too much salt and sugar.” Several participants mentioned meats. “I was told

not to eat any *pork*,” said Marisa. “I heard that people should not have *any meats*. Eating meat aggravates diabetes,” said Olegario, a 39-year-old worker from México.

In contrast, some participants did not have any knowledge about the associations between foods and diabetes. When asked if eating something could cause diabetes, Wendy, a focus group participant whose mother-in-law has diabetes, declared, “To tell you the truth, I have no idea.” Similarly, Mimi, a 37-year-old from México whose grandmother and aunt have diabetes, stated “Well, to tell you the truth, I don’t know. I am here hoping to learn.”

In this section I highlighted irrational beliefs associated with the causes of diabetes. The next section will cover the irrational beliefs that the participants associated with the symptoms of the disease.

Table 3

Causes of diabetes mentioned

Risk Factors Lacking Scientific Support		
All meats	Anger	Dust
Fresh juice	Fright	Mosquito bite
Potatoes	Pork	Rice
Street foods	Tortillas	Too much salt
Too much sugar or candies	Too much work	
Something very pleasant/unpleasant		
Risk Factors with Scientific Support		
Age		
Genes/Hereditary		
Excess soda consumption		
Lack of exercise		
Obesity		
Poor diet		

Diabetes symptoms. Irrational statements made about changes in the physical constitution of individuals with diabetes were also disclosed. In general, participants were knowledgeable about the symptoms of diabetes, citing a long and accurate list of complications and comorbid conditions associated with the disease. Nonetheless, a few IHBs regarding glucose levels were mentioned by participants. For example, several of the participants believed that diabetes is present only when glucose levels are high. Jierva, who also believed that stress caused diabetes, indicated that individuals living with diabetes did not have diabetes when their glucose levels were low. In his opinion, diabetes was only present if glucose levels were above normal: “Only when the sugar is high. Because when you don’t have diabetes, you are only on 105 and that is normal.” Celimarno, who believed that dust caused diabetes, shared Jierva’s opinion.

When asked if individuals diagnosed with diabetes also had diabetes when their glucose levels were low, he responded, “No, because when it is normal you can eat anything you want. It doesn’t hurt you.” And Marisa did not know if a person still had diabetes when glucose levels were low. She stated, “I don’t know. To tell you the truth, I can’t answer that question because I am not sure.” In addition to symptoms-related IHBs, participants provided feedback on diagnosis-related beliefs. The subsequent section explores that theme.

Diabetes diagnosis. IHBs about diagnosis were those statements made regarding the identification of diabetes through examination. These IHBs were mostly linked to the participants’ reliance on self, family, and friends for an initial

diagnosis. Participants mistakenly believed that they could diagnose their own diabetes or that one need not consult a doctor to get a correct diagnosis. Participants' tendencies to self-diagnose or diagnose others might lead to irrational behaviors or irrational beliefs but those tendencies do not represent irrational beliefs, per se.

Marcos, a 40-year-old from Venezuela who is currently struggling with finding the right treatment for his diabetes, believed the number one problem for a diabetes diagnosis is the individual's tendency to self-diagnose. As he commented, "The only downside is that Hispanics have self-diagnosis issues. If we are sweating, we believe that it is the humidity and the heat. If we have a headache, we believe that it is tension and things like that." Marcos' observation is validated by Jierva's experience with an incorrect self-diagnosis. Before obtaining an official diabetes pronouncement from his primary care physician, Jierva diagnosed himself with a prostate gland disorder. "I thought that, because of my age, that I had prostate problems. Because I hear that that's how it starts...with lots of trips to the bathroom." After watching a television commercial for Prostatan, Jierva proceeded to purchase the herbal product marketed for the treatment of prostate issues. "They cost me \$150," he said with regret about purchasing the Prostatan pills. Several participants indicated that they self-diagnosed based on what they read online. "I immediately go to the internet...and then, I try to see if it is severe, and then I call the doctor's office," said Lucy, a 46-year-old from Venezuela, whose father has diabetes. In addition to engaging in self-diagnosis, a few study participants revealed that they were inclined or prone to diagnosing others. Sofia, a 36-year-old stay-at-home

mother from México, remembers helping a friend to diagnose a relative. “I told her to go get some analysis done. Go get checked again. I told her that things were not looking right,” she explained.

Some participants told stories of how they were impressed that family members or friends had diagnosed the disease in other individuals.

I have a friend whose son was always drinking water, water, water. ‘Mami, I’m thirsty, mami, I’m thirsty.’ And this other lady told his mother. ‘Listen, have you not checked your son’s sugar, because that doesn’t sound normal. And it turns out that she finally took him to the doctor – and this was because of her friend’s advice – and he had diabetes.

Diagnosis-related irrational beliefs were described as those pertaining to the identification of diabetes through informal examinations. The next section provides an overview of treatment-related IHBs.

Diabetes treatment. As with the causes of diabetes, participants had a variety of IHBs about the treatment of diabetes. The beliefs were mostly related to symptom relief/curability, diet/nutrition, and insulin.

Several participants in this study believed that diabetes could be cured. Jierva, for example, believed that pre-diabetes could be cured through pills, “They go [to the doctor], and they give them medication, and it disappears.” Delfi believed that diabetes is curable depending on the person and the circumstances. “Sometimes it’s treatable, and sometimes it’s curable,” he stated. Sofia, the focus group participant who assisted with a diabetes diagnosis, believed that diabetes had no cure but

admitted that sometimes she questioned this belief when she heard stories of people who claimed to have conquered the disease.

There was this guy that supposedly had sugar. And his mother says that he no longer has it. I asked about her son, because I saw him. And when I saw him, he looked very different, very skinny. And I asked her, ‘What happened? Does he still have sugar?’ ‘No,’ she told me. I was left thinking, ‘Why is that so?’

Although beliefs related to curability surfaced on several occasions, nutrition-related beliefs comprised the crux of IHBs related to treatment. Many of the participants shared food-based treatments including nopal smoothies, jitomate water, and alpiste canary seeds. Nopal, an edible species of cacti, was the most popular ingredient associated with diabetes treatment.



Figure 1. Nopals, left, and sábila (aloe vera), right, are commonly used for diabetes management by the participants in this study.

That certain juices and vegetables control diabetes seemed to be a general belief of the group. “I eat nopals. I made smoothies with sábila, carrots, and blueberries. Altogether, but blended,” said Celimarno sharing his treatment plan. Adela, a 46-year-old from El Salvador, also believed in the benefits of nopals for those with diabetes. “So, I have tried nopal juice. I blend the nopal leaves, celery, cilantro, and grapefruit and will drink that for a month, and then I stop. After a while, I’ll do it again,” Adela said of her routine. Jierva also believed jitomate water helped his diabetes. Jitomate is the word use in certain parts of Mexico to refer to red tomatoes. He explained that he made the drink by cooking tomatoes and placing them in water where they dissolve. When asked if he thought he had made a connection between his glucose levels and the jitomate water, he responded, “It works. Yes, because, I tell you, I don’t test myself daily. I only do it every eight days. But eight days after, I am in 120, 106, 125.” Some participants also believed that alpiste seeds were good for controlling diabetes. Alpiste, or canary grass, is used primarily as bird seed; however, it is also marketed for human consumption. Alpiste seeds have gained popularity in recent years and are touted as having a variety of health benefits. Tijusna described how she prepared the seeds for consumption, “At night, I soak five tablespoons. The next day I toss the water, blend it [with milk], and drink it, and that helps prevent diabetes and also controls it. I tried, and, in my case, it worked.” Delfi also shared a recipe. “This one was prescribed by a friend,” he said and continued, “I drink blended nopal with lemon, a head of garlic, and a small chunk of pineapple.” When I asked if his friend was a doctor, he shook his head, “No. No. But that’s how he has

controlled his diabetes.” Marisol, a 37-year-old focus group participant, believed that people with advanced diabetes should not rely on unproven medical treatments.

Even today, I hear stories about people boiling leaves and everything. I’m referring to bitter leaves. And people don’t want to use pills. And much less insulin! My daughter’s uncle was diagnosed with diabetes, and he was still taking herbs. He was prescribed medication and everything, but he still preferred his herbs.

When asked if her daughter’s uncle had seen an improvement from using the herbs, she exclaimed, “The last time he went to the doctor, his sugar was 500 and something!” As illustrated in Marisol’s quotation, insulin surfaced several times as a treatment that was dreaded and feared by some of the participants, their families, or acquaintances. “I have read that when people are taking insulin they are one step away from death,” remarked Delfi. “I have heard that insulin is for people whose sugar condition is grave,” noted Marisa. One participant believed that insulin was only for people with type 1 diabetes. “A person with type 2 diabetes who is regulated with pills does not need insulin. Insulin is for the other type, for type 1,” explained Madona, a 38-year-old from Honduras.

This section covered irrational beliefs related to the actions that people took to treat the disease. In the following section, I discuss irrational beliefs about the disease in general.

Table 4

Types of diabetes treatments mentioned

Not Backed by Science	Backed by Science
Alpiste canary seeds	Take medication
Almendro leafs water	Follow doctor's orders
Bitter herbs	Eat in moderation
Cinnamon tea	Drink plenty of water
Chia seeds	Eat vegetables
Cooked chayote	Exercise
Jitomate water	Eat salads and fruits
Nopal capsuls	Have a balanced diet
Nopal smoothies	
Nopal water	
Mandarin shells	
Noni fruit	
Sabila smoothie	
Tomato leaf tea	

The Disease. Clinician accounts conveyed that individuals make irrational statements about the links between diabetes and various lifestyle choices, including sports, studies, work, conception, diet products and alcohol consumption. These general IHBs were confident and clear expressions made by participants about diabetes, which have been refuted or invalidated by science, or for which no scientific evidence is available. To examine the clinicians' casual observations, we asked participants about their agreement or disagreement with, or belief in, some of those IHBs. Consistently, participants in this study believed some of the assertions to be true. For example, Marisa, who works in a restaurant kitchen, firmly believed that work *worsens diabetes*. "Yes. Because when you work, things are being demanded of you. Then they tell you 'you have to move faster,' and when I move faster to do my

job, all my energy is depleted,” she said explaining her rationale. Maira, from El Salvador, shared Marisa’s sentiment: “ [Work] confounds people, because it exhausts you. It can be exhausting due to treatment...because of the medication you are taking. Or simply just from thinking about having the disease.” Another IHB, *women who have diabetes should not have children*, was also mentioned. Jierva, who seemed to hold a variety of irrational beliefs, specifically stated that women with diabetes should refrain from conceiving, “It is bad because the fetus inherits the disease...They should not have children.”

Diet products were another topic generating a variety of inaccurate statements. Study participants believed that diet products “shouldn’t be mixed with medicines,” “should be avoided,” or “should not be consumed.” Tijusna, for instance, believed that diet products contained more sugar than regular products. “Well, more than anything, diet products affect people the most. For example, *diet cola has more sugar than regular cola*,” she said about the sugar-free product. Vilea, a 42-year-old from México, believed that consuming diet products had severe consequences. “If you don’t know how to handle them, if you don’t use them well, *they can cause anemia and other diseases*.” Maira also believed that diet products had negative consequences. When asked if she thought that people with diabetes should consume diet products, she exclaimed, “No. No. Because I hear that *if you mix them with medicines it could be fatal*.”

Clinicians have also pointed to the various misconceptions surrounding alcohol consumption and diabetes. Of specific interest was the statement *people with*

diabetes should not have a drop of alcohol. Many participants in the study believed firmly that diabetes and alcohol did not mix. When asked what she thought of people with diabetes who drink alcohol, Agustina, a 42-year-old from México living with diabetes, indicated that they shouldn't. "Well, you can imagine. If you are taking medication and you are drinking alcohol, the alcohol is going to cancel all the effects of the medication," she commented. Marisa shared the same opinion. "It is dangerous. It is dangerous. Because if you are taking medication – not the people who are not taking medication – but the people who are taking medication, they should not mix them with alcohol," she stressed. Another participant, Retesa, a 70-year-old retiree from Puerto Rico asserted, "It is harmful. It's harmful. It doesn't have any benefit at all." However, one particular example in favor of drinking spirits stood out. Celimarno emphatically indicated that Mezcal, a distilled alcoholic beverage made from Agave, is good for diabetes. "Alcohol is good because it disinfects the blood. It is like Mezcal. Like water. It is whiter and stronger. It is like lime. Lime is acid, and blood is sweet. If you add the lemon, blood comes to life."

In summary, participants held a variety of irrational beliefs associated with the causes, symptoms, diagnoses, treatment, and the disease in general. This confirms the extant literature on IHBs and clinicians' casual accounts and non-empirical observations. The next research question will examine the origination of those beliefs.

Q2: Where Do Those Beliefs Originate?

During individual and focus group interviews I constantly queried participants about the origin of their beliefs. I asked, “Where did you get that information?” or “Where did you hear that information? Participants’ responses varied but were grouped into three main categories: observation, deduction/inference, and information acquisition. The following segment reviews these themes.

Observation. Conversations with the participants indicated that rational and irrational beliefs could originate from observing the particular circumstances of other individuals living with diabetes. Observation steered individuals to connect diabetes with specific people, and particular characteristics or traits. Alcántara, a 33-year-old from Honduras whose father has diabetes, shared that she developed an association between skin appearance and diabetes through observation of her landlord’s self-care routines. She noted,

She was a completely different case and a contrast to my father. She was constantly measuring her sugar. She was always taking care of herself and going for medical check-ups, always taking her time. She was always very conscious of her medication time. She was very obsessive about taking care of herself, but you could tell the difference [between her and her father]. She already had problems with skin sores; that’s why she took so much care of herself. And she always said that she measured her diabetes status through

her skin. If her skin looked good, her sugar was controlled. If not, something was wrong.

Alcántara's keen observation of her landlord's self-care influenced her belief in the landlord's own inferences about the relationship between the skin condition and diabetes. Because the landlord took care of herself, Alcántara thought her landlord's extrapolations about the condition of the skin must have been correct.

Given that being overweight is a commonly known risk factor for diabetes, it was interesting to discover that Ricarda, a focus group participant from Venezuela whose father-in-law's mother died from diabetes, believed that diabetes had nothing to do with weight because she had seen slender people contract the disease. As she explained,

My father-in-law doesn't have diabetes, but his mother died of diabetes, just like her uncle, with two legs cut off. *And I saw it! I saw* how that woman...a woman who was thinner than [a person in the room], a woman that was never overweight, suffered from diabetes. So, I said, 'It doesn't have anything to do with being overweight.'

Ricarda observed her husband's grandmother and associated her with a certain characteristic: thinness. This association led to Ricarda's irrational belief that diabetes had nothing to do with a person's weight. Jierva also developed an irrational belief through observation:

I have seen other people get cured. As I said, I know many people with diabetes. The majority of Hispanics have diabetes. It's just that some have it

more advanced than others. I can tell you that I know of a person that was diagnosed in time and they stopped his medication and they told him that he didn't have to take them anymore. That he was okay.

Direct observation of incorrectly perceived information led Jierva to believe that diabetes was curable. Another participant, 20-year-old Yuri, believed that chocolates could save a diabetic's life because she saw her mother reviving her father with the sweet. She described the episode as follows,

The first time that *I saw* my mother revive my father with it was very traumatic for me. She started shoving chocolate down his throat, and I said to her, 'Do you want to kill him or what?' But, she said, 'No. I'm doing it to revive him, or we are going to lose him.' And curiously...it was true.

Yuri's observation of this harrowing incident led her to believe that chocolates were a potential life saver during a diabetic coma. In fact, providing any type of food to an unconscious diabetic can have dangerous consequences. The individual may have lapsed into the coma due to hypoglycemia or hyperglycemia and administering foods may exacerbate the situation depending on the condition.

This segment illustrated how some individuals formed beliefs through observation and by paying close attention to the circumstances surrounding them or their family members living with diabetes. Besides employing observation to form their beliefs, participants also formed diabetes-related irrational and rational beliefs through deduction/inference. The next segment explains this concept.

Deduction/inference. Deduction and inference refer to the formation of beliefs that go beyond observation to include the individuals' reasoning or information derived from past experiences. Deduction was common in the responses of participants with little or no formal education. When asked where he heard that being happy or sad causes diabetes, Delfi, who only attended elementary school, replied, "Cause, I supposed so." Delfi maintained that he had deduced the information on his own. Similarly, Celimarno, who had no formal education and could not read or write, connected deductive thinking to many of his diabetes beliefs. When queried about where he learned that dust caused diabetes, he replied "Well, I, I made it up, to tell you the truth. Since I didn't go to school, I don't know much. I believed that's the case, but I am not certain." When asked if he learned from his ancestors that Mezcal was good for diabetes, he commented,

No. No one teaches me anything... I learned it on my own... because I have to take care of myself. If I don't take care of myself, I will go into shambles on my own. So, I have to think about what to drink to keep my sugar in check.

Celimarno relied on inferences to form beliefs about the relationship between alcohol and diabetes. Marisa, who also had no formal education, described a similar belief formation process. When probed about how she learned that eating fatty foods and drinking soda caused diabetes, she admitted to deducing the information. "We start making all these small connections...what would hurt us and what would not," she explained. Marisa stressed her own experiences as the main reason for her beliefs. When asked if perhaps she learned the information from her friends with

diabetes, she dismissed the suggestion. “No,” she refuted, “Because I have experienced it. I have lived it.” As a result of her personal experiences with food, Tijusna formed beliefs about what she could eat or could not eat. For example, she believed that eggs increased her glucose levels, even though science indicates that eggs have no impact on blood glucose levels since they contain no carbohydrates. As she surmised,

Eggs elevate sugar and cholesterol. I already tested it, and, if I eat two eggs, including the yolks, my sugar increases. If I eat three or four eggs without the yolks, my sugar levels remain the same...Two hours after I eat, I test my blood sugar. And I tell you, three egg whites do not increase my blood sugar levels, but, if I eat the yolks, they do.

Tijusna associated an object, eggs, with an attribute, increased blood sugar.

However, her lower blood sugar could be related to another object that Tijusna has yet to identify.

Some rational beliefs are also the result of inference. Armanda, a 27-year-old from México, learned through inference that undiagnosed diabetes, or even diabetes that has been diagnosed too late, can have substantial consequences. She reached that conclusion after witnessing her uncle’s struggles with a toenail avulsion that would not heal. She observed,

First, they had to remove part of his foot. Then, he walked for a while, but his foot would not heal. It would not heal. So, they had to cut off his leg. Then, he

developed gangrene, and they had to cut off his other leg. Now he spends most of his time lying down, and he is developing sores.

Likewise, Alejandra, a 42-year-old Mexican on a tourist visa whose mother and father both have diabetes, inferred from observing her siblings neglectful attitudes that conscientious self-care could outweigh genetics when it came to getting the disease. She commented,

Something else that I've noticed is that I am the oldest of nine children, and all the siblings that came after me...almost all have diabetes. Just a few don't have it. And I don't have it. But I take care of myself, and they don't!

Self-care may delay the development of diabetes in individuals with a strong familial history of the disease; however, it is not necessarily accurate to assume that self-care will outweigh genetics. Alejandra may still develop the disease even if she takes care of herself. Inference also led Sofia to believe that frequent urination was not a symptom of diabetes. Addressing a focus group participant who identified frequent urination as a sign of the disease, she said "I don't believe that is true because ever since I was a little girl I have always urinated a lot. I remember." Sofia, who did not have diabetes, made a connection between her own experiences with frequent urination and the disease. Because she has frequently urinated and she does not have diabetes, she believed that frequent urination must not be a sign of the disease.

The above demonstrate how individuals form beliefs from the associations they make between events and their attributes or consequences. In addition to

observation and inference, participants formed beliefs through information they received from other sources. The next segment explores this possibility.

Information acquisition. Some participants' beliefs about diabetes stemmed from information that they received or gathered about the disease. Adela, for example, who believed that nopals helped control her diabetes, said that she sought information about nopals on her own, after initially getting information about the disease from other sources. "Yes. And then one goes looking for information about everything...about everything that I think will help me." Tijusna, who shared a similar view, stated that she actively sought out the advice of older individuals. For example, she commented,

I ask if someone has diabetes, and if they tell me that they have had diabetes for more than 30 years, then I go to that person to ask for advice and to ask for support, mostly because that person has lived longer with the disease and has more information.

Information that Tijusna gathered from a stranger led her to believe that alpiste teas and water helped control diabetes. "Just recently, a person I came across told me to drink alpiste tea and not alpiste water," she said. When asked what she thought of the advice, she noted, "It works." Delfi also indicated that he gathered information about diabetes. When asked where he learned that insulin "was for people who were on the verge of death," he plainly replied, "I read it." He also indicated that he has gathered information from friends and books about the benefits of herbs, teas, and smoothies for diabetes control. Roberto, a 69 year-old Puerto Rican, believed that

stress caused diabetes. When asked where he obtained this information, he replied, “I think I read it in a magazine.”

The examples above show that participants searched for and accepted information about diabetes from other sources. They then used that information to form their own diabetes-related beliefs. For example, there is no scientific evidence that alpiste seeds can cure or control diabetes. But some of the participants took that to be true.

In summary, accounts shared by participants in this study revealed three main themes pointing to the origination of rational and irrational diabetes-related beliefs: I saw it/Observation, I deduced it/inferred it/Deduction, and I encountered information about it/Information acquisition. The next section introduces the possible communication sources involved in the dissemination of those beliefs.

RQ3: What Communication Sources Are Involved in the Dissemination of IHBs?

Interpersonal communication and mass communication were the two main sources of belief dissemination. It is important to note that some overlap exists between the sources of origin and the sources of dissemination. This is due to the fact that belief formation was facilitated through the sources that disseminated those beliefs. Nevertheless, this study indicates that the origin and dissemination sources could be distinct from each other. For the purposes of this investigation, a source of origination *led the participants to accept* diabetes-related information from a particular person or artifact. A dissemination source, alternatively, implied that a

person or artifact *facilitated the spread* of diabetes related information. Facilitating the spread of information can then lead to diabetes-related IHB formation.

Interpersonal communication sources. This study indicated that family, friends, other people with diabetes, and health professionals were responsible for disseminating IHBs. Sofia, whose mother had diabetes, believed that stress caused diabetes because she heard about it from her family. “I heard about stress causing diabetes from my mother because, supposedly, that’s how she contracted it,” she explained. Likewise, Alejandra learned that fright caused diabetes from her relatives. As Alejandra explained:

It turns out my father had a grocery store, and once it burned down at midnight because he accidentally left a grill connected and didn’t realize it. He heated coffee, drank it, and forgot to unplug it. That’s how the fire originated. And people came home to tell him that the store was on fire. Then, my dad got really scared, and they [relatives] say that from then on he developed diabetes.”

Luisa, a 36-year-old also from México, said that she formed a connection between fright and diabetes from a conversation with a friend. “I had a friend who died two or three years ago, and he used to say that he developed diabetes due to a big scare.”

Tijusna, who believed that *enojo* or anger caused diabetes, credited an acquaintance with the information. “Well, this lady that I knew, she told me that anger caused it. And more than anything, I also checked it. I got angry once. And, 20 minutes later, I ran a test, and my blood sugar was high.”

Several participants identified people living with diabetes as disseminators of diabetes-related information. Explaining how he learned that people with diabetes suffered from aches and pains, Olegario, a man from México explained, “I learned it from those who have suffered from the disease.” Yuri, a woman from México whose father had diabetes, believed that eating at the right times was the best way to prevent diabetes. She shared that she learned that information from her family. “Eating at the right time.” That’s what they said at home. Eating at the right time and following a strict diet.” Agustina indicated that she had heard from other people about natural sources to control diabetes. “I have heard many times, and I have been told, that there are some natural juices that I could prepare with *nopals*, *savila*, lemon, and pineapple to control diabetes.” When asked if she had followed this recommendation, she responded, “Yes.” In the situations described above, diabetes-related IHBs were disseminated by family or acquaintances. Participants chose to accept the information provided without requiring further proof, as they trusted the source of the information.

Along with family and friends, health professionals were viewed as sources of information about diabetes. However, these interactions did not seem to contribute to the spread of information that could lead to IHBs. Many participants indicated that they or their family members with diabetes learned from social workers, doctors, and health advisors about diabetes management and care. Adela, a 46-year-old from El Salvador, credited a social worker with teaching her to manage diabetes-related depression. “I heard it from a social worker. Yes. They are in charge of giving

you therapy...Because, to me, diabetes was like death hovering over. It was like the word, cancer. I was going crazy when they told me.” On the other hand, Maira, who believed that depression caused diabetes, and not the other way around, indicated that she inferred that information from conversations with her psychologist. As she explained,

Well, I went to a few talks that were given to us by a psychologist. And she, I am seeing a psychologist now, and she says that the depression forms when there are problems, many problems at home. For example, I left my three children there [in México]. I have two here now, thank God. I’m missing only one. So that's [what caused diabetes], I think...The psychologist said that was right.

Some irrational beliefs may have their origin in diabetes education programs, where several of the participants went for information about the disease. Although the programs may provide participants with accurate information, the participant’s interpretation of that information may be distorted. For example, Tijusna, who recently discovered that diabetes was manageable but not curable, was convinced that salt caused diabetes. “Well, as I said, salt, more than anything salt,” she emphasized. When probed about the source of this belief, she explained, “I learned it in a class at Duke – in a Duke clinic. That’s where I took my class, and that’s where I learned that information.” Chanita, a stay-at-home mother from México, indicated that she learned about diabetes treatments from various sources. “Well, I, I have

learned about it from talks here at the Center, or from friends, or from people who have had it. I listen when they talk.”

In addition to the spread of IHBs through interpersonal communication, IHBs were disseminated through mass communication channels. The subsequent section describes this process.

Mass communication sources. Media sources also contributed to the dissemination of irrational beliefs about diabetes. Participants of various ages and education levels passively obtained and actively sought information about diabetes through mass media, including television, print, and the Internet. Rubí, a young woman from México, described how she learned about the different types of insulin from *Caso Cerrado*, a Telemundo court show featuring Ana María Polo, a court lawyer, arbitrator, and Cuban celebrity.

Now that we are talking about it...yesterday, on *Caso Cerrado*, there was a guy with diabetes. The show was about diabetes. The guy was young but was detected with diabetes as a child. He had type 1 diabetes. Well, the doctor told him that originally insulin was made from animals, porcine, or something like that. I can't remember. But now, apparently, there's another type of insulin that causes less side effects.

Although Rubí gathered a few pieces of information about insulin from *Caso Cerrado*, that information was not completely accurate. The *Caso Cerrado* episode (#930) referenced by Rubí actually featured an example of an IHB and could have led to irrational belief formation. For instance, part 2 of the episode, which is

available on YouTube, showed Francisco, the individual of whom Rubí spoke, blaming insulin for his loss of eyesight:

Thanks to this. Thanks to this beautiful, famous and glorious insulin injection that is supposed to save my life, I have lost my vision. I have lost everything. I have lost the strength in my kidneys. I would not even recommend insulin to my worst enemy.



Figure 2. Francisco, an 18 year old Hispanic adolescent living with diabetes, argues in front of millions of *Caso Cerrado* viewers that insulin has degraded his quality of life.

<https://www.youtube.com/watch?v=6-4oDBW-I5g>

Francisco's experience with insulin led him to believe that insulin caused blindness. He then shared this belief on a television program watched by 1.5 million viewers.

The irrationality of Francisco's belief was confirmed through the show's verdict. The judge ultimately recommended that he be committed to a mental health treatment facility for believing that insulin was harmful to his health. In the end, Judge Polo's verdict and final message could certainly help dissuade the audience from spreading Francisco's IHBs about insulin. Nonetheless, Francisco's emotional and passionate testimony against the use of insulin could have had the opposite effect. Further illustrating the connections between media sources and IHB dissemination is a YouTube comment posted under the video. Referring to Francisco, one individual wrote, "He should eat cactus pulp. It is really good to for eliminating the need to use insulin." These examples show how the interconnection of media sources can quickly facilitate the dissemination of IHBs. For example one television episode (from *Caso Cerrado*) posted on a different media source (YouTube) contained several venues (videos and video comments) that individuals could use to disseminate multiple IHBs (e.g., "insulin causes blindness" and "cactus pulp reduces the need for insulin").

Besides television, newspapers can also spread information that contributes to an irrational health belief. Julieta, a health promoter with more than 13 years of experience working with the Hispanic community, believed that advertisements in Spanish newspapers disseminated spurious information about diabetes cures. She said,

Grab some of the newspapers in that stand, and I'll show you. A lot of the diabetes and other health-related advertisements in those papers are truly

bogus. They are making false claims about their products. But, the health program participants believe in those ads. Because they think that if they are in the Spanish newspaper, they must be true. The advertisers have no scruples.

Although the newspapers that Julieta referenced did not at that time contain any advertisements with direct connections between diabetes and IHBs, they did contain a series of advertisements from *curanderos* and *chamans* claiming to cure “unknown, natural and super natural diseases.” *Curanderos* are known as healers who use natural or folk remedies for treating illness, while *Chamans* are known as people who claim to interact with spirits and practice divination and healing. One particular ad in the *Que Pasa* newspaper did feature an advertisement for *Natural Solutions*. The company offered customers natural supplements to help with diabetes.

INDIO KAIZANDU
CHAMAN Y CURANDERO AMAZONICO
 ¿TE ABANDONO? ¿SE FUE CON OTRO? ¿TE DEJARON DE AMAR?
REGRESAMOS A TU SER AMADO EN 24 HORAS
SALVO TU MATRIMONIO, HAGO AMARRES DE AMOR Y FELICIDAD
 TE LIBERO DE TODO TRABAJO VUDU, BRUJERIA O MELEFICIO. **CURO ENFERMEDADES**
 DESCONOCIDAS, NATURALES O SOBRENATURALES, IMPOTENCIA SEXUAL, LA MALA
 SUERTE EN EL AMOR O EL DINERO. **GRATIS:**
 CONSULTA, LECTURA DE CARTAS Y CONSEJOS
¡GARANTIZADO!
 TRIUNFAMOS DONDE OTROS FRACASAN **(205) 356-7547** 2166 HWY 31, PELHAM AL 35124

Figure 3. In this advertisement running in the *Que Pasa Mi Gente* newspaper, Indio Kaizandu claims to cure diseases.

ABRAHIM
CONOCIDO COMO EL MEJOR BRUJO DEL MUNDO

TRABAJOS PROFESIONALES 100%

NO TE HUMILLES...AMARRALO

Resultados inmediatos y efectivos en 7 horas

- Magia Blanca
- Magia Negra
- Magia Roja
- Santa Muerte
- Brujería Indígena
- Vudu
- Hechiceria
- Chamanismo
- Cultos

- amarres
- detengo divorcios
- alejo amantes
- atraigo al ser amado
- retiro enenigos
- números de loteria
- mejoro el trabajo
- protejo negocios
- curo enfermedades
- curo vicios
- se hacen limpieas
- destruyo maleficios
- saco de la carcel
- recupero las taxas
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Especialista en regresos a corta y larga distancia

919-975-4578 Basta de promesas solo resultados

¡¡ LLAMEMOS, LE ATENDEREMOS INMEDIATAMENTE SU PROBLEMA

Llámame ya! Consulta GRATIS

Figure 4. In this advertisement, the area circled in red reads “I cure diseases.”

Natural Solutions

SOLUCIONES NATURALES

PROGRAMAS DE SALUD	SOPORTES NUTRICIONALES PARA LA SALUD
Iridología Computarizada	Diabetes, Presión Alta, Osteoporosis, Artritis, Mal de Nutrición, Obesidad, Etc.
Nutrición Personalizada	Soporte para la Circulación
Acupresión	Soporte para el Sistema Nervioso
Jugo de Terapias	Soporte para el Sistema Óseo
Desintoxicación Linfática	Soporte para el Sistema Endócrino
Desintoxicación Celular	Soporte para el Sistema Digestivo, Urinario, Menopausia y Próstata.

En nuestro centro de medicina complementaria natural NATSOL LLC, nos especializamos en ayudar a las personas a recuperar a la salud de los órganos que están deficientes. Desde el 2004 estamos en el área de Charlotte NC, DR. ANTONIO SALDAÑA, medico Naturista, Iridólogo, Herbológico, Nutricionista y Homeópata con mas de 23 años de experiencia, le ofrece mas de 80 programas de soporte para las deficiencias o enfermedades mas comunes.

Las soluciones naturales que ponemos a tu disposición son soportes alimentarios basados de alta concentración que son elaborados de manera natural, a partir de un cuidadoso proceso de selección de plantas medicinales, cuyas sustancias activas se potencian unas a otra para beneficiar a grupos o sistemas de órganos de nuestro cuerpo.

Nuestra terapias va desde la formación alimentaria, jugos terapia, Nutrición y ejercicios, hasta terapias como la piedra de jades, terapias para la ansiedad, problemas para dormir y dolor corporal, programas de ejercicio y control de peso, todo de una forma natural y sin efectos negativos y secundarios de fármacos en la salud integral de la persona que comience a ayudarse en nuestro centro. Venga y aprenda a como cuidar su cuerpo, como ayudara a su salud y lo que la medicina natural tiene para brindarle y ayudarle. Los invitamos a que sea parte de la familia SOLUCIONES NATURALES.

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9am a 3pm

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Natsolllc@msn.com

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Charlotte, NC 28212
Tel 704-248-8049

Figure 5. This advertisement for Natural Solutions offers natural nutritional supplements.

Besides turning to television and newspapers for diabetes-related information, a few participants also mentioned seeking guidance from health brochures and books, which skewed their beliefs about diabetes. When asked if eating something in particular could cause diabetes, Agustina's immediate response was fats. "Well, everything with fat. Every food with a high fat content." She explained that she learned this information "in brochures and on YouTube." Delfi, from El Salvador, claimed to learn about the connection between diabetes and emotional volatility from books. "As diabetes goes up and down, it carries happiness and it carries sadness," he said. When asked how he learned this information, he replied, "I have read that in books that I have purchased. I have read about the symptoms and about everything." Delfi turned his poetic interpretation into a fact in his own mind. Delfi also believed that diabetes was curable. When I asked where he learned that information, he responded "Well, I have read it in books."

Study participants also turned to the Internet for information. In fact, all participants who had formal schooling used the Internet to gather information about health.



Figure 6. The Spanish language YouTube video from which this image was taken claimed that alpiste canary seeds could cure diabetes in just two weeks.

<https://www.youtube.com/watch?v=SvPezykMpBQ>

The Internet not only helped disseminate beliefs about the disease but it could be a useful tool to help dispel irrational beliefs. Participants in two different focus groups, for example, mentioned watching Internet videos of Sierra Sanderson wearing her insulin pump during the Miss Idaho pageant. The study participants pointed out that the footage helped young women gain more confidence about wearing their own pumps. Lucy read the comments on the blogs and believed that the viral video was helpful. “That was great, because a lot of girls, for example, don’t want to wear theirs. Kids feel ashamed to walk with that device. And that was an

inspiration for them.” Because many Hispanics associated insulin with death, watching an otherwise healthy and vital individual wearing an insulin pump could help dispel that myth. Marcos relied specifically on information from specialists but admitted reluctantly seeking information online because of the many unempirical sources found there. “Like the infamous Yahoo groups. Sometimes their answers contain some stories that leave you staggered, that leave you thinking, ‘What the f—k,’” he exclaimed.

This section identified interpersonal communication and mass communication sources as possible venues for the dissemination of irrational health beliefs about diabetes. The subsequent segment lays out the cultural factors that play a role in the dissemination of those beliefs.

RQ4: What Cultural Factors Play a Role in the Dissemination of IHBs?

Interviews with participants and health promoters indicate that education, language, and socio-economic status were the main cultural factors involved in the dissemination of IHBs. Religion also played a small role in this investigation.

Education. In this study, education surfaced as a significant cultural factor in the dissemination of IHBs. Participants’ comments indicated that those with no formal education were more likely to adopt irrational beliefs about diabetes. Celimarno, who earlier credited one of his irrational beliefs to his lack of academic instruction, was convinced that he could be more knowledgeable about diabetes had he obtained a formal education. “If I knew English, if I had gone to school, oof!, I would have gotten all the information: how you get it, where you get it,” he said,

referring to the disease. Celimarno believed that lack of formal education also prevented him from getting information from new media sources. As he described,

When I'm looking at the screen, I don't know what it says. I don't know what the letters mean. I don't. I truly don't. Well, when I came to the United States, God knows how I made it here! I don't know how to read. I don't know anything. But, I have never gotten lost.

Similarly, Maira, who wished she could use her computer or cell phone to acquire information about diabetes, said that her ability was limited. "I have a computer, but I can barely use it because I don't know how to read or write well," she explained.

Lisa, a 20-year-old whose mother has diabetes and whose grandparents may have died of the disease, believed education influenced the beliefs people formed about insulin, for example. She described the situation in her hometown in México,

There are too many families who suffered from diabetes and have to use insulin. And, I think that in my town – well now it is a town, but it used to be a ranch – people don't have an education. They don't know what diabetes is. People thought that others died from alcohol or drinking, too, but it was never associated with the disease.

Leonor, a health promoter serving Hispanics in the area, shared a similar opinion about the spread of irrational beliefs. "Also, in general...the lack of an education. A lot of people in the Hispanic community don't have any schooling," she explained. However, education was not the only factor influencing irrational belief formation.

Data gathered from this study indicated that language played a significant role, as well.

Language. For many participants, spoken and written communication was mostly conducted in Spanish. This limited participants' access to services and information available to them here in the United States. It could also lead to communication problems as well as the misinterpretation of information, leading also to the birth of irrational beliefs. Julieta, a health promoter, believed that language barriers indirectly contributed to the spread of irrational health beliefs related to home remedies.

Hispanics always believe in home remedies. Maybe because there's a fear that if they go to the clinic they will have to fill out paperwork; they will have to disclose their immigration status; they may have to make an appointment; and, therefore, they may have to speak in English and they don't know the language.

She explained that the process caused many people to self-treat at home and then share their perceived treatment "success" with others. As she explained, "Home remedies are cheap, don't require an appointment, can be taken at a desired time, and are not too scientific." In addition, she added, "They are 'natural' and 'won't have consequences,' even though we know that even a simple tea can have consequences." Carmen, a health promoter who spoke an indigenous Mesoamerican language in addition to Spanish, believed that language barriers were a significant problem for Hispanics coming from indigenous regions in Central and South America who speak

neither Spanish nor English and are dependent on the availability of friends or family for assistance. “This dependency can be the cause of many misunderstandings, not only about diabetes, but about other diseases, as well,” she said. Marta, a health promoter from México with 10 years of experience disseminating information about health to the Hispanic community, said she had friends that only spoke the home dialects, which made them reluctant to seek medical help in the U.S.

Some people speak Chatino, some Náhuatl. There are all kinds of different dialects. When I was training at El Centro, I met people who also spoke Otomi and another dialect from Guatemala – Chapino, I think. There are a lot of dialects...And that prevents them from seeking medical care.

For non-English speakers, getting around town was also very difficult because they could not speak the language and had no idea how to get to where they were going or how to ask for help. Margarita, a health promoter from Perú, explained that not being able to communicate with taxi drivers or bus drivers about their transportation needs made it difficult for people to seek professional medical care and treatment. As she described,

Some people learn to take the bus. But some decide to stay home. They don't go to the doctor. When I ask them when was the last time that they went to the doctor, they respond, ‘The last time I gave birth, four or five years ago.’ A lot of people don't go. When a tooth hurts, when their eardrums hurt, they

self-medicate. They go to the Hispanic food stores, and they buy medicines and antibiotics.

Although selling antibiotics over-the-counter is an illegal practice, Margarita explained that many Hispanic businesses do it despite being fined. Many individuals did manage to seek medical care but found that communication with health professionals could be difficult, a situation that could give way to the formation of IHBs. Modesta, a health promoter from Honduras, shared that she lived the experience herself when at the doctor's office for a regular checkup. As she explained,

I understand some English, but not much. I also speak a little bit of English. But I don't understand or use English medical vocabulary. I told a doctor once that I needed an interpreter, and she said, 'You don't need an interpreter because I understand you and you seem to understand me.' But I wanted to ask questions that I couldn't articulate in English, and I didn't get the chance. This happened every time. So, finally, one day, I called ahead of time and had them change my doctor. And that was my solution.

Besides educational and language barriers, socio-economic status (SES) also seemed to impact the dissemination of irrational health beliefs. The following section explains this connection.

Socio-economic status. Data from this investigation indicated that the participants' economic and social positions influenced the way they obtained

information about diabetes and their likelihood to seek medical care and treatment – all which could lead to the formation and dissemination of IHBs.

All of the health promoters argued that the inability to obtain or afford health insurance was the most significant problem related to the health program participant's economic status. Lack of health insurance prevented many individuals from seeking treatment when they needed it, which led them to seek alternatives that often were not the most suitable. Marta noted that the lack of health insurance prompted many people to seek health advice from family, friends, and acquaintances. As she explained:

A lot of people don't want to beg for money. So they choose not to get treatment. Instead, they prefer home remedies. So they call their mothers. Or they visit their friends or neighbors. And they ask, 'Do you know what's good for diabetes?' Some of those people will tell them to use nopals or *savila licuados*, or *jícama* water because that's going to help them. The gullible people are the ones who think that they are going to get cured that way. Also, sometimes they are even told that home remedies are more effective for diabetes than visiting the doctor.

In the scenario described by Marta, participants were led by their economic circumstances to rely on home remedies for treatment and to believe that these remedies would be effective in treating or even curing their diabetes.

In addition to identifying lack of health insurance as a problem leading to IHBs, the health promoters indicated that the types of employment held by many

Hispanics also affected their ability to seek care. As they explained, many Hispanic men and women were employed in inflexible work environments. They feared that asking their employers for time off during work hours could get them fired from their jobs. “When men have a job, they pay no attention to their health because they are afraid of losing their jobs if they miss work,” explained Leonor. “In general, men are the ones subjected to these issues, and they are the ones who visit the doctor less frequently.” She believed this situation was aggravated by the fact that many men did not believe that diabetes could have dangerous consequences. She witnessed this irrational belief first hand:

My father knew he had diabetes, but he always said he was too busy to seek treatment. He didn’t think diabetes was a serious disease. He thought it was like a cold, like an allergy. In his mind, it was easily treatable. He never paid any attention to the disease until he started noticing changes in his mental and physical state. And he started losing weight. Then, that’s when he decided to seek help.

Marta shared the same observation. She believed many men avoided going to the doctor for fear of losing their jobs, and because they thought the disease was easily curable. “They go to the Mexican stores instead, and they ask about teas and remedies. And that’s how they treat themselves until they are almost dying. Then, that’s when they go to the doctor,” she remarked. The situation also applied to women who worked outside the home. The health promoters’ observations were

validated by Marisa, the participant who believed that her inflexible work environment and her daughter's death caused her diabetes:

Well, I was a healthy person. I've had diabetes for seven years now. To me, it was caused by the fact that I worked a lot and sometimes I didn't eat until very late. I would be without coffee without anything until 2 p.m. because I was concentrating on my job. Work is very demanding. Since we earn hourly wages, they don't even let us take a 15 minute break. If you try to take your break, they tell you 'Hurry up.' And one, afraid of being fired, well one starves. So, I don't think that's good for your health.

As Leonor and Marta described, inflexible working conditions prompted men to neglect their health and forced them to adhere or cling to the beliefs that diabetes was not a serious disease and that treatment could wait. In addition, working conditions, such as the one that Marisa described, helped generate work-related irrational beliefs about the disease.

Socio economic status also dictated who sought regular care and who did not. "A lot of people who come from low socio-economic status did not grow up getting regular checkups as we do here," explained Julieta. As she described,

Going to a primary care physician has not been something to which they are accustomed. They don't know the medical language and become very apprehensive. Some people get very nervous just from getting their blood pressure taken because they find the process intimidating.

Marta witnessed the same apprehension, but she believed the uneasiness was fueled by irrational beliefs.

Sometimes people think that if they go get some analysis done and the analysis is positive, they think ‘Well now I’m going to die. My disease has no cure no matter how harmless it is’... So there are a lot of people who don’t want to get checked because they think ‘What if I have this or that? What if I am going to die? It is better not to know.’

When asked if that was a common attitude, Marta replied, “That’s the number one excuse in the majority of men. They say, ‘So, why should I go? So they tell me that I have a serious disease? I’m better off just waiting.’” Lack of previous experience with the health care system seemed to cause apprehension about treatment and perpetuated fatalistic attitudes and beliefs towards illness in general.

This segment illustrated how a low socio economic status led participants to behaviors that facilitated the formation and dissemination of irrational health beliefs. The next section covers the impact of religious beliefs and their association with health beliefs.

Religion. Religiousness for this study was viewed as the participants’ system of faith and worship. As suspected the majority of participants in this study believe that religion played a role in diabetes care. Also as suspected, participant accounts pointed to religion as a facilitator of irrational health beliefs. Nevertheless, several findings were worth noting. First, only a few participants believed that God would play a role in curing diabetes. Second, the majority of participants believed that faith

in God *combined* with self-reliance would play a role in diabetes care; and, third, diabetes *fatalism*, the belief that nothing that could be done about diabetes if God gave it to you, did not seem prevalent in this sample.

A few participants in this study believed that God could cure diabetes. Although the irrationality of this belief is highly debatable, the irrational circumstances to which it can lead are more apparent. For instance, Marisol, whose daughter's uncle had diabetes, shared that people near her Mexican hometown of Tamaulipas were lured by "religious leaders" claiming to offer a cure for diabetes.

People from that area used to go to a nearby town, just to get splashed with water, because they thought they were going to get cured. It was holy water to cure diabetes. I don't know if you heard about it on television. But people used to make these long lines. They would climb up a steep hill – I think they held it on the hill to make it more dramatic – and there they would find the healer. A lot of people went there. They even paid for the trip. And many of them would say 'Yes,' that they were cured. But later they were back to normal with their diabetes.

The hopefuls of Tamaulipas were not alone in their beliefs. Margarita, the health promoter from Perú, explained that many of the health program participants who she served believe that God would cure them of diabetes or other chronic diseases.

People sometimes say, 'My God is going to cure me.' For example, when they have a chronic disease they are told, 'You have cancer' But they say, 'No, that's

what the doctor said. But my doctor, my doctor is God. He is going to eradicate my disease.'

Shakira, a 27-year-old study participant from Colombia who developed gestational diabetes, shared her strong faith and belief in the role of religion in diabetes care:

If we believe, if one believes in the Lord, if we ask the Lord for a cure, God will do it. But, we also have to play our part because our body is the house of the Lord, and we should care for it.

Alcántara, from Honduras, also believed that God could cure diabetes. "On a personal note, I too believe that there's not a single disease that God can't cure," she said, adding that her father also believed that religion played a role in his diabetes care.

My father is a Christian and every day he places his condition in God's hands. And he says, 'If by God's will I have not been healed yet, it's because I have not finished accomplishing God's will. And what's God's will? Well, he wants me to treat my neighbor well. And he wants me to love him above all things. And obviously, I have not reached the level that he expects of me. That's why I think that he has not cured my diabetes.'"

The participants' accounts cited above illustrate how participants interconnected religious beliefs and health beliefs and how they communicated those beliefs to family, friends, and acquaintances. The accounts also demonstrated how religious beliefs could influence self-care. Alcántara's father, for example, connected his

diabetes status to his goodwill and benevolence. Instead, his efforts should center on monitoring his diet, exercise, and sugar levels.

Thinking that a higher power has control or impact on one's illness can influence self-care, especially for individuals with a defeatist disposition. Participants in this study, however, did not seem to adhere to *fatalism*. Instead, when asked their opinion about the role of God in diabetes care, many said that a combination of faith and self-reliance would help people living with diabetes better manage the disease. Some participants recalled the Spanish proverb *Dios dice: Ayúdate que yo Te ayudaré* or God helps those who help themselves. Clara, 37-year old from Mexico whose mother had advanced diabetes, believed a combination of prayer and medicine worked best. "For me God comes first, and then science...So, if you want something, you first ask 'God, please help me.' Then, you go to the doctor for help," she explained. Agustina also believed in a connection between religion and diabetes. "You have to have faith. Faith and follow your treatment. 'Cause he helps, but you help yourself more following the treatments," she said. Retesa believed in the role of religion in diabetes care, but thought there had to be a balance.

I think faith is always good because it helps you trust something bigger than yourself. Right? But there has to be action. Because if I have diabetes and I say God is going to take care of me, but I sit down and don't do anything to help God, who is so busy with everyone else, then is not worth it. So you have to have faith, but faith with action.

These participants firmly believed that religion had a role in diabetes management. Calling their statements irrational would be debatable. Their comments, however, indicated that the participants in this study were actively connecting diabetes self-care with religious beliefs and practices.

The health promoters argued that religion played a significant role in the development and dissemination of IHBs. Julieta, for example, painted a vivid picture of the impact of religion on health beliefs:

In Hispanic countries people are very faithful to religious beliefs. In Mexico, 80% of the population is Catholic. They follow the recommendations from their church leaders. If the priests say don't use condom, or birth control, they won't. I know the case of a pastor who told a woman that her husband did not need to use a condom because he wasn't promiscuous and the condoms were to prevent sexually transmitted diseases. A lot of people believe in *sanación* [the laying of the hands by religious figures]. There was a lady that came to us with bad stomach problems. Although we recommended many times that she were checked by a doctor, she refused to visit one. When she didn't feel well, she would go to an *imposition of the hands service* and then would drink her *Herba Light* and would claim to feel much better... One person thought he was sick because someone had practiced *brujería* [a bad spell] on him. People who believe that they are sick because of *brujería* also believe that the best way to recover from their sickness is by going somewhere that will thwart the spell. The mystics know what to do to attract and convince the community

that they have the right remedies for their illnesses. They know to make religious references. They say things like, ‘In the name of God I’m going to cure you.’

Although Julieta’s references did not point directly to diabetes beliefs, they demonstrated how religious leaders could influence the formation and dissemination of IHBs.

This section illustrated how cultural factors such as education, language, socioeconomic status, and religion played a role in the dissemination of irrational health beliefs.

Overall, data gathered in the qualitative part of this study indicated that the current sources of irrational health beliefs included observation, deduction/inference, and information seeking. In addition, findings pointed to interpersonal communication and mass communication as the primary means of disseminating IHBs. Finally, cultural factors that played a role in the dissemination of diabetes-related IHBs included the participants’ education, religion, and language.

Quantitative Results

Although researchers have studied diabetes beliefs and also health behaviors, few studies have established a relationship between diabetes-related irrational beliefs and health behaviors. The quantitative portion of this study aimed to accomplish that goal. Thus, the following hypotheses were addressed in this investigation. H1: Hispanics who endorse more diabetes-related IHBs will be: (a) less likely to obtain health information from health professionals; (b) less likely to

seek health information from health professionals; (c) more likely to seek information from non-medical sources; (d) more likely to follow a poor nutritional regimen. H2: Hispanics with diabetes who endorse more diabetes-related IHBs will be: (a) less likely to report exercising regularly; (b) less likely to adhere to medical recommendations; and, (c) more likely to have comorbid conditions.

Before testing the hypotheses, descriptive statistics were gathered for the most relevant variables in the sample. In addition, five different scales/scores were computed to conduct the statistical analysis: the DIHBS, non-medical sources scale, dietary screener score, physical activity score, medication adherence score, and comorbid conditions scale. The following is a summary of the descriptive statistics and statistical tests conducted.

Descriptive Statistics

A questionnaire was administered on paper (N=497) and online (N=234) to a convenience, non-probability sample. After discounting incomplete surveys, the final total sample (n= 591) was 18-79 years old (median =37), and largely female (63.3%). Fifteen Latin American and Caribbean countries were represented in the sample, including Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Puerto Rico, Peru, and Venezuela. Most participants hailed from Mexico (55.1%), Puerto Rico (7.4%), and Honduras (4.1%). The majority of the sample (54.4%) did not have a high school degree, 22.6% had a high school degree or some college/trade school, and 23% had a bachelor's degree or higher. Only 10.7% of the sample had diabetes (this is consistent

with the national average.) But, 60.4% had a family or a friend with diabetes, and 69.9% knew someone else with diabetes.

Findings

Few studies have examined the relationship between diabetes-related irrational beliefs and health behavior (e.g., Christensen, Moran & Wiebe, 1999; Hunt, Valenzuela, & Pugh, 1998). These few studies along with reports from clinicians' accounts indicated that IHBs would influence certain health behaviors. Tests results indicate that, as expected, the DIHBS score was able to predict only variance in the participant's physical activity scores. However, the ability of DIHBS to predict variances in the information sources and nutrition in all participants, and comorbidity in participants with diabetes is not apparent with the measures and questions employed in this study. Nonetheless, study findings have significant implications for public health and health communication practitioners.

H1a: Hispanics who endorse more diabetes-related IHBs will be less likely to seek information from health professionals.

A linear regression was utilized to test hypothesis. Results suggest that the DIHBS score did not predict the frequency with which participants obtained information from health professionals, $\beta = -.57$, $t = -1.025$, $p < .306$. This is inconsistent with expectations that participants who endorse more DIHBS would be more likely to obtain information from health professionals. It is also inconsistent with findings from the quantitative portion of the study, which indicate that health professionals were the most trusted source of health information.

H1b: Hispanics who endorse more diabetes-related IHBS will be more likely to seek health information from non-medical sources.

To test people who endorse more IHBS were more likely to seek information from non-medical sources, a simple linear regression was conducted. The null hypothesis for this test assumed that the regression coefficient was equal to “0.” The results from the linear regression suggest that the DIHB score did not predict the Non-Medical Sources score. In other words, the participants’ score on the DIHBs scale was not a good predictor of the participants’ likelihood to obtain information from non-medical sources, $\beta = .046$, $t = .819$, $p < .413$. The hypothesis was not supported.

H1c: Hispanics who endorse more diabetes-related IHBS will be more likely to follow a poor nutritional regimen.

A simple linear regression was conducted to determine if poor nutritional regimen (dependent variable) could be predicted from the DIHBs score (independent variable). Results indicate that nutritional regimen could not be predicted from the DIHBs score, $\beta = .046$, $t = .819$, $p < .413$. The hypothesis was not supported. Again, this was inconsistent with predictions that high endorsers of IHBS would entertain unhealthy eating habits. It is also inconsistent with the literature on diet and diabetes which stresses that the high glycemic control of main food staples in the Hispanic diet leads to poor nutritional choices (e.g., McCloskey & Flenniken, 2010; Thompson, Winham, & Hutchings, 2012).

H2a: Hispanics with diabetes who endorse more diabetes-related IHBs will be less likely to report regular physical activity.

For this hypothesis, a linear regression was also conducted. Results indicate that a small but significant proportion of the total variation in physical activity scores was predicted by the DIHBS score, $\beta = .139$, $t = 2.875$, $p < .004$. The higher the endorsement of IHBs, the higher the level of physical activity. The hypothesis was not supported. To corroborate this finding, a linear regression test was also computed using the various categories of the IPAQ – vigorous, moderate, walking – (dependent variables) and the DIHBS score (dependent variable). The results suggest that the DIHBS score can predict vigorous activity, $\beta = .168$, $t = 2.714$, $p < .007$. However, the results also suggest that the DIHBS score cannot independently predict moderate physical activity $\beta = .125$, $t = 1.955$, $p < .052$ or walking, $\beta = .030$, $t = .566$, $p < .572$. It is important to clarify that here we are only testing DIHBS among Hispanics and the scale's ability to predict their level of physical activity – not the physical activity levels of participants, in general.

H2b: Hispanics with diabetes who endorse more diabetes-related IHBs will be less likely to comply with medication adherence.

The next regression test was conducted to determine if medication adherence in patients with diabetes could be predicted from their DIHBS scores. Results suggest that the DIHBS score (independent variable) cannot predict the variance in medication adherence (dependent variable) $\beta = .215$, $t = 1.632$, $p < .108$, $N = 57$. The hypothesis was not supported.

H2c: Hispanics with diabetes who endorse more diabetes-related IHBs will be more likely to have comorbid conditions.

This last linear regression was conducted to determine if comorbidity in patients with diabetes could be predicted from the DIHBS score. Results indicate that the variance in comorbidity scores (dependent variable) cannot be predicted from the DIHBS (independent variable), $\beta = .215$, $t = 1.632$, $p < .108$. The hypothesis was not supported. Again, this is inconsistent with my prediction that individuals with high endorsement of IHBs would be more likely to have comorbid conditions.

Table 5

Demographic Characteristics as a Percentage of the Sample

Characteristic	%	Mean	Median	Mode
Sex		1.63	2.0	2
Male	36.7			
Female		63.30		
Age		38.32	37.00	32
18-24	10.0			
25-34	29.9			
35-44	31.7			
45-54	18.6			
55-64	8.5			
65 and older	1.1			
Diabetes Status		1.89	2.00	2
Has Diabetes	10.7			
Does not have diabetes	89.3			
Country of Origin				
México	55.1			
Puerto Rico	7.4			
Honduras	4.1			
El Salvador	2.6			
Colombia	2.3			
Venezuela	1.0			
Other	27.5			
Education		3.82	3.00	3
No formal	1.9			
Elementary	23.6			
Some high school	28.9			
High school/GED	13.5			
Some college/Trade School	9.1			
Bachelor's Degree	13.5			
Master's or Doctorate	9.5			

Table 5 Continued

Demographic Characteristics as a Percentage of the Sample

Characteristic	%	Mean	Median	Mode
Employment Status		2.80	2.00	1
Full-time	48.2			
Part-time	20.3			
Unemployed	4.0			
Student	4.4			
On disability	.4			
Retired	1.6			
At home	19.4			
Other	1.8			

Table 6

Descriptive Statistics of Scales

Variable	Mean	Median	Mode	SD
Diabetes IHBS (DIHBS)	11.278	11.000	9.00 ^a	5.043
Physical Activity (IPAQ)	6,732	2,916	396	8,266
Non-Medical Sources Scale (NMSS)	1.664	1.500	1.00	.677
Diet/Nutrition Scale (DSQ)	3.104	3.200	3.20	.634
Comorbid Conditions Scale (CCS)	1.745	1.000	1.00	1.444
Medication Adherence (MMAS)	2.884	3.000	1.00	1.865

Chapter 5

Discussion & Suggestions

Thousands of academic articles have examined health beliefs about a wide range of illnesses and health conditions. Nonetheless, irrational health beliefs have not received much attention. Only a handful of studies have investigated the concept; and, to my knowledge, only one of these studies pertained to diabetes (Christensen, Moran, & Wiebe, 1999). Thus, this mixed methods investigation aimed to fill a gap in the diabetes and irrational health belief literatures. To accomplish that goal, I interviewed members of the Hispanic community regarding their opinions, ideas, and thoughts about type 2 diabetes mellitus. I analyzed these interviews searching for evidence of diabetes-related irrational health beliefs, their origin, and the communication sources and cultural factors involved in their dissemination. Results from the qualitative study were utilized to inform the quantitative part of this investigation, which aimed to establish if a relationship exists between irrational health beliefs and health behaviors.

This study confirmed the presence of diabetes-related irrational beliefs and expanded the irrational health belief literature. The qualitative analysis evidenced the prevalence of diabetes-related IHBs in the Hispanic community, suggested possible points of origination, and alluded to the communication sources and possible cultural factors playing a role in the dissemination of these beliefs. The quantitative analysis did not support a strong relationship between IHBs and health

behavior, at least not with the measures and questions employed. But, it did support a relationship between the participant's level of education and irrational health beliefs. It also showed a relationship between education and level of physical activity. In the following segments, I review the main findings that surfaced under each research question. I also describe their implications for communication and public health research and practice.

Common Diabetes-Related IHBs

Participants in the qualitative part of this study revealed a number of IHBs mostly about the causes and treatment of diabetes and about the disease, in general. These beliefs were documented and categorized for this report. This was a significant outcome of the study as the extant literature lacked a typology of diabetes-related irrational beliefs. It is important to reiterate that, while *diabetes beliefs* among Hispanics have been documented by a limited number of studies (e.g., Arcury, Skelly, Gesler, & Dougherty, 2004; Godina, Tejada, Thompson, & Coronado, 2004; Hatcher & Whittemore, 2007; Mann, Ponieman, Leventhal, & Halm, 2009; Mendenhall, Fernandez, Adler, & Jacobs, 2012; Palmquist, Wilkinson, Sandoval, & Koehly, 2012; Santos, Hurtado-Ortiz, & Sneed, 2009; Sullivan, Hicks, Salazar, & Robinson, 2010), none of these studies have focused on evidencing *diabetes-related irrational beliefs* in particular. In fact, to my knowledge, this is the first study to do so. The typology of beliefs supports many of the diabetes-related irrational beliefs casually documented through clinician accounts. Some of these beliefs (e.g., that *susto* and *coraje* cause diabetes) also have been previously acknowledged in the

Hispanic and diabetes beliefs literature (e.g., Hatcher & Whittemore, 2007; Mendenhall et al., 2012; Palmquist et al., 2012; Smith, 2012) but had not been explicitly classified as irrational health beliefs. Instead, they are simply called beliefs, folk beliefs, or misconceptions. The IHB label is important because it suggests a belief's lack of scientific support. In addition, it alludes to the belief's potential impact on self-care and medical decision making. Besides developing a typology of diabetes-related IHBs, I was able to isolate a few significant findings about the causes and treatment of diabetes. These findings are discussed next.

Causation. Data from both the qualitative and quantitative parts of this study indicated that participants attributed diabetes causation to two main factors – emotions and foods. Emotional causes identified included fright, anger, and very unpleasant or very pleasant surprises. Of the survey participants (n=578), 44% believed that a person's emotional state causes diabetes, 50% believed that fright causes diabetes, and 46% believed that being angry causes diabetes. This supports findings on perceived diabetes etiology among Hispanics. Sullivan and colleagues (2009), for example, found that 50% of the participants in their study born in Mexico or Guatemala believed that *susto* caused their diabetes. Mendenhall and colleagues (2012), who measured diabetes causality in their study of diabetes beliefs and depression among Mexican-Americans, found that 60% of the participants in their sample (n=404) believed that *susto* caused their diabetes and 73% reported that *coraje* caused their diabetes. Emotion also emerged as a common explanation for diabetes in several studies (e.g., Arcury, Skelly, Gesler, Dougherty, 2004).

Emotional responses including *susto* and *coraje* were part of the Diabetes Irrational Health Belief Scale (DIHBS). Study findings indicate that the scale did not find any relationship between IHBs and particular health behaviors such as information seeking or physical activity. This is not to say that IHBs have no effect on health behaviors—other behaviors, not assessed in this study, might be implicated by IHBs. For example, it is possible that participants who believe that emotional distress can cause diabetes may avoid stressful situations and pursue opportunities for relaxation. Finkler (1994), for example, reports that Mexicans use the expression “Do not make anger and you will not get sick,” – a phrase that connects a belief to a behavioral outcome. Future work in this area should consider the potential impact of IHBs on a broader range of health behaviors and outcomes, including anger and stress management.

A second finding related to causality involved the seeming inability of some focus group and individual interview participants to distinguish between causality and potential for causality when it came to foods and diabetes. They believed that the foods that placed them at a higher risk of developing the disease actually caused the disease. For instance, some participants thought that fat caused diabetes instead of thinking that eating a diet high in fats may put them at a higher risk of obesity and, therefore, at a higher risk of developing diabetes. One patient thought that coffee caused diabetes, even when she acknowledged that the physician had asked her to cut down the beverage because the amount of sugar she added to the beverage placed her at a higher risk for obesity. A disconnect seemed apparent between the self-

reported recommendations that participants with diabetes received from their health care providers regarding food consumption and the interpretation of those recommendations by the participants. The participants with diabetes in this study seemed to *awfulize* the “offending” foods in order to cope with their diabetes. Davis and colleagues (2010) defined awfulizing as the evaluation of people, events, or concepts as worse than they should be. The individuals may conclude that all fats “cause” diabetes, or pork “causes” diabetes, or “coffee” causes diabetes because they can no longer indulge in the foods as usual. Awfulizing the foods allows them to refrain from eating them. This may cause participants to inadvertently disseminate these beliefs as facts. Blaming causality on particular foods can divert attention from empirically observed causative factors, such as obesity, poor eating habits, physical inactivity, or genetics and ethnicity.

Symptoms. I found it surprising that participants in both the qualitative and quantitative parts of this study were very familiar with the symptoms of diabetes. The only symptom-related IHB apparent during individual interviews and focus groups concerned the detection of blood glucose levels. The majority of participants in both the quantitative and qualitative studies believed that people with diabetes could instinctively feel when their blood glucose levels were high or low. In the quantitative study, almost 75% of participants believed that people with diabetes could feel when their sugar levels were high. This is consistent with previous research (e.g., Mann, Ponieman, Leventhal, & Halm, 2009) and should be addressed during clinician-patient communication. Believing that high blood glucose levels can

be *felt* may lead individuals to adopt improper glucose monitoring practices. Further research should also be conducted to determine if this belief affects people's attitudes towards glucose monitoring and medication adherence.

IHBs Points of Origination

Besides evidencing the prevalence of diabetes-related IHBs, this study suggested possible points of origination. Three main themes emerged: I saw it, I deduced/inferred it, and I searched for it. These were subsequently labeled observation, deduction/inference, and information acquisition. These themes are consistent with the literature on belief formation. Fishbein and Azjen (1975), for example, categorized beliefs into three main groups based on their source of origin: descriptive beliefs, inferential beliefs, and informational beliefs. The authors defined descriptive beliefs as those that were acquired through observation or direct experiences with objects, inferential beliefs as those that went beyond observation to include contact with others, and informational beliefs as those that were "formed by accepting the information provided by an outside source" (p. 133). Data from the qualitative part of this investigation suggests that participants *without* diabetes were more likely to form diabetes-related beliefs through observation. Alternatively, participants living *with* diabetes were more likely to form diabetes beliefs through deduction and inference, especially if the participants had little or no formal education. Both individuals living with or without diabetes seem to passively or actively form beliefs through information acquisition. These findings support and extend research on the formation of beliefs, rational or otherwise. Economists

studying observation and its impact on belief formation and predictive skills have found that observers tend to form inaccurate beliefs and make wrong predictions, especially those who cannot process information quickly (Hyndman, Özbay, Schotter, & Ehrblatt, 2012). This certainly seems to be the case in this context and might explain why individuals develop irrational beliefs about a variety of topics, including vaccine efficacy and climate change. Combatting irrational beliefs in this and other contexts will necessitate additional research on the factors that encourage or discourage IHB formation.

Deduction and inference also seemed to spawn the formation of diabetes-related irrational beliefs, especially in participants with low educational attainment. This is understandable given that many of these participants could not read or write and were not able to gather information from printed or online sources. Thus, they relied almost exclusively on deduction/inference and personal experience for knowledge building. As is the case with beliefs developed through observation, beliefs formed through inferences are not always justified (Audi, 2003). Reliance on deduction and inference due to low educational attainment and illiteracy can impact health literacy – the ability of people to obtain, process and understand basic health information in order to make appropriate health decisions (U.S. Department of Health and Human Services, 2000). In turn, IHBs may be a product of a lack of health literacy. Hispanic immigrants in particular are at “risk of having limited health literacy” (Soto Mas, Fuentes, & Tinajero, 2015, p. 369) due to their limited language and communication skills, as well as unfavorable economic conditions.

Additional research is needed to examine possible links between IHBs, belief formation processes, and health literacy in this and other populations.

Communication Sources

In addition to identifying possible points of origination, this investigation alluded to the communication sources involved in the dissemination of IHBs. Interpersonal and mass communication were identified as the two main sources involved in spreading diabetes-related IHBs. This is a significant finding as the extant literature makes no mention of diabetes-related IHBs and how they get communicated or disseminated. Interpersonal and mass communication have been identified as sources of belief dissemination in general (e.g., Azjen & Fishbein, 1980; Fishbein & Azjen, 1975; Hoyer & Sheluga, 1987; Rokeach, 1972). Data from this investigation show that these sources are also involved in disseminating IHBs. Interview and focus group participants in this study were exposed to IHBs through interpersonal communication with family and friends. The knowledge and beliefs that these referent sources have about diabetes can have an impact on the quality of the support they receive from family and friends (Weller et al., 2012). In addition, referent beliefs have been associated with an individual's tendency to perform or not perform a certain behavior (Ajzen & Fishbein, 1980). If members in the support networks believe, for example, that individuals with diabetes can successfully control blood glucose levels with alpiste drinks, they may encourage their family members with diabetes to do so. The family member in turn may agree to follow the recommendation, since it is perceived to come from a trusted source. It is possible

that participants will try alternative methods in addition to following the clinician's advice. Thus, clinicians should ask patients about alternative methods being used to treat the disease.

Besides learning IHBs from family and friends, participants were also exposed to IHBs through mass media sources –especially television and the internet. Although the majority of participants in the qualitative study indicated that they sought information from their health care providers first, they also admitted to getting information from television and the internet. Approximately 50% of the participants in the quantitative study indicated that they received health information from television and the internet at least once a month. Studies have identified television as a principal media source of health information for Hispanics (e.g., Livingston et al., 2008). A descriptive analysis of the quantitative study showed that participants who identified television as the source of health information were not necessarily obtaining health information from televised health shows. Instead, they passively received health information from segments in entertainment or news programming, such as *Al Rojo Vivo*, *Despierta America*, or *Primer Impacto*. This can be problematic given that participants who watch these shows may not be getting health information from expert sources. In addition, many of these shows are sensationalized and some of the information featured may lack a solid scientific foundation. The internet offers participants more selective control over the information available online. It also offers them the opportunity to access scientifically sound information from reputable sources. However, the participants

who could have benefitted the most from accessing diabetes-related information online were precisely those who self-reported not using the source for information — participants with little or no educational attainment. This is consistent with the literature. Studies (e.g., Lopez, Gonzalez-Barrera, & Patten, 2013) indicate that internet usage among Hispanics is lower for individuals who are Spanish language dominant, older, and with low educational attainment. It is interesting to note, however, that participants with higher educational attainment expressed concern about gathering or receiving information from the internet. These participants found it difficult to discern applicable material from the large amounts of information available. Participants indicated they tended to self-diagnose with worse conditions than those ultimately diagnosed by their doctors and, therefore, found the process of looking for health information online stressful.

Cultural Factors

This study also indicated that several cultural factors played a role in the dissemination of IHBs: education, language, SES, and religion. Of these factors, education played the most significant role. Both the qualitative and quantitative parts of this study indicated that participants' education level played a prominent role in the development of IHBs. Higher educational attainment has been associated with greater knowledge of diabetes and vice versa (Weller et al., 2012). In this investigation, participants with little or no formal education held more irrational beliefs, confessed to depend more on observation and inference for belief formation, and were more likely to disseminate irrational beliefs via interpersonal

communication. This supports research by Weller and colleagues (2012) who found that the level of educational attainment was fundamental in diabetes beliefs, knowledge, and practices among Hispanics. In their study of the patient-provider gap and cultural competence, Weller et al. argued that knowledge and beliefs that people hold about diabetes could affect the care that patients received. Because Hispanics depend greatly on family support for treatment adherence, the knowledge of those providing support is crucial for successful treatment. In addition, educational attainment seemed to impact the type of information that the participants in this study were able to access. Participants with higher educational levels were able to easily access diabetes-related information through a variety of sources. Conversely, those with lower educational levels, especially those who could not read or write, found it more difficult to access information.

Reaching illiterate patients or patients with low educational attainment may be difficult because lack of health insurance prevents them from visiting health care institutions and clinician's offices. However, a concerted effort by health care and health communication practitioners to reach this segment of the population may help improve the information low-income immigrants receive. Many non-profit organizations targeting Hispanics offer courses and instruction designed to increase knowledge of specific chronic conditions or illnesses. These organizations are already familiar with the patient's culture and language and can assist with reducing or preventing health communication obstacles. Providers and clinicians could offer support to these programs, thereby overcoming language and cultural barriers to

provide quality information. In addition to capitalizing on cultural health programs, states and public health departments should be more aggressive at promoting policy that incorporates lay health workers/*promotoras de salud* into their systems (Brownstein, Andrews, Wall, & Mukhtar, 2011). As Brownstein and colleagues explain, the impact of health promoters in the management of chronic disease has been well documented (e.g., Babamoto, Sey, Camilleri, Karlan, Catalasan, Morisky, 2009; Davis, O'Toole, Brownson, Llanos, & Fisher, 2007; Ruggiero, Oros, & Choi, 2011; Witmer, Seifer, Finocchio, Leslie, & O'Neil, 1995). Health promoters not only help deliver health information, but they also assist in connecting the community with various health networks and services.

Language. In addition to education, language played a significant cultural role in the dissemination of IHBs. The role of language in general belief formation (to a smaller extent), and in health care (to a larger extent) has been covered in the literature (e.g., Prankish, 1998). This study pointed to a couple of language issues that are worth noting, especially as they relate to IHB formation. First, it was surprising to learn of the existence of indigenous people within the area where the qualitative study was conducted. The health promoters indicated that this particular group had the most difficulty seeking and receiving health care due to language difficulties, as they spoke neither English nor Spanish. This information supports studies on the poor health status of indigenous people (e.g., Carruthers & Boucher, 1998). Some studies indicate that even when located in wealthier countries, indigenous people have higher rates of chronic diseases, such as diabetes (e.g.,

Stephens, Porter, Nettleton, Willis, 2006). The health promoters also indicated that the language difficulties of indigenous people lead them to rely on family and friends for health information. This exposes this segment of the population to higher risks of developing IHBs. Language was also a problem for people who spoke Spanish, but not English. Of particular interest was the testimony of the health promoter of limited English proficiency who asked for a Spanish interpreter but was refused the service several times, until she requested a switch in health care providers. Studies indicate that professional interpreters are underutilized in health care settings (Hsieh, 2014). Although the literature is ripe with articles concerning language and cultural barriers in health care settings, little has been written about the specific communication skills necessary to promote the management of chronic health conditions among the indigenous population in the US. Researchers should be more mindful of cultural and linguistic diversity within this population as not to overlook the experiences of indigenous people.

Fatalism. An unexpected cultural finding was the absence of *fatalismo*. Fatalism refers to the tendency to believe that one has no control over the future, or that events are pre-determined and, therefore, irreversible. Although fatalism has been mentioned in other diabetes studies (e.g., Caballero, 2005; Millan-Ferro & Caballero, 2009) and has received considerable attention in other disease contexts, such as cancer (e.g., Franklin et al., 2007), it was not referenced by participants in this study. Interview and focus group participants believed that diabetes could be controlled and treated. The majority of participants believed that a combination of

religious practices and self-care had optimal results. A strong support network that encourages people living with diabetes to self-treat and self-manage the disease (even if the suggested treatments may not be adequate) could have contributed to the lack of fatalistic views about diabetes. Family and friends are providing hope in the form of treatments they believe can “cure” or treat diabetes. Instead of believing that nothing can be done about the disease, the patients are being encouraged to try remedies that may help improve their situation. The possibility that support from family, friends, and acquaintances could outweigh religious fatalism should be investigated. This phenomenon could provide further insight into the prevention of diabetes fatalism, “a complex psychological cycle characterized by perceptions of despair, hopelessness, and powerlessness” (Osborn, Bains, & Egede, 2010, p. 914). Besides studying the influence of a support network on diabetes fatalism, it may be worthwhile to study the impact of diabetes news coverage in Spanish media. Some studies (e.g., Jensen et al., 2011; Niederdeppe, Fowler, Goldstein, & Pribble, 2010) have indicated that exposure to television news may encourage fatalism about cancer. Studies should be conducted to determine the influence of news coverage of diabetes in Spanish news programming and its effects on viewers. It may be possible that the manner in which diabetes information is disseminated in the Spanish media may have an impact in the way participants perceive their possible control over the disease and its outcomes.

Theoretical Implications

This investigation considered four different theoretical frameworks for their insight into the belief-behavior relationship: the theory of reasoned action (TRA), the theory of planned behavior (TPB), the health belief model (HBM), and the ecological models of health behavior (EMHB). Ultimately, the theory of reasoned action and its extension, the theory of planned behavior, were chosen as they offered the most effective framework for the study. In the theory chapter of this study, I had supposed that a combination of these theories would have been an effective means to examine the relationship between diabetes beliefs and health behaviors among low-income Hispanics. This study validated that supposition.

The theories of reasoned action and planned behavior were effective at explaining the relationship between beliefs and behavioral intentions. Hispanics with diabetes, who believed that certain natural remedies would cure them of their diabetes, were likely to claim use of those remedies as part of their diabetes treatment. Likewise, Hispanics with diabetes who believed that certain foods caused the disease were likely to indicate that they avoided consumption of those foods. In addition, family, friends, and acquaintances seemed to play a significant role in the decisions that people with diabetes made about treatment options. This supported the notion of normative beliefs and the subjective norm (Ajzen & Fishbein, 1989). The perceived behavioral control element added by the theory of planned behavior was also relevant to this study. Participants with diabetes, for example, seemed in control of the choices they made to treat their condition. Many participants elected

to adopt treatments that they believed would better help them manage the disease – even if those treatments were not scientifically proven to treat diabetes. In addition, participants who lacked economic resources to obtain health insurance or medical treatments exercised control over their treatments by seeking natural remedies, such as alpiste seeds, nopals, sábila, or bitter herbs. This perception of control over diabetes treatment options clearly lent support to the TPB (Ajzen, 1985). Although the TRA and TPB were useful in helping establish a relationship between beliefs and behavioral intentions, they lacked significant insight into the formation of beliefs. It was not possible to understand through the TRA lens how Hispanics of low-income backgrounds formed beliefs about the disease, including beliefs about the diseases' causes, symptoms, diagnosis, and treatment. These theories only provided a lens for understanding the beliefs once they had already been formed.

Although this study did not employ the health belief model during design or data analysis, it was apparent that the HBM (Rosenstock, 1966) could serve as an appropriate lens through which to examine diabetes health behaviors. The model would be useful for studies intending to determine the likelihood that Hispanics with prediabetes or at risk of developing diabetes may take action to prevent the disease. Focus group participants in this study, for instance, alluded to their perceived susceptibility to diabetes, as well as their perceived severity, perceived benefits, perceived barriers, self-efficacy and the various factors that led them to take action against the disease.

Participants living with and without diabetes commented on their perceived susceptibility to the disease. People without diabetes who had family members with the disease seemed more concerned about contracting the condition than participants who did not have close relatives with the disease. In addition to commenting on their susceptibility to the disease, participants seemed aware of, and concerned about, the disease's severity. Most participants seemed to believe that diabetes had grave consequences and provided a long list of symptoms and comorbid conditions associated with the disease. Besides commenting on their susceptibility and perceived severity, participants also spoke of beneficial actions they perceived would make them less susceptible to developing diabetes. Diet and exercise comprised the key beneficial actions. Poor economic conditions as well as lack of medical insurance were listed as the main barriers to disease prevention. Thus, participants in this study showed the key signs to identify the likelihood that someone would take action against a health threat: psychological readiness and perceived benefits. As such, the HBM does seem to fit the data. But, like the TRA and the TPB, it does not help explain the origin of diabetes related beliefs or the cultural sources that influence those beliefs.

Culture played a significant role in the formation and dissemination of irrational health beliefs about type 2 diabetes. It was clear during this investigation that the ecological models of health behavior would have been appropriate frameworks to study the origin and dissemination of diabetes beliefs. This study confirmed that intrapersonal, interpersonal, and institutional environments, as well

as community and public policy, influenced diabetes belief formation and dissemination. In this investigation, the participants' belief system – their ideas and thoughts about diabetes—as well as their relationships with friends, family and acquaintances, their lack of access to health institutions, the support received from the Hispanic community, and the impact of public policy (e.g., illegal immigrants not allowed to obtain drivers' licenses), all played significant roles in the treatment choices made by participants. The ecological models of health behavior helped add the cultural component that the TRA, TPB, and HBM were missing. But alone, this theory would have not been able to explain the relationship between beliefs and health intentions.

In summary, this investigation was examined through the TRA and TPB. Nonetheless, neither the TRA/TPB nor the other theories considered for this study provided a comprehensive lens through which to view IHB formation, dissemination, and health behavior effects. Thus, I am proposing the Communication Model of Health Belief Formation (CMHBF). The following section explains the model components, which were also previewed in the literature review.

Communication Model of Health Belief Formation

This model provides a visual representation of the role of communication in health belief development. The CMHBF is comprised of eight main components: cultural and environmental context, belief formation, observation and experience, information acquisition, inference, perception, demonstration, and dissemination.

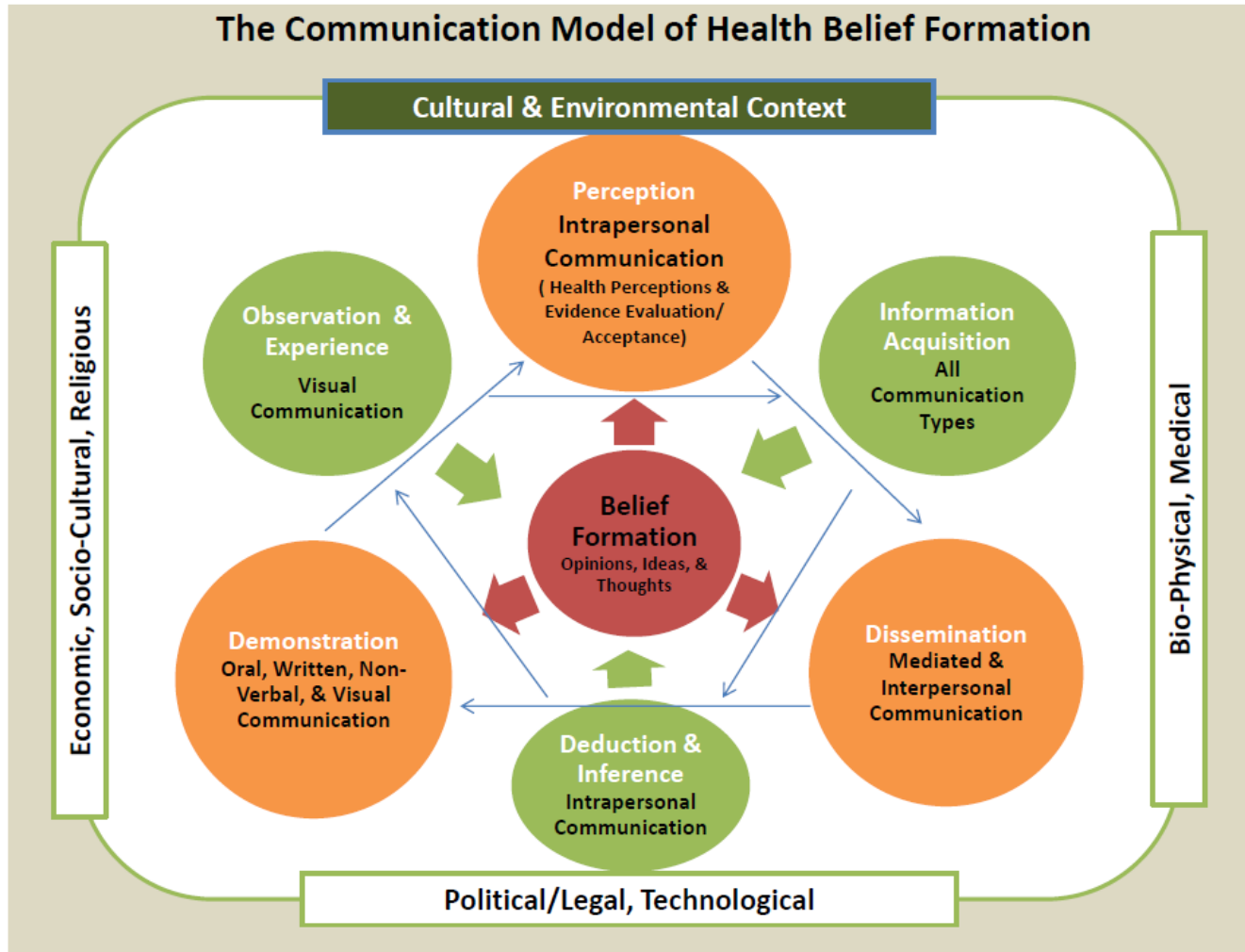


Figure 7. The communication model of health belief formation illustrates the role of communication in health belief development.

These components incorporate elements of the theories examined for this study as well as elements from the study findings.

Cultural and environmental context. Health belief formation does not occur in a vacuum. It is influenced by cultural and environmental forces. Values, norms, traditions, language, economic conditions, education, technology, community, and religion, for example, impact the opinions, ideas, and thoughts that individuals develop about health. An immigrant with low-literacy skills and poor economic prospects who cannot afford health insurance and whose main language is not English is likely to communicate differently about a chronic health condition and hold less knowledge about a disease than an educated individual with excellent health insurance and a better understanding of the same health condition. Therefore, culture and the environment must be taken into consideration when researching, studying, and communicating about health belief formation. The ecological models of health behavior provide an appropriate source to better understand the role of culture and the environment in health belief formation.

Belief formation. Constituting the central part of this model, health belief formation has been insufficiently researched in the health communication literature. The extant literature on health beliefs tends to circumvent health belief formation and neglects to explicate the role of communication in this process. Currently, it may be impossible to determine the exact path by which an individual may have formed a particular health belief. However, findings from this investigation support the notion that the development of opinions, ideas, and thoughts about health is connected to

three key components – information acquisition, observation and experience, and deduction and inference (Fishbein & Ajzen, 1975; Rokeach, 1972). In addition, it is also evident that perception, demonstration, and dissemination are part of the health belief formation process. The convergence of these elements contributes to the continuous development and modification of health beliefs that individuals hold.

Observation and experience. Individuals may form health beliefs through personal experience or by observing others dealing with sickness, illness, disease, chronic health conditions, or health-related disorders. Observation and experience have a great impact in the development of health beliefs because they are perceived as concrete evidence to the individual observing or living the situation. If an individual improves his/her diabetes through diet and exercise, that individual is going to believe in diet and exercise as suitable treatments for diabetes. Likewise, the young adult whose mother survived cancer due to consistent screening and early detection may grow up believing in the benefits of cancer screening. In this phase of belief formation, individuals rely heavily on visible communication cues, what I call, “visual communication.” These cues are stored in the mind, where they are employed during deduction and inference.

Deduction and inference. This component occurs when individuals start to think logically about the information that they have gathered through observation and experience. The product of this logical thinking may include rational or irrational health beliefs. For example, after observing that many of his/her friends with diabetes have undergone unexplained weight loss, an individual can deduce

that diabetes causes people with the disease to lose weight. This deduction would be accurate. Nonetheless, individuals may misinterpret health events or situations that they have observed or experienced. A patient who associates high sugar levels with egg consumption might believe that eggs increase his/her AIC levels, even though eggs have no glycemic index. As evidenced in this study, individuals with little or no education may rely primarily on deduction and inference for health belief formation, as they find it difficult to obtain health information from written sources.

Intrapersonal dialogue is the type of communication mostly employed in this phase of belief formation. Individuals may ask themselves questions or engage in self-talk as they try to make sense of health issues or health problems. Besides relying on deduction and inference, individuals form beliefs through information acquisition.

Information acquisition. Health beliefs may be formed from information that individuals receive or actively seek. Individuals may come across information for which they weren't searching, simply by talking with someone that decides to share interesting health facts or news. A mother who decides to share with a friend the traumatic experience that she lived when her son contracted *Naegleria fowleri* (brain eating bacteria) at a resort pool may cause her friend to believe that pools constitute health hazards. Or a diabetic who shares that alpiste seeds are controlling his diabetes may incite his/her friend to believe that alpiste is a good treatment for the disease. Besides receiving health information, individuals are actively seeking it. Searching for information online, reading newspapers, watching television,

conversing with others--these are all activities that individuals employ to obtain (accurate and inaccurate) information about health.

Perception. The way in which an individual may understand or perceive health beliefs may depend on the experiences lived and the cultural context within which these experiences were formed. Individuals may perceive characteristics of a disease based on the beliefs they hold about that disease. This supports the health belief model concepts concerning perception. If individuals believe that the particular outcome of a disease is not serious, their perceived severity of the disease may be low. If they believe that a particular disease has a genetic component that runs in their families, their perceived susceptibility to the disease may be high. Individuals of low socio-economic status may perceive more barriers when confronting a health threat because they have fewer financial resources to invest in reducing the threat. Perception is also involved in evidence evaluation. Individuals may evaluate evidence presented about a disease or disease treatment and perceive that evidence as clear, adequate, and logical if it comes from a trusted source. Conversely, if the information comes from someone they do not trust, understand, or respect, they may perceive that evidence as invalid, even when it is accurate. Because individuals engage in internal communication when trying to make sense of their experiences (Brinthaup, Hein, & Kramer, 2009; Honeycut, Zagacki, & Edwards, 1987), intrapersonal communication plays a significant role in perception. This type of communication is defined as the internal dialogue that takes place within an individual (Brooks & Emmert, 1976).

Demonstration. Showing, displaying, or expressing beliefs is part of human nature. Demonstration of health beliefs has taken place for centuries. Sand rock paintings, some dating back 4,000 years, have shown depictions of medicine dances and female puberty rites, with an obvious focus on “healing, sexuality, and environmental well-being” (Eastwood, 2008 p. 140). Today, demonstration of health beliefs can take place through a variety of activities. Individuals demonstrate their health beliefs when they gather in support or opposition of the Affordable Care Act, for example, or when ethnic and minority groups lobby for better access to health care, or when cancer survivors participate in sports to raise funds for cancer research. Wearing specific colors in support of people living with a particular disease has also become a popular activity related to health beliefs. Demonstration of health beliefs is made possible through oral, written, non-verbal, and visual communication.

Dissemination. Inevitably, once health beliefs are formed, they will be shared with others. Parents share their health beliefs with their children, and friends, family and acquaintances are likely to share their health beliefs with each other. Some individuals, as evidenced in this study, will share their health beliefs with complete strangers. Dissemination of health beliefs can be both helpful and detrimental. Sharing accurate health beliefs can lead to disease prevention and improved care. But, sharing inaccurate information about the symptoms, diagnosis, treatment, and prevention of disease can negatively impact medical decision making and treatment. Health beliefs are disseminated through interpersonal and mediated

communication. Interpersonal communication involves sharing information between two or more individuals. Mediated communication involves information delivery through technological means, instead of face-to-face. Letters, books, television, radio, the internet, newspapers, magazines, and lectures are all sources used in mediated communication.

In summary, the communication model of health belief formation illustrates the different components involved in the formation of health beliefs and its relationship to the various types of communication. To my knowledge, no other model exists that depicts the health belief formation process and the involvement of communication in this process. Thus, this model has the potential to impact the health and communication literature.

Implications for Communication and Clinical Practice

These findings have several practical implications for providers, patients, and communication practitioners. It is imperative for clinicians, providers, and health communication professionals to understand how the patient is receiving and processing messages about diabetes. Interviews with focus group participants suggested that communication about diabetes with family, friends, acquaintances, and health care providers affected the participants' feelings, thoughts, and behaviors related to the disease. As such, to understand and affect health behavior change in this population, practitioners must consider and address these various influences on the patient. Providers would be wise to adopt Engle's (1977) biopsychosocial model, a framework that highlights the impact of social, psychological, and behavioral

factors on illness (Wood, 2012), if they hope to understand their patients. In addition to this more macro-approach, one must consider a patient's micro-interactions, including the specific messages that they receive about diabetes and how they make sense of those messages. Studies (e.g. Mazor et al., 2010) have shown, for example, that people tend to forget the details and misinterpret the ideas expressed in health messages. Similarly, in a study of women's knowledge about cancer screening, Denberg and colleagues (2005) found that the participants misinterpreted the terms "screening" and "prevention." To women in that particular study, *screening* meant specifically looking for malignant not premalignant or benign tumors. In addition, the women believed that *prevention* referred to preventing death not preventing the cancer itself. As Denberg et al. explained, misunderstandings sometimes rest in the meanings that people assign to health terminology. Thus, when dealing with patients with type 2 diabetes, practitioners must verify patient understanding. This is particularly important when patients/providers do not share the same culture or language, as is the case with many Hispanics seeking medical care in the US. Messages about diabetes must be clear and specific. For example, when clinicians recommend that patients living with diabetes avoid meats and high fat content foods, it does not mean that meats and high fat content foods cause diabetes. It means that they may cause obesity, which, in turn, may increase the chance of developing the disease. Verifying that the patient understands, as opposed to assuming that one's recommendations are understood, will aid practitioners' efforts to reduce IHBs.

It is also important that clinicians engage in a two-way communication process with their patients. In a study of patient-provider communication, Ciechanowski and colleagues (2001) found that patients who rated communication with their providers as *good* maintained lower glucose levels than patients who rated it as *poor*. During this investigation, it was apparent that many participants with diabetes had high regard for the opinions and treatment suggestions offered by their health care providers. It was also apparent that the participants were not communicating with their providers about the alternative remedies they were using at home. It is crucial for clinicians to ask about these remedies. Clinicians can and should ask questions that can provide insight into the patients' health choices and health behaviors. Providers could ask, *Besides the treatments that I have recommended, what other remedies are you using to treat your diabetes? Or, Of all the remedies that you are taking, what do you believe works best for you? How did you learn about that remedy?* These simple, straightforward questions may promote the flow of information between the two parties. It also gives patients the opportunity to communicate about their health beliefs and health care practices. In addition, it provides clinicians with insight into the cultural factors affecting their suggested medical treatments. Learning about their patients' beliefs can help refute irrational health beliefs or thwart health behaviors inconsistent with recommended treatments. The clinicians must learn to carefully listen to their patients and to seriously consider and examine the course of action that they have decided to take. A two-way communication process can help patients discern between alternative

remedies that may be helpful from those that are not. Patients may be more likely to reject alpieste seeds as a cure for diabetes if their health care providers offer reasonable reasons for rejecting the alternative remedy. This implies that clinicians must also learn about the alternative products and the likelihood that they could be beneficial or detrimental for diabetes.

Furthermore, as mentioned in the introduction, a distinction was indeed apparent between IHBs referring to health behaviors and IHBs referring to health concepts. For example, the statement “if diabetes runs in my family, there’s nothing I can do about it to prevent it” characterizes a behavior-related IHB. On the other hand, IHBs referring to a health concept indicate an individual’s views about the disease, itself. The statement “type 2 diabetes is not a severe disease,” for instance, exemplifies a concept-related IHB. Health communication practitioners should study the impact of these linguistic distinctions on the public’s perception of diabetes prevention and management and the public’s views about the diabetes itself.

In summary, researchers, clinicians and health communication practitioners seeking to understand how health beliefs about diabetes are formed, disseminated, and communicated, as well as how they impact health behaviors and behavior change, should a) pay closer attention to how messages about diabetes are being received and processed, b) engage in two-way communication, c) and question the patients about alternative treatments and actively listen to their responses.

Limitations

This study had some limitations. First, the number of focus groups and individual interview participants was relatively small. Although I managed to include a diverse group of participants, time did not allow me to recruit enough participants from each nationality to be able to categorize findings by particular Latin American countries or regions. Second, due to a request from the Mexican Consulate and El Centro Hispano, I was not allowed to gather information about the participant's income or their particular line of work. This precluded me from including that information in my data analysis. And finally, the quantitative study design and questions were not suitable in the end to run the type of statistical analysis that would have yielded significant information. I employed too many questions that required answers in nominal data. Instead, I should have designed the questionnaire to include questions that required responses to be expressed in ordinal, interval or ratio variables.

Conclusion

This investigation evidenced the presence of irrational health beliefs in the Hispanic community and provided clues to their origin and the communication and cultural sources involved in their dissemination. In addition, the study found a small but significant association between IHBs, education, and physical activity. Due to the limited scope of this investigation, it was not feasible to interview a large sample of participants representing all Latin American countries. Therefore, considerable

research is still needed to document irrational beliefs about diabetes that may be pervasive in the various national or regional Latin American communities.

This study also indicated that it may be of great value to investigate the irrational health beliefs about diabetes held by the indigenous populations proceeding from Latin American countries. Because of their limited knowledge of both Spanish and English, it is imperative to examine how they communicate and disseminate information about the disease. In addition, it was apparent that participants with little or no education had the most irrational health beliefs about diabetes. A study that identifies best communication practices to improve diabetes knowledge in this segment of the population and refute irrational health beliefs would be of great impact to health communication and public health. Finally, additional research is also needed to continue testing the relationship between IHBs and health behaviors.

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Appendices

Appendix A

Selection Criteria Guidelines and Checklist

DIABETES BELIEFS AND COMMUNICATION STUDY Criteria for Selection of Study Participants

The following criteria have been established for selecting study participants for the qualitative portion of this project. The guidelines are divided into three main categories: inclusion criteria, demographic characteristics to ensure variation, and additional considerations. The PI retains the flexibility to add additional criteria, provided that they do not conflict with the ones stated below:

Mandatory Requirements for Inclusion

- **Spanish or English Language:** The language criterion will be used to ensure that volunteers speak either Spanish or English. Language is of critical importance since it influences how beliefs are articulated and communicated. In addition, language also influences how individuals convey their health concerns and how they describe health symptoms. This criterion will also help determine the language preference for the interviews and focus groups. The individual interviews will be conducted in the participants' preferred language. The focus group interviews will be conducted in one language only. Groups of five to seven participants will be formed according to language preference. Participants who do not speak Spanish or English will be eliminated from the pool of volunteers.
- **Hispanic Ethnicity/Racial Background:** All participants must be of Hispanic origin or ethnicity. Ethnic/race aspect will be considered because it is one indicator of diabetes risk. Hispanics, Blacks, and Native Americans are at higher risk of developing type 2 diabetes. Hispanics can be of any race. Thus, investigators will monitor the progress report weekly to strive for balanced representation of the racial composition of the Hispanic community, as a whole, and to ensure that these specific subgroups of the Hispanic community are represented.
- **Country of Origin:** The participants' country of origin must be located in North America, Central America, South America, the Caribbean, Spain, or anywhere where Spanish language or culture are dominant. The weekly progress report will be monitored to ensure a good representation of various nationalities. Recruiting a diverse group is necessary to create a typology of diabetes-related irrational beliefs representative of the Hispanic community, as a whole.

Demographic Characteristics to Ensure Variation

- **Age:** All participants must be at least 18 years of age by April 22, 2014, the date the project is submitted to the IRB. Participants younger than 18 years of age will not be included in the study. The criteria checklist will be used to keep track of prospects' ages. Participants who qualify will be placed into two main groups: 18-39 years old, and 40 years of age or older. Because type 2 diabetes is more prevalent in older adults, the study will strive to keep a balance between the two age groups. The weekly progress report will be used to monitor the age of the volunteers every week and adjust participation accordingly.
- **Gender.** Participants will be asked about their gender to select as even a number of male and female participants as possible. Hispanic females are diagnosed with diabetes at slightly higher rate than males. Therefore, the study will ensure that women are adequately represented in the sample.
- **Educational Attainment:** The participants' highest completed educational attainment will be used to determine the level of vocabulary used by the interviewers, and to develop sets of focus group participants. Participants with similar education attainment will be grouped together to increase their level of comfort and to reduce the possibility that some may feel intellectually intimidated by other members of the group. Educational attainment, however, is not a requirement for participation. Participants who can't read or write will be read the consent form.

Other Requirements or Considerations

- **Diabetes Status:** Participants will be asked if they have diabetes, if they have a family member with diabetes, or if they know someone with diabetes. Diabetes status is important because family history of diabetes is a risk factor for the disease. In addition, having a family member or a friend with diabetes may influence the knowledge and beliefs that participants have about the disease. As with all the other factors, the selection criteria checklist and weekly status report will be used to assess the number of participants who have selected a specific diabetes status and to strive for a balanced representation.
- **Access to Health Care:** Screening for health care access will help determine where additional participants may be recruited, in the event that additional participants are necessary.
- **Transportation:** We will strive to recruit individuals with private transportation as much as possible, to better assure attendance and punctuality during appointments.

Codes Section

The codes section in the shaded area will assist the researcher with the survey tabulation process. Once participants have completed the survey, the researcher will mark the corresponding answers in the shaded box. The answers will be manually transferred from the codes section to Excel and recorded in the Selection Criteria Progress Report for tabulation.

Name:	Date:
Phone:	Email Address:
Age: Individuals must be 18 of age or older to participate. <input type="checkbox"/> Age _____	Ethnic Category: What is your ethnicity? <input type="checkbox"/> Hispanic born and raised in Spanish speaking Country, but living in US for 9 years or less <input type="checkbox"/> Hispanic born and raised in Spanish speaking Country, but living in the US for 10 years or longer <input type="checkbox"/> Hispanic, born in the US <input type="checkbox"/> Other _____
Gender: What's your gender? <input type="checkbox"/> Female <input type="checkbox"/> Male	
Language: What is your language preference? <input type="checkbox"/> I prefer to speak Spanish <input type="checkbox"/> I am fully bilingual and can speak both Spanish or English <input type="checkbox"/> I prefer to speak English <input type="checkbox"/> I do not Speak English or Spanish fluently	Country of Origin/Ancestry: What is your country of origin: <input type="checkbox"/> Mexico <input type="checkbox"/> Puerto Rico <input type="checkbox"/> Cuba <input type="checkbox"/> Dominican Republic <input type="checkbox"/> Central America Where? _____ <input type="checkbox"/> South America Where? _____ <input type="checkbox"/> Other _____
Diabetes Status: What is your diabetes status? <input type="checkbox"/> Have diabetes, and have family members who have it <input type="checkbox"/> Have diabetes, and don't have family members who have it <input type="checkbox"/> Have diabetes, have no family with diabetes, but know someone who has it <input type="checkbox"/> Don't have diabetes, but have a family member who has it <input type="checkbox"/> Neither my family or I have diabetes, but I know someone who has it <input type="checkbox"/> Don't have diabetes, nor know someone who has it	
Educational Attainment: What is the highest level completed? <input type="checkbox"/> No formal education <input type="checkbox"/> Elementary School <input type="checkbox"/> High School <input type="checkbox"/> Trade School/Junior College <input type="checkbox"/> Undergraduate <input type="checkbox"/> Masters <input type="checkbox"/> Doctorate	Racial Category: Do you belong to, or identify with the following racial category(ies), or is your racial background composed of the following racial category(ies)? Please mark all that apply: <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Other _____ <input type="checkbox"/> None
Access to Health Care: Where do you prefer to seek health care? <input type="checkbox"/> Physician's office <input type="checkbox"/> Urgent care center <input type="checkbox"/> Emergency Room at nearest hospital <input type="checkbox"/> Health care program at a community organization <input type="checkbox"/> Other _____	For PI/Recruiters Use Only: 1. A ___ 2. G: M ___ F ___ 3. L: S ___ SE ___ E ___ 4. Eth: H9 ___ H10 ___ HUS ___ O ___ 5. DBS: H&F ___ HNF ___ DHF ___ DHBN ___ DHDN ___ 6. CO: CO ___ 7. RC: _____ 8. EA: ES ___ HS ___ TS ___ UG ___ G ___ 9. PO ___ UCC ___ ER ___ HCP ___ O ___ 10. OV ___ FV ___ PT ___ O ___
Transportation: What is your main mode of transportation? <input type="checkbox"/> My own vehicle <input type="checkbox"/> Public transportation <input type="checkbox"/> Family vehicle <input type="checkbox"/> Other _____	
I have provided the above information because I am interested in participating in this study about diabetes beliefs and health behaviors. I understand that this information will be used to determine if I qualify for this study. The information I have provided will be kept strictly confidential. Study findings will be used to extend theory and to build knowledge about the connection between diabetes knowledge and health behaviors. This project might help researchers better disseminate diabetes information to the Hispanic community in the future. If I qualify for the study, I authorize the researchers to contact me at the above telephone number and/or email address. I also understand that participation in individual interviews or focus groups may take up to 1 hour.	
Participant's Print Name _____	Signature _____ Date _____

Appendix A2

Selection Criteria Guidelines and Checklist Spanish Version

ESTUDIO DE CREENCIAS ACERCA DE LA DIABETES Y SU COMUNICACIÓN

Criterios para la selección de los participantes del estudio

Se han establecido los siguientes criterios para la selección de los participantes en la parte cualitativa de este proyecto. Las directrices se dividen en tres categorías principales: los criterios de inclusión, características demográficas para asegurar una variedad de participantes, y consideraciones adicionales. La investigadora principal reserva la flexibilidad de añadir criterios adicionales, siempre que no entran en conflicto con los anunciados siguientemente:

Requisitos obligatorios para la inclusión de los participantes

- **Hablar inglés o español** : El idioma se utilizará como criterio para asegurar que los voluntarios hablan español o inglés. El idioma es de vital importancia ya que influye como las creencias acerca de la salud son articuladas y comunicadas. Además, el lenguaje también influye como las personas expresan sus preocupaciones acerca de la salud y como describen los síntomas de la salud. Este criterio también ayudará a determinar la preferencia de idioma para las entrevistas y grupos de enfoque. Las entrevistas individuales serán conducidas en el idioma preferido de los participantes. Las entrevistas de grupos de enfoque se realizarán en un solo idioma. Se formarán grupos de cinco a siete participantes según la preferencia de idioma de los participantes. Los participantes que no hablan español o inglés serán descalificados.
- **Fondo étnico/Racial**: Todos los participantes deben ser de origen hispano. El aspecto étnico/racial será considerado porque es un indicador de riesgo para la diabetes. Los hispanos, los negros y los nativos norteamericanos corren mayor riesgo de desarrollar diabetes tipo 2. Los hispanos, sin embargo, pueden pertenecer a cualquier raza. Por lo tanto, los investigadores de este proyecto supervisarán el informe semanalmente. Esto ayudará a lograr una representación equilibrada de la composición racial de la comunidad hispana, en general, y a garantizar que estos subgrupos específicos de la comunidad hispana sean representados.
- **País de origen** : El país de origen de todos los participantes deben estar ubicado en América del Norte, América Central, América del Sur, el Caribe, España o en cualquier lugar donde predomina el idioma o la cultura hispana. El informe semanal será monitoreado para asegurar que haya una representación

diversa. El reclutamiento de un grupo diverso es necesario para crear una tipología de las creencias irracionales relacionadas con la diabetes que sean representativos de la comunidad hispana, en general.

Características demográficas para asegurar la variación

- **Edad:** Todos los participantes deben tener 18 años de edad empezando el 22 de abril de 2014, la fecha que el proyecto será sometido al Junta de Revisión Institucional. No se incluirán en el estudio los participantes menores de 18 años de edad. La lista de criterios se utilizará para realizar un seguimiento de las edades de las perspectivas. Los participantes que califiquen se colocarán en dos grupos principales: 18-39 años de edad y 40 años de edad o más. Porque la diabetes tipo 2 es más frecuente en los adultos mayores, el estudio se esforzará por mantener un equilibrio entre los dos grupos de edad. El informe de progreso se utilizará para llevar cuenta de la edad de los voluntarios cada semana y ajustar la participación de acuerdo al progreso.
- **Género:** Se tomará en cuenta el sexo/género de los participantes para asegurar, lo más posible, un balance en el número de participantes masculinos y femeninos. Las mujeres hispanas son diagnosticadas con diabetes a un ritmo más avanzado que el de los hombres. Por lo tanto, el estudio se asegurará de que las mujeres estén adecuadamente representadas en la muestra.
- **Nivel educativo:** El nivel educativo más alto que hayan completado los participantes se utilizará para determinar el nivel de vocabulario utilizado por los entrevistadores y para formar los grupos participantes. Participantes con un logro educativo similar se agruparán juntos. Esto ha sido estipulado para aumentar el nivel de comodidad de los participantes y para reducir la posibilidad de que algunos pueden sentirse intelectualmente intimidados por otros miembros del grupo. El logro educativo, sin embargo, no es un requisito para la participación. A los participantes que no saben leer ni escribir se leerá el formulario de consentimiento.

Otros requisitos o consideraciones

- **Estado de la diabetes:** Los participantes se les pedirá si tienen diabetes, si tienen un familiar con diabetes, o si conocen a alguien con diabetes. El estado de diabetes es importante debido a que un historial familiar de diabetes es un factor de riesgo para la enfermedad. Además, tener un familiar o un conocido con diabetes puede influir los conocimientos y creencias que tienen los participantes acerca de la enfermedad. Como con todos los demás factores, el informe semanal de progreso será utilizado para evaluar el número de participantes que hayan seleccionado un estado específico de la diabetes y para mantener una representación equilibrada.

- **Acceso a servicios de salud** : El criterio de acceso a servicios de salud ayudará a determinar dónde pueden ser reclutados participantes adicionales, en caso de que participantes adicionales sean necesarios.
- **Transporte:** Nos esforzaremos por reclutar a individuos con transporte privado tanto como sea posible, para asegurar la mejor asistencia y puntualidad durante las citas.

Sección de códigos

La sección de códigos en el área sombreada asistirá al investigador con el proceso de tabulación de la encuesta. Una vez que los participantes hayan completado la encuesta, el investigador marcará las respuestas correspondientes en el cuadro sombreado. Las respuestas serán transferidas de la sección de códigos a Excel, y registradas en el informe de progreso donde serán tabulados.

Nombre:	Fecha:
Teléfono:	Correo electrónico:
Edad: Los interesados deben ser de 18 de edad o más para participar. <input type="checkbox"/> Edad _____	Categoría étnica: ¿Cuál es su origen étnico? <input type="checkbox"/> Hispano, nacido y criado en un país de habla Hispana, pero he estado viviendo en los EU por 9 años o menos <input type="checkbox"/> Hispano, nacido y criado en un país de habla Hispana, pero he estado viviendo en los EU por más de 10 años <input type="checkbox"/> Hispano, pero nacido en los EU <input type="checkbox"/> Otro _____
Género: ¿Cuál es tu género? <input type="checkbox"/> Mujer <input type="checkbox"/> Hombre	País de origen: ¿Cuál es tu país de origen?: <input type="checkbox"/> México <input type="checkbox"/> Puerto Rico <input type="checkbox"/> Cuba <input type="checkbox"/> República Dominicana <input type="checkbox"/> Centroamérica ¿Qué país? _____ <input type="checkbox"/> América del sur ¿Qué país? _____ <input type="checkbox"/> Otro _____
Idioma: ¿Qué idioma prefiere hablar? <input type="checkbox"/> Prefiero hablar en Español <input type="checkbox"/> Soy completamente bilingüe y hablo español e inglés <input type="checkbox"/> Prefiero hablar en inglés <input type="checkbox"/> No hablo muy bien ni el Español ni el inglés	Categoría racial: Pertenece a, o se identifica con las siguientes categorías raciales, o su origen racial se compone de las siguientes categorías raciales. Por favor, marque todas las que apliquen: <input type="checkbox"/> Nativo Americano/Nativo de Alaska <input type="checkbox"/> Nativo hawaiano/isleños del Pacífico <input type="checkbox"/> Africano Americano <input type="checkbox"/> Asiático <input type="checkbox"/> Negro <input type="checkbox"/> Blanco <input type="checkbox"/> Otra _____ <input type="checkbox"/> Ninguno
Estado de diabetes: ¿Cuál es su estado de diabetes? <input type="checkbox"/> Padezco de diabetes, y miembros de mi familia también <input type="checkbox"/> Padezco de diabetes, no tengo familiares padecen <input type="checkbox"/> Padezco de diabetes, mi familia no padece, pero conozco a alguien que padece de diabetes <input type="checkbox"/> No padezco diabetes, pero conozco miembros de la familia que si padecen <input type="checkbox"/> No padezco de diabetes, ni mi familia padece de diabetes, pero conozco a alguien si padece <input type="checkbox"/> No padezco de diabetes, ni conozco a alguien que padece	
Nivel educativo: ¿Cuál es el nivel más alto completado? <input type="checkbox"/> No tengo educación formal <input type="checkbox"/> Grados 1-6 <input type="checkbox"/> Grados 7-12 <input type="checkbox"/> Escuela Vocacional/Colegio Comunitario <input type="checkbox"/> Licenciatura (4 Años de Universidad) <input type="checkbox"/> Maestría <input type="checkbox"/> Doctorado	
Acceso a servicios de salud: ¿Dónde prefiere buscar atención médica?: <input type="checkbox"/> Consultorio médico <input type="checkbox"/> Centro de cuidado urgente <input type="checkbox"/> Sala de emergencias del hospital más cercano <input type="checkbox"/> Programa de atención médica en una organización comunitaria <input type="checkbox"/> Ninguno <input type="checkbox"/> Otro _____	For PI/Recruiters Use Only: 1. A ___ 2. G: M ___ F ___ 3. L: S ___ SE ___ E ___ N ___ 4. Eth: H9 ___ H10 ___ HUS ___ O ___ 5. CO: CO ___ 6. RC: _____ 7. DBS: H&F ___ HNF ___ DHF ___ DHBN ___ DHDN ___ 8. EA: ES ___ HS ___ TS ___ UG ___ G ___ 9. PO ___ UCC ___ ER ___ HCP ___ O ___ 10. OV ___ FV ___ PT ___ O ___
Transporte: ¿Cuál es tu modo principal de transportación?: <input type="checkbox"/> Mi propio vehículo <input type="checkbox"/> Vehículo de la familia <input type="checkbox"/> Transportepúblico <input type="checkbox"/> Otro _____	
Me han proporcionado esta información porque estoy interesado(a) en participar en este estudio. Entiendo que esta información se utilizará para determinar si califico para este estudio. La información que he proporcionado se mantendrá estrictamente confidencial. Los resultados de este estudio se utilizarán para ampliar la teoría y a construir el conocimiento sobre la relación entre el conocimiento de la diabetes y los comportamientos de salud. Se espera que este proyecto pueda ayudar a los investigadores a difundir más información sobre diabetes para la comunidad hispana en el futuro. Si califico para el estudio, yo autorizo a los investigadores a ponerse en contacto conmigo mediante el número de teléfono o correo electrónico que he proveído. También entiendo que la participación en entrevistas individuales o grupos de enfoque puede tardar hasta 1 hora.	
Nombre en imprenta del participante	Firma
	Fecha

Appendix B

Selection Criteria Progress Report

FACTOR	MAY				JUNE	
	Week 1 Total	Week 2 Total	Week 3 Total	Week 4 Total	Week 1 Total	Week 2 Total
AGE						
>17						
18-39						
40+						
unmarked						
GENDER						
Females						
Males						
Unmarked						
LANGUAGE						
Prefer to speak Spanish						
Speak both English and Spanish						
Prefer to speak English						
Do not speak English or Spanish						
Unmarked						
COUNTRY OF ORIGIN						
Puerto Ricans						
Mexicans						
Cubans						
Dominicans						
South American						
Central American						
Other						
Unmarked						
ETHNICITY						
Hispanic (9 years or less living in the US)						
Hispanic (10 years or more living in the US)						
Hispanic (born and raised in the US)						
Unmarked						
RACE						
American Indian/Alaska Native						
Native Hawaiian or Other Pacific Islander						
African American						
Asian						
Black						
White						
Other						

Appendix C

Semi-Structured Interview Schedule English

Interview Schedule

Institution: North Carolina State University
Principal Investigator: Johanne I Laboy

Thank you for taking part in our research study. First, I would like to restate the purpose of this project. We are conducting this interview because we would like to learn more about your opinions, ideas, and thoughts about diabetes, especially type 2 diabetes. This is the type of diabetes that affects most adults. All the questions in this interview will refer to this type of diabetes. It is important that we understand what people know about the disease, so that we can better educate Hispanics about the causes, symptoms, diagnoses, and treatment of diabetes. In addition, your feedback will help guide diabetes prevention programs directed to the Hispanic population.

During the first part, I will explain the consent form to you. A consent form is a written document that introduces a research study, explains its purposes and methods, and outlines the risks and benefits of participation. A signed consent form is required for participation.

After the consent form, we will begin the interview process. During the first set, I will ask you some questions to get to know you better. During the second set, I will ask you some questions about diabetes in general. During the last set, I will ask about anything else that you would like to share regarding diabetes. At the end of the interview, you will receive \$25.

There are no wrong or right answers to these questions.

I. Ice-Breaking Questions

1. From which country are you originally?
2. How long have you been in this area?
3. Do you miss home?
4. How did you seek health care in (home country)?
5. Do you seek health care here in the US?
6. Where? (Doctor's office, urgent care clinic, homeopathic office)?
7. Do you have diabetes?
8. Do you know anyone with diabetes?
9. If yes: Is this person a family member, a friend, an acquaintance?
10. Tell me a little bit about this person's diabetes?
11. When you need health information, who do you ask? (If diabetes patient, ask specifically about diabetes)

12. From what other sources do you get information about health? (If diabetes patient, ask specifically about diabetes)

II. Essential Questions

The next set of questions is designed to get your opinions, ideas, and thoughts about type 2 diabetes.

Salient Beliefs

Causes

13. In your opinion, how do people get diabetes?
 14. In your opinion, is diabetes contagious? Or, could you catch diabetes from someone else? If so, how? If so, do you remember how you learned that diabetes was contagious?
 15. Can one's emotional state cause diabetes? If so, how? If so, do you remember where you learned this information?
 16. Does eating anything in particular cause diabetes? If so, how? If so, do you remember where you learned this information?

Symptoms

17. Can you mention some symptoms of diabetes?
 18. Do you believe that people only have diabetes when their glucose levels are high? If so, do you remember where you learned this information?
 19. Do you think diabetes symptoms are severe?

Diagnosis

20. How do people know they have diabetes? Where did you learn that information?

Treatment

21. What do you believe is a good treatment for diabetes? Where did you learn that information?
 22. Do you think people can be cured of diabetes? If so, how? If so, where did you learn that diabetes was curable?
 23. What do you know about insulin? Where did you learn this information?
 24. What can worsen diabetes? Where did you learn that information?

Prevention

25. What do you believe people should do to prevent the disease?

Normative Beliefs/Subjective Norm

26. Have you ever heard anything said about diabetes that was of interest to you?
 27. What was one thing you heard about diabetes that was of interest to you?
 28. If yes: Who said it?

For questions 29-37, follow with the question, "Do you remember where you learned this information?"

29. Do you know of any specific diets that are good for people with diabetes? Should people with diabetes consume diet products? What about alcohol? Herbal teas?
30. What do you think diabetes can do to people who work, study or exercise?
31. What do you think about diabetes and people who practice sports?
32. What do you think about women with diabetes who want to have children?
33. What do you know about diabetes and herbal teas?
34. What do you know about the effects of diet products in people with diabetes?
35. What do you know about alcohol consumption and people with diabetes?
36. If you were to need advice about diabetes, to whom would you go for information?
37. When it comes to health, whose advice do you trust the most (Your mother's, a family member's, your doctor)?

Socio-Cultural Factors

38. Do you practice a religion?
39. If yes, what do you believe is the role of God in diabetes care?
40. Do you use a computer?
41. If yes, do you have internet access?
42. If yes, do you use it for health information?
43. Do you use a cell phone? What kind? (smart phone, flip phone)
44. If yes, do you use the cell phone for health information?

III. Closing Questions

45. Is there anything you would like to add?

Thanks again for your time and information. As I mentioned, this information will help us develop better programs to educate the Hispanic population about diabetes, its causes, symptoms, diagnosis, treatment and prevention. If you have any questions, please contact me at the number provided in the consent form.

Appendix C2

Semi-Structured Interview Schedule Spanish

Programa de Entrevista

Institución: North Carolina State University

Investigadora principal: Johanne Laboy

Gracias por tomar parte en nuestro estudio de investigación. En primer lugar, me gustaría reafirmar el propósito de este proyecto. Estamos llevando a cabo esta entrevista porque nos gustaría aprender más acerca de tus opiniones, ideas y pensamientos acerca de la diabetes, especialmente la diabetes tipo 2. Este es el tipo de diabetes que afecta a la mayoría de los adultos. Todas las preguntas en esta entrevista se referirán a este tipo de diabetes. Es importante entender lo que las personas saben acerca de esta enfermedad, para así nosotros poder educar mejor a los hispanos sobre las causas, síntomas, diagnóstico y tratamiento de la diabetes. Además, su opinión puede ayudar a mejorar los programas de prevención de diabetes dirigidos a la población hispana.

Durante la primera parte, te explicaré el formulario de consentimiento. Un formulario de consentimiento es un documento escrito que introduce un estudio de investigación, explica sus propósitos y métodos y describe los riesgos y beneficios de participación. Haber firmado el formulario de consentimiento es necesario para tu participación en este estudio.

Después de revisar el formulario de consentimiento, comenzaremos el proceso de entrevista. Durante la primera parte, te haré algunas preguntas para conocerte mejor. Durante la segunda parte, te haré algunas preguntas acerca de la diabetes en general. Durante la última parte, te preguntaré si alguna otra cosa que deseas compartir con respecto a la diabetes. Al final de la entrevista, usted recibirá \$25.

Como estamos requiriendo tu opinión, no hay respuestas correctas o incorrectas en esta encuesta.

I. Preguntas de introducción

1. ¿De qué país eres originalmente?
2. ¿Cuánto tiempo llevas en esta área?
3. ¿Extrañas a tu país?
4. ¿Dónde buscabas atención médica en tu país?
5. ¿Buscas atención médica aquí en los Estados Unidos?
6. ¿Dónde? (Consultorio médico, clínica de atención urgente, oficina homeopática)?
7. ¿Tienes diabetes?

8. ¿Conoces a alguien con diabetes?
9. Si es así: ¿es un miembro de la familia, un amigo, un conocido a esta persona?
10. Cuénteme un poco acerca de la diabetes de esa persona.
11. ¿Cuándo usted necesita información de salud, a quién le pregunta? (Si el participante padece de diabetes, pregunte específicamente acerca de la diabetes)
12. ¿Qué otras fuentes de información utiliza para mantenerse informado acerca de la salud? (Si el participante padece de diabetes, pregunte específicamente acerca de la diabetes)

II. Preguntas esenciales

La siguiente serie de preguntas está diseñada para obtener tus opiniones, ideas y pensamientos acerca de la diabetes tipo 2.

Creencias salientes

Causas

13. ¿En tu opinión, cómo la gente contrae diabetes?
14. ¿En tu opinión, es contagiosa la diabetes? ¿O, podría usted contraer diabetes de otra persona? Si es así, ¿Cómo? Recuerdas cómo te enteraste de que la diabetes es contagiosa?
15. ¿Piensas que el estado emocional de una persona puede causar diabetes? Si es así, ¿cómo? Recuerdas dónde aprendiste esta información?
16. ¿Piensas que comer algo en particular causa diabetes? Si es así, ¿cómo? Recuerdas dónde aprendiste esta información?

Síntomas

17. ¿Puedes mencionar algunos síntomas de la diabetes?
18. ¿Crees que la gente sólo tiene diabetes cuando sus niveles de azúcar ha subido? Recuerdas dónde aprendiste esta información?
19. ¿Crees que los síntomas de la diabetes son graves?

Diagnóstico

20. ¿Cómo se sabe que una persona que tienen diabetes? ¿Dónde aprendiste esa información?

Tratamiento

21. ¿Qué crees que es un buen tratamiento para la diabetes? ¿Dónde aprendiste esa información?
22. ¿Crees que la gente puede curarse de la diabetes? Si es así, ¿cómo? ¿Dónde aprendiste que la diabetes es curable?
23. ¿Qué sabes acerca de la insulina? ¿Dónde aprendió esta información?
24. ¿Qué piensas que puede empeorar la diabetes? ¿Dónde aprendiste esa información?

Prevención

25. ¿Qué crees que la gente debe hacer para prevenir la enfermedad?

Creencias subjetivas y normativas

26. ¿Has oído algo acerca de la diabetes te pareció de interés?
27. ¿Qué fue lo que escuchaste acerca de la diabetes que te pareció de interés?
28. En caso afirmativo: ¿Quién lo dijo?

Para preguntas 29-37, sigan con la pregunta, " Te acuerdas de dónde aprendiste esta información?"

29. ¿Sabes de algunas dietas específicas que sean buenas para las personas con diabetes? ¿Piensas que las personas con diabetes deben consumir productos de dieta? ¿Alcohol? ¿Infusiones?
30. ¿Qué efectos crees que la diabetes puede causarle a las personas que trabajan, estudian, o ejercen?
31. ¿Qué opinas sobre la diabetes y personas que practican algún deporte?
32. ¿Qué piensas de las mujeres con diabetes que quieren tener hijos?
33. ¿Qué sabes acerca de té herbal para la diabetes?
34. ¿Qué sabes acerca de los efectos que los productos dietéticos tienen en personas con diabetes?
35. ¿Qué sabes sobre el consumo de alcohol y las personas con diabetes?
36. ¿Si fueras a necesitar asesoramiento acerca de la diabetes, a quien acudirías para obtener información?
37. ¿Cuando se trata de salud, en los consejos de que persona tu más confías (de su madre, un miembro de la familia, su médico)?

Factores socio-culturales

38. ¿Practica una religión?
39. ¿Si sí, cuál cree que es el rol de Dios en el cuidado de la diabetes?
40. ¿Tienes una computadora?
41. En caso afirmativo, ¿tienes acceso al internet?
42. En caso afirmativo, ¿la utilizas para obtener información acerca de la salud?
43. ¿Utilizas un teléfono celular? ¿Qué clase? (teléfono inteligente, teléfono de tapa)
44. En caso afirmativo, ¿usas el celular para obtener información de salud?

III. Pregunta de cierre

45. ¿Hay algo que te gustaría añadir?

Gracias por tu tiempo e información. Como ya he mencionado, esta información nos ayudará a desarrollar mejores programas para educar a la población hispana sobre la diabetes, sus causas, síntomas, diagnóstico, tratamiento y prevención. Si usted tiene alguna pregunta, por favor comuníquese conmigo al número proporcionado en el formulario de consentimiento.

Appendix D

Informed Consent Form for Individual Interviews English

North Carolina State University

INFORMED CONSENT FORM for RESEARCH

Project Title: Type 2 Diabetes: Knowledge and information sources

Principal Investigator: Johanne Laboy

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. Please print a copy of this consent form for your records. If at any time you have questions about your participation, do not hesitate to contact the researcher named above.

What is the purpose of this study?

We are interested in learning more about the Hispanic population's beliefs about diabetes and how those beliefs are communicated. Studying people's diabetes beliefs will help researchers better disseminate diabetes information to those who need it in the future.

What will happen if you take part in the study?

If you agree to participate in this study, you will first be asked a series of questions about health issues, including diabetes. Then, you will be asked about your diabetes beliefs, about the sources of those beliefs, and about some cultural factors related to diabetes. We expect that these tasks will take approximately 1 hour.

Risks

We do not foresee any potential risks associated with this study; however, you should feel comfortable to withdraw from the study at any point in time. If you feel uncomfortable continuing for any reason, please do not hesitate to stop your participation.

Benefits

Other than some compensation discussed below, study findings will be used to extend theory and to build knowledge about the connection between diabetes

knowledge and health behaviors. This project might help researchers better disseminate health information in the future.

Confidentiality

The information in the study records will be kept completely confidential. Interviews and focus groups will be recorded on a digital device. This device and any other study materials will be stored in a locked box. These digital files will be downloaded to the PI's computer, and the data cards from the digital device will be removed and placed in the locked box. The data cards (SD cards) will serve as a back-up in case files on the computer are lost or corrupted. The computer files (including the audio recordings and the transcriptions of the interviews) will be stored and managed through NVivo, a qualitative research software program that allows us to securely store and manage data on my computer. Furthermore, no reference will be made in oral or written reports that could link you to the study.

Compensation

All individuals who complete the survey will receive \$25 compensation for their participation.

What if you have questions?

If you have questions at any time about the study or the procedures, you may contact:

Johanne Laboy
Department of Communication
919.515.9736
Email: jilaboy@ncsu.edu

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact:

Deb Paxton
Regulatory Compliance Administrator
Box 7514
NCSU Campus
919/515-4514

Consent to Participate

"I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or stop participating at any time without penalty or loss of benefits to which I am otherwise entitled."

Participant's print name _____
Participant's signature _____
Date _____
Investigator's signature _____
Date _____

Appendix D2

Informed Consent Form for Individual Interviews Spanish

North Carolina State University
FORMULARIO DE CONSENTIMIENTO

Título del proyecto: Diabetes de tipo 2: fuentes de conocimiento e información

Investigador principal: Johanne Laboy

¿Cuáles son algunos conocimientos generales que debería saber sobre los estudios de investigación?

Se le ha pedido tomar parte en un estudio de investigación. Su participación en este estudio es voluntaria. Usted tiene el derecho a ser parte de este estudio, optar por no participar, o dejar de participar en cualquier momento sin penalización. El propósito de los estudios de investigación es obtener un mejor entendimiento acerca de un determinado tema o asunto. No se le garantiza ningún beneficio personal por participar en este estudio. Los estudios de investigación pueden presentar un riesgo a los que participan. En este formulario de consentimiento encontrará detalles específicos sobre la investigación en la que se le ha pedido a participar. Si no entiende algo en este formulario, es tu derecho el pedirle al investigador una aclaración o más información. Por favor imprima una copia de este formulario de consentimiento para sus registros. Si en cualquier momento usted tiene preguntas acerca de su participación, no dude en contactar a la investigadora nombrada al principio.

¿Cuál es el propósito de este estudio?

Estamos interesados en aprender más acerca de las creencias de los hispanos sobre la diabetes y cómo se comunican esas creencias. Estudiar las creencias que las personas tienen acerca de la diabetes puede ayudar a los científicos a mejorar los métodos utilizados para difundir información sobre esta enfermedad a aquellas personas que puedan necesitarla en el futuro.

¿Qué pasará si usted participa en el estudio?

Si usted se compromete a participar en este estudio, primero se le hará una serie de preguntas sobre cuestiones de salud, incluyendo la diabetes. Luego, le preguntaremos acerca de sus creencias, sobre los orígenes de esas creencias, y sobre algunos factores culturales relacionados con la diabetes. Esperamos que esto tome aproximadamente 1 hora.

Riesgos

No anticipamos ningunos riesgos asociados con este estudio; sin embargo, siéntase en confianza de retirarse del estudio en cualquier momento. Si se siente incómodo

(a) por cualquier motivo, por favor no dude en desistir de su participación.

Beneficios

Aparte de algún tipo de compensación expuesto a continuación, los resultados del estudio se utilizarán para extender la teoría y a ampliar el conocimiento sobre la relación entre la diabetes y los comportamientos relacionados con la salud. Este proyecto podría ayudar a los investigadores a mejorar la forma de diseminar información acerca de la salud en el futuro.

Confidencialidad

La información en los registros del estudio se mantendrá totalmente confidencial. Las entrevistas y grupos de enfoque se grabarán en un dispositivo digital. Este dispositivo y cualquier otro material de estudio se almacenarán en una caja con llave. Estos archivos digitales se descargarán en la computadora de la investigadora principal, y las tarjetas de datos desde el dispositivo digital serán removidas y colocadas en la caja con llave. Las tarjetas de datos (tarjetas SD) servirán como un respaldo en caso de que los archivos en la computadora se borren o se dañen accidentalmente. Los archivos de computadora (incluyendo las grabaciones de audio y las transcripciones de las entrevistas) serán almacenados y analizados a través de NVivo, un programa digital que nos permite firmemente almacenar y administrar datos en la computadora. Además de estas medidas, tampoco se hará referencia acerca de usted oralmente o por escrito en ninguna parte del estudio.

Compensación

Todas las personas que completen la encuesta recibirán compensación de \$25 por su participación.

¿Qué pasa si usted tiene preguntas?

Si usted tiene preguntas en cualquier momento sobre el estudio o los procedimientos, puede comunicarse con:

Johanne Laboy
Departamento de comunicación
919. 515. 9736
jilaboy@NCSU.edu

Si tiene preguntas acerca de sus derechos como participante de investigación

Si usted siente que no ha sido tratado según los plazos indicados en este formulario, o han sido violados sus derechos como participante en la investigación durante el curso de este proyecto, puede contactar a

Deb Paxton
Administradora de Cumplimiento Regulatorio

Box 7514
NCSU Campus
919/515-4514

Consentimiento para participar

"He leído y entiendo la información anterior. He recibido una copia de este formulario. Me comprometo a participar en este estudio con el entendimiento de que puedo elegir no participar o parada de participar en cualquier momento sin penalización o pérdida de beneficios a la cual tengo derecho de lo contrario".

Imprimir nombre del participante _____

Firma del participante _____ Fecha _____

Firma de la investigadora _____ Fecha _____

Appendix E

Focus Group Interview English

Institution: North Carolina State University
Principal Investigator: Johanne I Laboy

Welcome

Introduce the moderator and assistant

Project Overview

Thank you for taking part in our research study. We are conducting this interview because we would like to learn more about your opinions, ideas, and thoughts about diabetes, especially type 2 diabetes. This is the type of diabetes that affects most adults. All the questions in this interview will refer to this type of diabetes. It is important that we understand what people know about the disease, so that we can better educate Hispanics about the causes, symptoms, diagnoses, and treatment of diabetes. In addition, your feedback will help guide diabetes prevention programs directed to the Hispanic population.

During the first part, I will explain the consent form to you. A consent form is a written document that introduces a research study, explains its purposes and methods, and outlines the risks and benefits of participation. A signed consent form is required for participation.

After the consent form, we will begin the interview process. To start off, I will ask you some questions to get to know you better. Next, I will ask you some questions about diabetes, in general. The end of the interview will focus on anything else that you would like to share regarding diabetes. When the interview is completed, you will receive \$25.

Guidelines

There are no wrong or right answers, only differing points of view.

We are tape recording, so please speak one at a time.

We will be calling each other by our first names.

You don't have to agree, but you must listen respectfully as other share their views.

We ask that you turn off your cell phones.

If you are expecting an urgent phone call, please do so as quietly as possible and get back as soon as you can.

My role as a moderator will be to guide the discussion.

You are welcome to talk to each other.

I. Ice-Breaking Questions (Directed to all participants in the room)

1. From which countries are you originally?
2. How long have you been in this area?
3. Do you miss home?
4. Do you have diabetes?
5. Do you know anyone with diabetes?
If yes: What is your relationship with this person?
6. Tell me a little bit about this person's diabetes?
7. When you need health information, who do you ask? (If diabetes patient, ask specifically about diabetes)
8. From what other sources do you get information about health? (If diabetes patient, ask specifically about diabetes)

II. Essential Questions

The next set of questions is designed to get your opinions, ideas, and thoughts about type 2 diabetes.

Salient Beliefs

Causes

9. In your opinion, how do people get diabetes? What do you think causes diabetes?

Symptoms

10. Can you mention some symptoms of diabetes?
11. How severe do you believe that diabetes symptoms are?

Diagnosis

12. How do people know they have diabetes?

Treatment

13. What do you believe is a good treatment for diabetes? Where did you learn that information?
14. Do you think people can be cured of diabetes? If so, how? If so, where did you learn that diabetes was curable?
15. What do you know about insulin? Where did you learn this information?

Prevention

16. What do you believe people should do to prevent the disease?

Subjective Norm

17. Think back...tell me something that someone said about diabetes that was of interest to you? Who said it?

Socio-Cultural Factors

18. What do you believe is the role of God in diabetes care?
19. Do you use a computer for health information?
20. What kind of cellphones do you have? (smart, flip)
21. Do you use the cell phone for health information?

III. Closing Questions

22. Is there anything you would like to add?

Thanks again for your time and information. As I mentioned, this information will help us develop better programs to educate the Hispanic population about diabetes, its causes, symptoms, diagnosis, treatment and prevention. If you have any questions, please contact me at the number provided in the consent form.

Appendix E2

Focus Group Interview Spanish

Institución: North Carolina State University
Investigadora principal: Johanne Laboy

Bienvenida

Introducción de la asesora y el asistente

Visión general del proyecto

Gracias por tomar parte en nuestro estudio de investigación. Esta entrevista se está llevando a cabo porque nos gustaría aprender más acerca de tus opiniones, ideas y pensamientos sobre la diabetes, especialmente la diabetes tipo 2. Este es el tipo de diabetes que afecta a la mayoría de los adultos. Todas las preguntas en esta entrevista se referirán a este tipo de diabetes. Es importante que entendamos el conocimiento que tienen acerca de la enfermedad, para así nosotros poder educar mejor a los hispanos sobre las causas, síntomas, diagnóstico y tratamiento de la diabetes. Su opinión también ayudará al desarrollo de programas de prevención de la diabetes dirigidos a la población hispana.

Durante la primera parte, se te explicará el formulario de consentimiento. Un formulario de consentimiento es un documento escrito que introduce un estudio de investigación, explica sus propósitos y métodos y describe los riesgos y beneficios de tu participación. Un formulario de consentimiento firmado es necesario para tu participación en este grupo de enfoque.

Después del formulario de consentimiento, comenzaremos el proceso de entrevista. Durante la primera parte, les haré algunas preguntas para conocerlos mejor. Durante la segunda parte, les haré algunas preguntas acerca de la diabetes en general. Durante la tercera parte, les preguntaré si hay algo más que desean compartir con respecto a la diabetes. Al final de la entrevista, usted recibirá \$25.

Directrices

No hay malas o buenas respuestas, sólo diferentes puntos de vista.

La sesión será grabada. Así que por favor, hable uno a la vez.

Nos llamaremos mutuamente por nuestros nombres.

No tienen que estar de acuerdo unos con otros, pero deben escuchar respetuosamente mientras otros comparten sus puntos de vista.

Le pedimos que por favor apaguen sus teléfonos celulares.

Si estás esperando una llamada urgente, por favor hazla tan silenciosamente como sea posible y regrese al grupo tan pronto como pueda.

Mi función como moderadora será orientar la discusión.

Están bienvenidos a dirigirse a los demás.

I. Preguntas de Introducción (dirigidas a todos los participantes en la sala)

1. ¿De que países provienen originalmente?
2. ¿Cuánto tiempo llevan en esta área?
3. ¿Extrañan a sus países de origen?
4. ¿Tienen diabetes?
5. ¿Conocen a alguien con diabetes? Si afirmativo: ¿es un miembro de la familia, un amigo, un conocido?
6. Cuénteme un poco acerca de la diabetes de esa persona.
7. ¿Cuándo usted necesita información sobre la salud, a quién le pregunta? (Si es paciente de diabetes, pregúntele específicamente acerca de la diabetes.
8. ¿Qué otras fuentes de información utiliza para mantenerse al tanto de la salud? (Si es paciente diabetes, pregúntele específicamente acerca de la diabetes)

II. Preguntas esenciales

La siguiente serie de preguntas está diseñada para obtener sus opiniones, ideas y pensamientos acerca de la diabetes tipo 2.

Creencias salientes

Causas

9. ¿En tu opinión, cómo la gente contrae diabetes?

Síntomas

10. ¿Puedes mencionar algunos síntomas de la diabetes?
11. ¿Qué tan grave crees que son los síntomas de la diabetes?

Diagnóstico

12. ¿Cómo saben las personas que tienen diabetes?

Tratamiento

13. ¿Qué crees que es un buen tratamiento para la diabetes? ¿Dónde aprendiste esa información?
14. ¿Crees que la gente puede curarse de la diabetes? Si es así, ¿Cómo? ¿Dónde aprendió que la diabetes se cura?
15. ¿Qué sabes acerca de la insulina? ¿Dónde aprendió esta información?

Prevención

16. ¿Qué crees que la gente debe hacer para prevenir la enfermedad?

Norma subjetivo

17. De acuerdo a tu memoria... dime algo que alguien haya dicho acerca de la diabetes que te pareció de interés? ¿Quién lo dijo?'

Factores socio-culturales

18. ¿Cuál crees que es el papel de Dios en el cuidado de la diabetes?
19. ¿Utilizan una computadora para obtener información sobre la salud?
20. ¿Qué tipo de teléfonos móviles tienen? (inteligente, de tapa)
21. ¿Usan el celular para obtener información de salud?

III. Preguntas de cierre

22. Hay algo más que te gustaría añadir?

Gracias por compartir sus opiniones y por pasar este tiempo con nosotros. Como ya he mencionado, esta información nos ayudará a desarrollar mejores programas para educar a la población hispana sobre la diabetes, sus causas, síntomas, diagnóstico, tratamiento y prevención. Si ustedes tiene alguna pregunta, por favor comuníquese conmigo al número proporcionado en el formulario de consentimiento.

Appendix F

Informed Consent Form for Questionnaire English

North Carolina State University INFORMED CONSENT FORM for RESEARCH

Project Title: Type 2 Diabetes: Knowledge and information sources
Principal Investigator: Johanne Laboy

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. Please print a copy of this consent form for your records. If at any time you have questions about your participation, do not hesitate to contact the researcher named above.

What is the purpose of this study?

We are interested in learning more about the Hispanic population's knowledge about and behaviors regarding diabetes. Studying people's diabetes knowledge and behavior will help researchers better disseminate health information to those who need it in the future.

What will happen if you take part in the study?

If you agree to participate in this study, you will first be asked a series of questions about health issues including diabetes. Then, you will be asked about your diabetes knowledge. The questions that follow will focus on the behavioral, environmental, and socio-cultural factors that might affect your diabetes-related knowledge and behavior. We expect that these tasks will take less than 30 minutes.

Risks

We do not foresee any potential risks associated with this study; however, you should feel comfortable to withdraw from the study at any point in time. If you feel uncomfortable continuing for any reason, please do not hesitate to stop your participation.

Benefits

Other than some compensation discussed below, study findings will be used to extend theory and to build knowledge about the connection between diabetes knowledge and health behaviors. This project might help researchers better disseminate health information in the future.

Confidentiality

The information in the study records will be kept completely confidential. Data will be stored securely in a password protected survey account. Your name will never be connected to your responses, so no one will be able to match your identity to the answers that you provide. Furthermore, no reference will be made in oral or written reports that could link you to the study.

Compensation

Participants may choose to enter a raffle for a \$50 Visa gift card. After completing the survey, you will be redirected to a completely different survey to take your information for the raffle. This information will never be connected to your responses to the survey.

If you are taking this survey in paper form in El Centro Hispano, El Pueblo, or the Mexican Consulate, you also may receive a small promotional item, such as pens/pencils, cups, or paper fans.

What if you have questions?

If you have questions at any time about the study or the procedures, you may contact:

Johanne Laboy
Department of Communication
919.515.9736,
Email: jilaboy@ncsu.edu

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact:

Deb Paxton
Regulatory Compliance Administrator
Box 7514
NCSU Campus
919-515-4514

Consent to Participate

If you agree or decline to take part in this research study as outlined in the information above, please click appropriate phrase below and then click on the “Next” button. Clicking on the phrase, “**I consent to take the survey,**” indicates your consent to participate in this study. It is recommended that you print this statement for your records, or record the address for this site and keep it for reference.

Appendix F2

Informed Consent Form Questionnaire Spanish

North Carolina State University FORMULARIO DE CONSENTIMIENTO

Título del proyecto: Diabetes de tipo 2: Fuentes de conocimiento e información
Investigador principal: Johanne Laboy

¿Cuáles son algunas cosas generales que debería saber sobre estudios de investigación?

Se le ha pedido a tomar parte en un estudio de investigación. Su participación en este estudio es voluntaria. Usted tiene el derecho a ser parte de este estudio, optar por no participar o dejar de participar en cualquier momento sin penalización. El propósito de los estudios de investigación es obtener un mejor entendimiento acerca de un determinado tema o asunto. No se le garantiza ningún beneficio personal por participar en este estudio. Los estudios de investigación pueden presentar un riesgo a los que participan. En este formulario de consentimiento encontrará detalles específicos sobre la investigación en la que se le ha pedido a participar. Si no entienden algo en este formulario es tu derecho a pedirle al investigador una aclaración o más información. Por favor imprima una copia de este formulario de consentimiento para sus registros. Si en cualquier momento usted tiene preguntas acerca de su participación, no dude en contactar a la investigadora nombrada arriba.

¿Cuál es el propósito de este estudio?

Estamos interesados en aprender más acerca de las creencias que tiene la población hispana sobre la diabetes y cómo se comunican esas creencias. Estudiar las creencias que las personas tienen acerca de la diabetes puede ayudar a los científicos a mejorar los métodos utilizados para difundir información sobre esta enfermedad a aquellas personas que puedan necesitarla en el futuro.

¿Qué pasará si usted participa en el estudio?

Si usted se compromete a participar en este estudio, primero se le hará una serie de preguntas sobre cuestiones de salud, incluyendo la diabetes. Luego, le preguntaremos acerca de su conocimiento sobre la diabetes. Las preguntas que siguen se centrarán en las influencias conductuales, ambientales y socio-culturales que puedan afectar su conocimiento acerca de la diabetes y los comportamientos asociados con ella. Esperamos que este proceso tome menos de 30 minutos.

Riesgos

No anticipamos ningunos riesgos asociados con este estudio; sin embargo, siéntase en confianza de retirarse del estudio en cualquier momento. Si se siente incómodo

(a) por cualquier motivo, por favor no dude en desistir de su participación.

Beneficios

Aparte de algún tipo de compensación expuesto a continuación, los resultados del estudio se utilizarán para extender la teoría y a ampliar el conocimiento sobre la relación entre la diabetes y los comportamientos relacionados con la salud. Este proyecto podría ayudar a los investigadores a mejorar la forma de diseminar información acerca de la salud en el futuro.

Confidencialidad

La información en los registros del estudio se mantendrá totalmente confidencial. Los datos se almacenarán firmemente en una cuenta protegida con contraseña. Su nombre nunca se conectará a sus respuestas, así que nadie será capaz de conectar su identidad con las respuestas que usted proporcione. Además, no se hará referencia de usted oralmente o por escrito en los informes que podrían relacionarlo con el estudio.

Compensación

Los participantes pueden optar por participar en un sorteo para recibir una tarjeta de regalo de \$50. Después de completar la encuesta, se le redireccionará a una encuesta completamente diferente para tomar su información para la rifa. Esta información nunca será conectada a sus respuestas en la encuesta.

Si usted está tomando esta encuesta en forma impresa en El Centro Hispano, El Pueblo o en el Consulado Mexicano, usted también puede recibir un pequeño artículo promocional, como bolígrafos/lápices, tazas o abanicos.

¿Qué pasa si usted tiene preguntas?

Si usted tiene preguntas en cualquier momento sobre el estudio o los procedimientos, puede comunicarse con:

Johanne Laboy
Departamento de comunicación
919. 515. 9736
jilaboy@NCSU.edu

Si tiene preguntas acerca de sus derechos como participante de investigación

Si usted siente que no ha sido tratado según los plazos indicados en este formulario, o han sido violados sus derechos como participante en la investigación durante el curso de este proyecto, puede contactar a

Deb Paxton
Administradora de Cumplimiento Regulatorio
Box 7514
NCSU Campus
919/515-4514

Consentimiento de Participación

Si estás de acuerdo o te niegas a participar en este estudio de investigación como se ha descrito previamente en este documento, por favor, seleccione la frase adecuada y luego haga presione el botón "Siguiente." Si escoge la frase, "doy mi consentimiento para participar en la encuesta," indica su consentimiento para participar en este estudio. Se recomienda que imprima esta declaración para tus registros, o anote la dirección de este sitio y guárdela para referencia.

Appendix G

Quantitative Questionnaire



NC STATE UNIVERSITY

North Carolina State University

FORMULARIO DE CONSENTIMIENTO

Título del proyecto: Diabetes tipo 2: Fuentes de conocimiento e información

Investigador principal: Johanne Laboy

¿Cuáles son algunos datos generales que debería saber sobre estudios de investigación?

Se le ha pedido participar en un estudio de investigación. Su participación en el mismo es voluntaria. Usted tiene el derecho a ser parte del estudio, optar por no participar o dejar de participar en cualquier momento sin penalización. El propósito de los estudios de investigación es obtener un mejor entendimiento acerca de un determinado tema o asunto. No se le garantiza ningún beneficio personal por participar en este estudio. Algunos estudios de investigación pueden presentar un riesgo a los que participan. En este formulario de consentimiento encontrará detalles específicos sobre la investigación en la que se le ha pedido participar. Si no entiende algo de este formulario tiene el derecho de pedirle al investigador una aclaración o información adicional. Por favor imprima una copia de este formulario de consentimiento para sus registros. Si en algún momento usted tiene preguntas acerca de su participación, no dude en comunicarse con la investigadora nombrada arriba.

¿Cuál es el propósito de este estudio?

Estamos interesados en aprender más acerca de las creencias que tiene la población hispana sobre la diabetes y cómo se comunican esas creencias. Estudiar las creencias que las personas tienen acerca de la diabetes puede ayudar a los científicos a mejorar los métodos utilizados para difundir información sobre esta enfermedad a aquellas personas que puedan necesitarla en el futuro.

¿Qué pasará si usted participa en el estudio?

Si usted se compromete a participar en este estudio, primero se le hará una serie de preguntas relacionadas con la salud, incluyendo la diabetes. Luego, le preguntaremos acerca de su conocimiento sobre la diabetes. Las preguntas que siguen se centrarán en las influencias de comportamiento, situaciones ambientales y socio-culturales que puedan afectar su conocimiento acerca de la diabetes y los comportamientos asociados a ella. Esperamos que este proceso tome menos de 30 minutos.

Riesgos

No anticipamos riesgo alguno asociado con este estudio; sin embargo, siéntase en la confianza de retirarse del mismo en cualquier momento. Si se siente incómodo (a) por cualquier motivo, por favor no dude en desistir de su participación.

Beneficios

Aparte de algún tipo de compensación expuesto más adelante, los resultados del estudio se utilizarán para extender la teoría y ampliar el conocimiento sobre la relación entre la diabetes y los comportamientos relacionados con la salud. Este proyecto podría ayudar a los investigadores a

mejorar la forma de diseminar información acerca de la salud en el futuro.

Compensación

Si usted está tomando esta encuesta en forma impresa en El Centro Hispano, El Pueblo o en el Consulado Mexicano, usted también puede recibir un pequeño artículo promocional, como bolígrafos/lápices, tazas o abanicos.

Confidencialidad

La información en los registros del estudio se mantendrá totalmente confidencial. Los datos se almacenarán firmemente en una cuenta protegida con contraseña. Su nombre nunca se conectará a sus respuestas, así que nadie será capaz de conectar su identidad con las respuestas que usted proporcione. Además, no se hará referencia de usted oral o por escrito en los informes que podrían relacionarlo con el estudio.

¿Qué pasa si usted tiene preguntas?

Si usted tiene preguntas sobre el estudio o los procedimientos, en cualquier momento puede comunicarse con: Johanne Laboy, Departamento de comunicación, 919. 515. 9736
jilaboy@NCSU.edu

Si tiene preguntas acerca de sus derechos como participante de esta investigación

Si usted siente que no ha sido tratado según los parámetros indicados en este formulario, o han sido violados sus derechos como participante en la investigación durante el transcurso del proyecto, puede comunicarse con Deb Paxton, Administradora de Cumplimiento Regulatorio, Box 7514, NCSU Campus, 919/515-4514

Consentimiento de Participación

Al aceptar completar esta encuesta está dando consentimiento de participación.

Las siguientes preguntas están relacionadas con el estado de tu diabetes

Q1. ¿Tiene usted diabetes?

- Sí
- No --> prosiga a la pregunta 3.

Q2. ¿Si tiene diabetes, que tipo de diabetes tiene? Si no tiene diabetes, continúe con la próxima pregunta.

- Tipo 1
 - Prediabetes (Casi diabetes)
 - Diabetes Autoinmune Latente en Adultos (DALA/LADA)
 - No sé el tipo de diabetes que tengo
- Tipo 2
La diabetes gestacional (diabetes del embarazo)

Q3. ¿Tiene familiares con diabetes?

- Sí
- No

Q4. ¿Conoces a alguien más con diabetes?

- Sí
- No

Las siguientes preguntas están relacionadas con tus creencias sobre la diabetes

Q5. ¿Cree usted que la diabetes tipo 2 puede ser causada por lo siguiente?

	Sí	No
Ira o coraje	<input type="radio"/>	<input type="radio"/>
Demasiado trabajo	<input type="radio"/>	<input type="radio"/>
El estado emocional de una persona	<input type="radio"/>	<input type="radio"/>
Una sorpresa muy agradable	<input type="radio"/>	<input type="radio"/>
Estrés	<input type="radio"/>	<input type="radio"/>
Susto	<input type="radio"/>	<input type="radio"/>
Comer demasiados dulces o azúcar	<input type="radio"/>	<input type="radio"/>
Polvo que cae en la comida de la calle	<input type="radio"/>	<input type="radio"/>

Q6. ¿Cree usted que las personas con diabetes tipo 2 son más propensas a sentir los siguientes síntomas?

	Sí	No
Demasiada sed	<input type="radio"/>	<input type="radio"/>
Fatiga extrema e irritabilidad	<input type="radio"/>	<input type="radio"/>
Pérdida de peso inusual	<input type="radio"/>	<input type="radio"/>
Frecuentes deseos de orinar	<input type="radio"/>	<input type="radio"/>
Infecciones de la piel, las encías, y de la vejiga	<input type="radio"/>	<input type="radio"/>
Dolores de cabeza	<input type="radio"/>	<input type="radio"/>
Visión borrosa	<input type="radio"/>	<input type="radio"/>
Depresión	<input type="radio"/>	<input type="radio"/>

Q7. ¿Cree usted que la diabetes tipo 2 puede ser correctamente diagnosticada por lo siguiente?

	Sí	No
Un análisis de sangre	<input type="radio"/>	<input type="radio"/>
Una prueba de hemoglobina A1C	<input type="radio"/>	<input type="radio"/>
Un miembro de la familia	<input type="radio"/>	<input type="radio"/>
Un amigo	<input type="radio"/>	<input type="radio"/>
Una prueba de tolerancia de glucosa oral	<input type="radio"/>	<input type="radio"/>
La oficina de los médicos solamente	<input type="radio"/>	<input type="radio"/>
El hospital solamente	<input type="radio"/>	<input type="radio"/>
En un laboratorio solamente	<input type="radio"/>	<input type="radio"/>

Q8. ¿Piensa usted que las siguientes opciones pueden **curar** la diabetes?

	Sí	No
Las semillas o bebidas de alpiste	<input type="radio"/>	<input type="radio"/>
Los nopales	<input type="radio"/>	<input type="radio"/>
Las dietas de toronja, lima, o piña	<input type="radio"/>	<input type="radio"/>
El doctor	<input type="radio"/>	<input type="radio"/>
Los téis verdes	<input type="radio"/>	<input type="radio"/>
El agua de jitomate	<input type="radio"/>	<input type="radio"/>
Dios u otro poder superior	<input type="radio"/>	<input type="radio"/>
Hojas del árbol de NIN	<input type="radio"/>	<input type="radio"/>

Q9. Por favor, indique si cree que las siguientes declaraciones sobre la diabetes tipo 2 son ciertas o falsas.

	Cierto	Falso
La diabetes es curable.	<input type="radio"/>	<input type="radio"/>
La diabetes no es una enfermedad grave.	<input type="radio"/>	<input type="radio"/>
Las mujeres con diabetes no deberían tener hijos.	<input type="radio"/>	<input type="radio"/>
El trabajo empeora la diabetes.	<input type="radio"/>	<input type="radio"/>
Las personas que necesitan insulina se están casi muriendo.	<input type="radio"/>	<input type="radio"/>
Los diabéticos sólo deben tomarse sus medicamentos cuando los niveles de azúcar están altos.	<input type="radio"/>	<input type="radio"/>
Las personas con diabetes pueden sentir cuando sus niveles de azúcar están altos.	<input type="radio"/>	<input type="radio"/>
Una dieta a base de productos naturales cura la diabetes.	<input type="radio"/>	<input type="radio"/>

Q10. Las siguientes declaraciones describen una situación relacionada con la salud. Por favor, lea cada situación e imagínese que está ocurriéndole a usted. Indique la similitud asumiendo que usted estuviese en esa situación.

	No muy similar	No similar	Indeciso	Similar	Muy similar
Usted ha estado siguiendo un plan nutricional específico prescrito por su médico para un problema de salud. Este plan requiere que evite los postres y otros alimentos ricos en azúcar. En una fiesta de cumpleaños todo el mundo está comiendo pastel. Usted se dice así mismo (a), "si no como un pedazo de pastel, voy a echar a perder la fiesta."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuma y esta de sobrepeso, pero nunca ha tenido un problema de salud importante. En una revisión reciente, el médico le dice que estos hábitos lo ponen en riesgo de problemas de salud en el futuro. Sus padres tienen hábitos similares y han vivido largas y sanas vidas. Usted se encuentra pensando, "El fumar y comer en exceso no son un problema en mi caso."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Debido a que ambos padres tenían diabetes, usted sabe que su riesgo de contraer la enfermedad es mucho mayor de lo que es para la mayoría de las personas. En una revisión reciente, el médico hace hincapié de que si hace ciertos cambios en su estilo de vida, podría reducir su riesgo de diabetes un 50%. Usted se encuentra pensando, "Si la diabetes corre en mi familia, el que la contraiga o no está realmente más allá de mi control."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Durante un examen físico de rutina, el médico nota un lunar en la mano y le sugiere que consulte a un especialista para que lo examine más. Usted se recuerda que un amigo suyo tenía un lunar similar durante años y nunca le causó ningún problema. Usted piensa, "Estoy seguro de que este lunar nunca va a causarme ningún problema."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Durante un chequeo de rutina, el médico hace hincapié en la importancia del ejercicio y comer bien para evitar problemas de salud. Te das cuenta de que el médico está bastante gordito. Así que piensas, "Si los buenos hábitos alimenticios y el ejercicio son realmente importante, el que debe perder peso es él."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11. Imagínese que usted ha estado sufriendo de dolores de cabeza y mareos durante algún período de tiempo. Usted visita a su médico. Él o ella le dice a usted que algo no se ve muy bien y lo refiere a un especialista para un examen médico en lugar de evaluarlo en su consultorio. Para cada declaración, por favor indique en qué medida la declaración es aplicable a usted.

	no es en absoluto aplicable a mí	no muy aplicable a mí	un poco aplicable a mí	más bien aplicable a mí	Muy aplicable a mí
Me propongo hacerle al especialista tantas preguntas como sean necesarias.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pienso que las cosas van a salir bien.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me propongo comenzar a leer sobre los dolores de cabeza y mareos.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Por el momento, trato de no pensar en los resultados desagradables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo no voy a preocuparme: ese examen no es peor que sufrir de dolores de cabeza todo el tiempo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

El siguiente grupo de preguntas es acerca de los diferentes tipos de alimentos que usted comió o bebió la semana pasada, es decir, en los pasados 7 días. Al contestar, por favor incluya las comidas y meriendas que consume en el hogar, en el trabajo o en la escuela, en los restaurantes, y cualquier otro lugar.

Q12. Durante los **últimos 7 días**, en promedio, ¿con qué frecuencia usted bebió soda regular o pop que contiene azúcar? No incluya refresco de dieta.

- | | |
|--|--|
| <input type="radio"/> Nunca/Menos de una vez por día | <input type="radio"/> 4-5 veces por día o |
| <input type="radio"/> 1 vez por día | <input type="radio"/> 6-7 veces por día |
| <input type="radio"/> 2-3 veces por día | <input type="radio"/> 8 o más veces al día |

Estos son ejemplos de productos de soda y sus cantidades en onzas, que le ayudarán a responder a la pregunta siguiente.



Q13. Durante **últimos 7 días**, en promedio, indique la cantidad de soda regular o pop que contiene azúcar que bebió por día. No incluya refresco de dieta.

- | | |
|--|---|
| <input type="radio"/> Ninguno | <input type="radio"/> 16-32 onzas por día |
| <input type="radio"/> Menos de 7 onzas por día | <input type="radio"/> 1 litro por día (33 oz) |
| <input type="radio"/> 8-15 onzas por día | <input type="radio"/> Más de un litro por día |

Q14. Durante la última semana, ¿con qué frecuencia usted comió arroz integral u otros cereales integrales cocidos, como el bulgur, trigo partido, o un molino o mijo? No incluya el arroz blanco.

- | | |
|--|--|
| <input type="radio"/> Nunca | <input type="radio"/> 4-5 veces la semana pasada |
| <input type="radio"/> 1 vez la semana pasada | <input type="radio"/> 6-7 veces la semana pasada |
| <input type="radio"/> 2-3 veces la semana pasada | <input type="radio"/> 8 o más veces la semana pasada |

Q15. ¿Durante la semana pasada, con qué frecuencia comió usted verduras/hojas verdes o ensalada de lechuga, con o sin otros vegetales?

- | | |
|--|--|
| <input type="radio"/> Nunca | <input type="radio"/> 4-5 veces la semana pasada |
| <input type="radio"/> 1 vez la semana pasada | <input type="radio"/> 6-7 veces la semana pasada |
| <input type="radio"/> 2-3 veces la semana pasada | <input type="radio"/> 8 o más veces la semana pasada |
-

Q16. Durante los últimos 7 días, ¿con qué frecuencia usted comió carne roja, como la carne de res, cerdo, jamón, o salchicha? Las carnes rojas también pueden incluir ternera, cordero, y cualquier embutidos elaborados con estas carnes. No incluya pollo, pavo o pescado. Incluya carne roja que comió en sándwiches, lasaña, estofados y otras mezclas.

- | | |
|--|--|
| <input type="radio"/> Nunca | <input type="radio"/> 4-5 veces la semana pasada |
| <input type="radio"/> 1 vez la semana pasada | <input type="radio"/> 6-7 veces la semana pasada |
| <input type="radio"/> 2-3 veces la semana pasada | <input type="radio"/> 8 o más veces la semana pasada |
-

Las siguientes preguntas son acerca del tiempo que estuvo físicamente activo en los últimos 7 días. Incluyen preguntas sobre las actividades que haces en el trabajo, quehaceres domésticos, y trabajo en el jardín, para llegar de un lugar a otro, y en su tiempo libre como recreación, ejercicio o deporte.

Q17. Durante los **últimos 7 días**, ¿Cuántos días realizó usted actividades físicas **vigorosas** como levantar objetos pesados, excavar, aeróbicos, o pedalear rápido en bicicleta?

- Días a la semana en los últimos 7 días
-
- ¿Cuántos minutos en total usted pasó usualmente en uno de esos días haciendo actividades físicas **vigorosas**?
-
- No hizo actividad física vigorosa en el tiempo libre en los últimos 7 días

Q18. Durante los **últimos 7 días**, ¿Cuántos días hizo usted actividades físicas **moderadas** tal como cargar objetos livianos, pedalear en bicicleta a paso regular, o jugar dobles de tenis? No incluya caminatas.

- Número de días en los últimos 7 días
-
- ¿Cuántos minutos en total usted usualmente pasó en esos días haciendo actividades físicas **moderadas**?
-
- No hizo actividad física moderada en su tiempo libre en los últimos 7 días

Q19. Piense acerca del tiempo que usted se dedicó a caminar en los **últimos 7 días**. Durante los **últimos 7 días**, ¿Cuántos días **caminó** usted por lo menos 10 minutos continuos? Esto incluye el tiempo que caminó en el trabajo o la casa, caminatas para ir de un sitio a otro, o cualquier otra caminata que usted hizo únicamente por recreación, deporte, ejercicio, o placer

- Número de días en los últimos 7 días
- ¿Cuántos minutos en total usted usualmente pasó en esos días caminando?
- No caminó en su tiempo libre en los últimos 7 días

Q20. Durante los últimos 7 días, ¿cuánto tiempo suele pasar sentado en un día de fin de semana?

- Horas por día
- Minutos por día

Q21. Las siguientes preguntas son acerca de su adherencia a los regímenes de medicamentos. Si al presente no está tomando medicamentos, por favor piense acerca de las veces en las cuales le han prescrito medicinas y responda de acuerdo a esas veces.

	Sí	No
¿Está actualmente tomando medicamentos?	<input type="radio"/>	<input type="radio"/>
¿Cuándo le recetan medicamentos, se le olvida a veces tomar sus medicamentos?	<input type="radio"/>	<input type="radio"/>
La gente a veces se olvida de tomar sus medicamentos por razones distintas a que simplemente se le olviden. Pensando en las últimas 2 semanas, ¿Hubo días en los que no se tomó sus medicamentos?	<input type="radio"/>	<input type="radio"/>
¿Alguna vez ha dejado de tomarse sus medicamentos por completo o por algunos días sin consultar antes con su médico, ya que se sintió peor cuando se los tomó?	<input type="radio"/>	<input type="radio"/>
Cuando sale de viaje o sale de la casa, ¿a veces se olvida de llevarse su medicamento?	<input type="radio"/>	<input type="radio"/>
¿Se tomó todos sus medicamentos ayer? Si no está tomando medicamentos, marque no.	<input type="radio"/>	<input type="radio"/>
Cuando usted siente que sus síntomas están bajo control, ¿Deja de tomarse sus medicamentos a veces?	<input type="radio"/>	<input type="radio"/>
Tomar medicamentos todos los días es un verdadero inconveniente para algunas personas. ¿Alguna vez le ha molestado tener que adherirse a su plan de tratamiento?	<input type="radio"/>	<input type="radio"/>

Q22. ¿Con qué frecuencia tiene dificultad para recordarse de que tiene que tomarse sus medicamentos?

- Nunca / Rara vez
- De vez en cuando
- A veces
- Por lo general
- Todo el tiempo
- No Actualmente tomar cualquier medicamento

Las siguientes preguntas son específicamente para personas con diabetes. Si usted tiene diabetes, por favor conteste las preguntas 23-27. Si usted no tiene diabetes, por favor, indíquelo abajo.

- Yo no tengo diabetes > prosiga a la pregunta 28

Q23. En el pasado, ¿le han diagnosticado con alguna de las siguientes condiciones? Por favor, marque todas las que correspondan.

- Las enfermedades cardiovasculares (enfermedades del corazón)
 Retinopatía diabética (enfermedad de los ojos)
 Enfermedad renal (enfermedad del riñón)
 La neuropatía (daño nervioso)
 La nefropatía (enfermedad del riñón)
 Gangrena / Amputaciones
 Ninguna de las anteriores

Q24. Durante los últimos 12 meses, ¿ha tenido que visitar una sala de emergencias de un hospital a causa de su diabetes?

- Sí
 No
 No lo sé

Q25. ¿Ha visitado una sala de emergencias de un hospital debido a su diabetes porque usted no pudo ver a su médico?

- Sí
 No
 No lo sé
 Yo no tengo un médico

Q26. Durante los últimos 12 meses, ¿Lo ingresaron al hospital durante una noche o más tiempo debido a su diabetes?

- Sí
 No
 No lo sé

Q27. ¿Han hablado con usted sus médicos y otros profesionales de la salud acerca del desarrollo de un plan para que usted sepa cómo cuidar de su diabetes?

- Sí
 No
 No lo sé

Las siguientes preguntas son acerca de las fuentes de información que usted utiliza para obtener información acerca de la salud.

Q28. ¿Con qué frecuencia obtiene información de las siguientes fuentes acerca **de la salud en general?**

	Nunca	Menos de una vez al mes	Entre una vez a la semana y una vez al mes	Un par de veces a la semana	Casi todos los días
El Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Televisión	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Periódicos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revistas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medios de Comunicación Social	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Si tiene diabetes, ¿con qué frecuencia obtiene información acerca **de la diabetes** de las siguientes fuentes? Si no tiene diabetes marque "no tengo diabetes" y prosiga a la próxima pregunta.

	Nunca	Menos de una vez al mes	Entre una vez a la semana y una vez al mes	Un par de veces a la semana	Casi todos los días
El Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Televisión	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Periódicos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revistas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medios de Comunicación Social	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Film	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q30. Por favor anote que medios de comunicación usa usted para obtener información acerca de la salud.

1.

2.

3.

Q31. ¿Con qué frecuencia obtiene información sobre la salud de las siguientes fuentes?:

	Nunca	Menos de una vez al mes	Entre una vez a la semana y una vez al mes	Un par de veces a la semana	Casi todos los días
Profesionales de la salud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Familiares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amigos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Homeópatas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curanderas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Otro _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q32. Si tiene diabetes, o algún miembro de su familia tiene diabetes, ¿qué recursos usa usted para obtener información acerca **de la diabetes** específicamente? Por favor anote todos los que le vienen a la mente.

- Estas son las fuentes que utilizo para obtener información sobre la diabetes (Incluya el nombre de la revistas, programas de televisión, periódicos, etc):

- Yo no tengo diabetes

Este conjunto de preguntas fue diseñado para aprender más acerca de usted en general.

Q33. ¿Cuál es su sexo biológico?

- Hombre
 Mujer

Q34. ¿Qué edad tiene usted?

 Años

Q35. ¿Con qué raza o grupo étnico se identifica más?

- Hispano/Latino
 País de origen _____
- Negro/Africano Americano
 Asiático/De las Islas del Pacífico
 Nativo Americano
 Blanco/Caucásico
 Otro

Q36. ¿Cuál es su grado académico más alto?

- No tengo educación formal
- Escuela primaria
- Algunos años de escuela superior/menos de 12 años de educación escolar
- Graduado de escuela superior o certificado de GED
- Algunos cursos de licenciatura o escuela vocacional
- Título universitario de bachiller o licenciatura, de 4 años de estudios
- Maestría o Doctorado

Q37. ¿Cuál es su estado de empleo actual?

- Trabajo a tiempo completo/40 horas o más
- Trabajo parcial, menos de 40 horas, un solo empleo
- Desempleado
- Estudiante
- Pensionado por incapacidad
- Jubilado
- Ama de casa
- Otro

Q38. ¿En dónde completó usted esta encuesta?

- En la internet
- Con un promotor de salud (por favor escriba el nombre del promotor).
- En el consulado mexicano por mi propia cuenta
- En el consulado mexicano con una promotora de salud
- En otro lugar

Con esto concluye la encuesta.
¡Gracias por participar!



*Sus repuestas ayudarán a la comunidad científica
a adquirir mejor conocimiento
sobre la diabetes y sobre el comportamiento de salud
relacionados con esa enfermedad.*

¡Gracias!