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## A Faith-Based Primary Diabetes Prevention Intervention for At-Risk Puerto Rican Adults: A Feasibility Study

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*University of Central Florida*

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A FAITH-BASED PRIMARY DIABETES PREVENTION INTERVENTION FOR  
AT-RISK PUERTO RICAN ADULTS:  
A FEASIBILITY STUDY

by

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A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy  
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at the University of Central Florida  
Orlando, Florida

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## ABSTRACT

Diabetes is a serious health threat that disproportionately affects Hispanics of Puerto Rican heritage. Current evidence supports diabetes prevention programs to change health behaviors in people who are at risk and thus prevent the development of type 2 diabetes. However, few interventions exist for Hispanics, and even fewer have been designed for Puerto Rican adults. A literature review of community-based diabetes prevention programs involving at-risk Hispanics was conducted using a cultural sensitivity framework to determine the state of the science and identify gaps in knowledge regarding diabetes prevention for Puerto Ricans. An integrated theoretical framework was developed using constructs from the extended parallel process model (perceived severity and susceptibility) and social cognitive theory (self-efficacy) to design program components aimed to educate and motivate positive dietary behavior change in Puerto Rican adults. The two key components were a diabetes health threat message and dietary skill building exercises that incorporated spirituality and relevant faith practices, and were culturally-tailored for Puerto Ricans.

A pretest-posttest, concurrent mixed methods design was used to test the impact and evaluate feasibility of a diabetes health threat message and skill-building exercises in a sample of Puerto Rican adults. A total of 24 participants enrolled in the study and attended six-weekly meetings that included baseline data collection, a health threat message, dietary skill building exercises, focus group interviews, posttest data collection, and an end-of-study potluck gathering. All of the study participants were Puerto Rican and a majority were female (70.8%), with a mean age of 55.5 years (SD 13.71). Most had a family history of diabetes ( $n = 21$ , 87.5%) and believed they were at-risk for the disease ( $n = 16$ , 66.7%). Using Wilcoxon matched-pairs signed rank test, significant increases or improvements were found in perceptions of diabetes

severity ( $p < .01$ ), dietary self-efficacy ( $p = .002$ ), and dietary patterns ( $p = .02$ ) at posttest in comparison to baseline. Spearman's rank correlations found moderate to strong relationships between the following variables: perceived severity and weight ( $r_s = -.44, p = .03$ ), dietary self-efficacy and dietary patterns ( $r_s = .43, p = .04$ ), dietary self-efficacy and fasting blood glucose levels ( $r_s = -.45, p = .03$ ), and American acculturation and weight ( $r_s = .51, p = .02$ ). The qualitative themes that emerged contributed to our understanding of participants' perspective relative to the health threat message, dietary skill building exercises, and the importance of cultural relevance and spirituality. The data support feasibility of this faith-based intervention that had an attendance rate of 58% and no loss of sample due to attrition.

Diabetes prevention interventions for at-risk Puerto Ricans adults that incorporate a faith-based, culturally-tailored health threat message and dietary skill building exercises may help educate those who are at-risk and motivate lifestyle behavior change to prevent the development of diabetes. Further faith-based, culturally-tailored diabetes prevention research is indicated for Puerto Rican adults.

I dedicate this dissertation to my family,  
especially to my husband, Dan, who has patiently supported me every step of the way;  
to my sons, Grant and Spencer, who have been my inspirations;  
to my parents, Eugene and Myrta, who have encouraged me to reach farther;  
and to my dear sister, Alice, who has been a constant source of strength.

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## **CHAPTER ONE: INTRODUCTION**

In the United States (US), people of Hispanic heritage are at high risk for developing type 2 diabetes (Centers for Disease Control and Prevention [CDC], 2014), and consequently experience higher diabetes mortality and morbidity rates than the general population (Heron, 2013). The problem of diabetes among Hispanics is an urgent national health concern, because Hispanics are the largest minority group, comprising 17.1% of the total US population (US Census Bureau, 2015). Hispanics are a genetically and culturally diverse ethnic population with considerable differences in diabetes prevalence across the subgroups (Caballero, 2011; Hanis et al., 1991; Lopez, Gonzalez-Barrera, & Cuddington, 2013). The Hispanic subgroup with the highest rate of diabetes is Puerto Ricans (CDC, 2014).

Diabetes prevention programs that focus on lifestyle behavior change in at-risk individuals have significantly reduced diabetes incidence up to 58% (Ahmad & Crandall, 2010). Such programs aim to improve diet and physical activity. To address diabetes prevention in at-risk Puerto Rican adults living in the US, a relevant, culturally specific intervention approach is needed.

The following sections provide a brief introduction and overview of the dissertation research that was conducted. To begin, a literature review examines the state of the science for diabetes prevention interventions in community-based settings involving Hispanics. The study aims and research questions are then presented before discussing the theoretical framework that underpinned the research. The next section discusses the research study and results. Lastly, lessons learned as a result of planning and implementing this research study are discussed.

## **State of the Science Paper**

A review of the relevant literature related to community-based diabetes prevention interventions that involved at-risk Hispanic adults living in the mainland US used a cultural sensitivity framework to determine the state of the science. To date, few interventions have evaluated diabetes prevention specifically for Puerto Rican adults who are at-risk for diabetes. Also, few interventions involving Hispanics have incorporated or measured outcomes related to perceptions of diabetes threat as motivators to health behavior change, and few have measured relationships between dietary related activities and behavioral outcomes. Further details about effective strategies that have been used with Hispanics and how they address cultural dimensions are found in Chapter Two.

## **Study Aims and Research Questions**

The aims of this faith-based study were to test the impact and evaluate feasibility of two key diabetes prevention components—a health threat message and dietary skill building exercises (food selection and preparation)—that were tailored to address socio-cultural factors of cultural relevance and spirituality in Puerto Rican adults who are at risk for diabetes. This study used a mixed methods approach to address the following specific aims and research questions (RQs).

### **Specific Aim 1**

*Examine the impact of a health threat message targeted specifically for at risk adults of Puerto Rican descent.*

RQ#1: Does a health threat message increase perceived severity and susceptibility as part of a program that includes severity, susceptibility, and skill building?

RQ#2: Is there a relationship between perceived severity and susceptibility and behavioral outcomes (dietary behavior patterns, weight, body mass index [BMI], and fasting blood glucose levels [FBG])?

RQ#3: What elements of the health threat message do Puerto Rican adults refer to as a help with lifestyle related decisions or when asked to recall what they learned or will remember about diabetes?

### **Specific Aim 2**

*Evaluate the impact and feasibility of skill building exercises (food selection and preparation).*

RQ#4: Do skill building exercises (food selection and preparation) increase self-efficacy in dietary behavior change?

RQ#5: Is there a relationship between dietary self-efficacy and behavioral outcomes (dietary behavior patterns, weight, BMI, and FBG)?

RQ#6: What do participants see as challenges and facilitators to dietary behavior change?

RQ#7: What do participants report as working and not working well in the skill building component (food selection and preparation)?

### **Specific Aim 3**

*Evaluate the influence of acculturation on responses to diabetes prevention components.*

RQ#8: Is there a relationship between acculturation and behavioral outcomes (dietary behavior patterns, weight, BMI, FBG)?



RQ#9: What cultural references do participants make when discussing dietary behavior change?

#### **Specific Aim 4**

*Examine the influence of spirituality on responses to diabetes prevention components.*

RQ#10: Is there a relationship between spirituality and behavioral outcomes (dietary behavior patterns, weight, BMI, and FBG)?

RQ#11: What spiritual references do participants make when discussing dietary behavior change?

### **Theoretical Framework**

The theoretical framework for this study integrated key constructs from the extended parallel process model (EPPM; Witte, 1992) and social cognitive theory (SCT; Bandura, 1977) with an understanding of Hispanic socio-cultural values and norms. This integrated framework supported tailoring diabetes prevention components for Puerto Rican adults at-risk for diabetes, thus increasing the likelihood of motivating dietary behavior change (Mier, Ory, & Medina, 2010). The key constructs in this framework were severity, susceptibility, self-efficacy, and influencing factors of acculturation and spirituality (see Figure 1).

#### **EPPM: Severity and Susceptibility in Health Threat Messages**

Severity and susceptibility are key constructs in the EPPM where they motivate engagement in cognitive processes that may lead to behavioral outcomes (Witte, 1992). According to the EPPM, a health threat (fear appeals) message combines severity and

susceptibility content pertaining to personally relevant harm or danger with an efficacy message pertaining to response efficacy and self-efficacy (Witte, 1992). Cognitive appraisal of a health threat message leads to perceptions of severity (i.e., the belief about how serious the threat is) and personal susceptibility (i.e., the belief that one will experience the threat), and perceptions of self-efficacy (i.e., the belief in one’s ability to perform a behavior) and response efficacy (i.e., belief that the recommended action will control the threat). In health promotion and disease prevention campaigns, health threat messages are most effective when high severity and susceptibility messages are combined with a high efficacy message (Maloney, Lapinski, & Witte, 2011; Witte & Allen, 2000). However, a health threat message of severity and susceptibility combined with self-efficacy content has not been previously applied to diabetes prevention intervention research involving Hispanics.

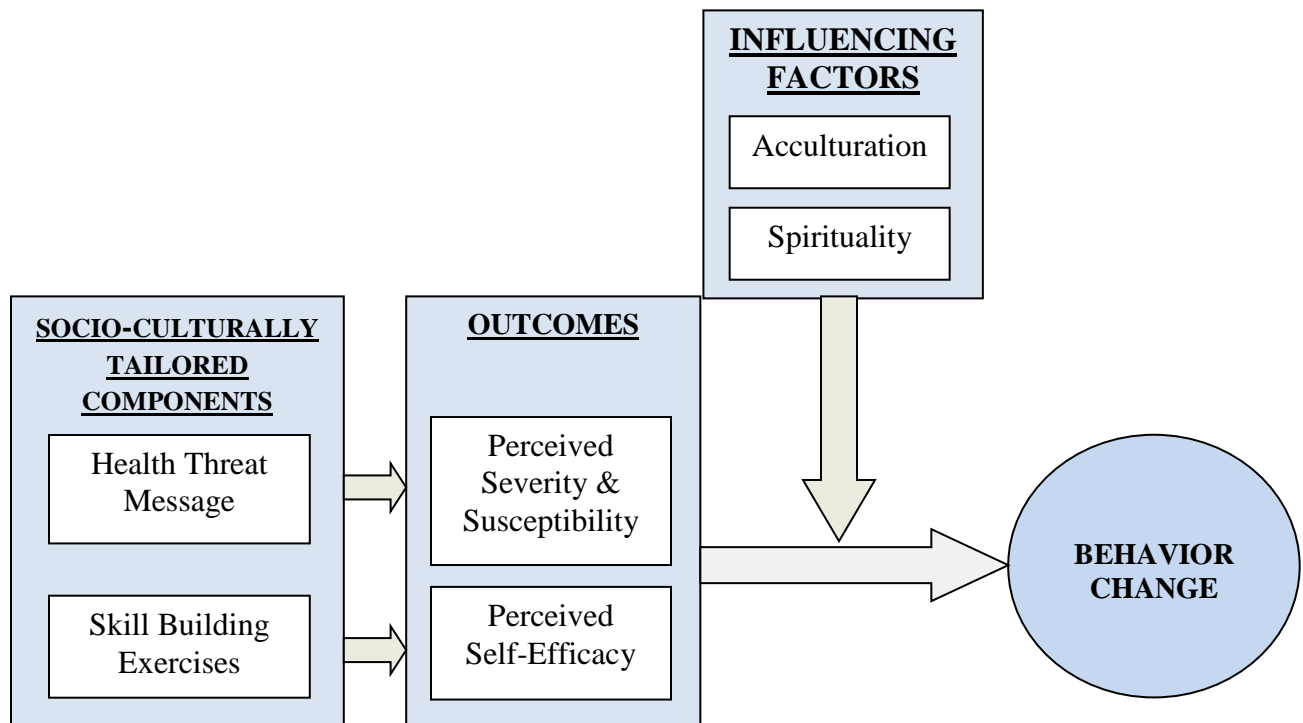


Figure 1. Integrated theoretical framework for A Faith-Based Diabetes Prevention Intervention Program for At-Risk Puerto Rican Adults: A Feasibility Study.

### **SCT: Self-Efficacy in Skill Building Exercises (Food Selection and Preparation)**

SCT identifies self-efficacy as a key determinant in behavioral change that increases through skill-building exercises (Bandura, 1977; Strecher, DeVellis, Becker, & Rosenstock, 1986). These exercises increase perceived self-efficacy by use of vicarious or direct learning experiences (Bandura, 2006). Dietary behavioral interventions are most effective at increasing dietary self-efficacy when hands-on skill building exercises with food (i.e., food preparation) are combined with information about nutritional content (Carpenter et al., 2004; Condrasky et al., 2011; McMurry et al., 1991; Levy & Auld, 2004).

### **Socio-Cultural Constructs**

Socio-cultural constructs were used to tailor the health threat message and skill building exercises to increase personal relevance for Puerto Rican adults. Specifically, the diabetes prevention components were tailored with respect to cultural relevance and spirituality because they have been identified as being important in diabetes prevention. Cultural relevance is crucial in promoting positive health behaviors in ethnically diverse populations at risk for diabetes, and is a practice guideline for diabetes educators (AADE, 2012). Spirituality has been identified as an important factor in health promotion behavior change interventions with low-income minorities (Gore, Williams, & Sanderson, 2012; Resnicow et al., 2004; Yanek, Becker, Moy, Gittlesohn, & Koffman, 2001; Yeary et al., 2011).

### ***Cultural Relevance***

Cultural relevance for Hispanics is defined as incorporating cultural values (Whittemore, 2007), addressing language barriers, and understanding the intimate relationship between food and culture (Sanjur, 1995). Cultural values important in health interventions for Hispanics are

*familismo* and *personalismo* (Paniagua, 2005). *Familismo* is a strong attachment and social cohesion to the nuclear and extended family and reliance on them for support (Marin & Marin, 1991). *Personalismo* is the expectation that interpersonal relationships be warm, friendly, and personal (Marin & Marin, 1991). Table 1 operationalizes Hispanic cultural values of *familismo* and *personalismo* for Puerto Ricans that help promote comfortable social interactions. For example, following initial formal introductions, Puerto Ricans like receiving warm greetings including a handshake that may be accompanied by a friendly hug (Andrés-Hyman, Ortiz, Añez, Paris, & Davidson, 2006; Andrés-Hyman et al., 2006; Paniagua, 2005).

Table 1: Hispanic Cultural Values Operationalized for Puerto Ricans

Cultural Value	Operationalized for Puerto Ricans
<i>Familismo</i>	<ul style="list-style-type: none"> <li>• Provide the option of including family members in decision making (Andrés-Hyman et al., 2006)</li> </ul>
<i>Personalismo</i>	<ul style="list-style-type: none"> <li>• Face-to-face contact</li> <li>• Provide a warm greeting that includes a handshake and may be accompanied by a friendly hug</li> <li>• Proper use of formal and informal forms of addressing a person (i.e., formal-“usted,” informal-“tu”)</li> <li>• Genuine interest in a person by use of active listening skills and mutual sharing (Andrés-Hyman et al., 2006; Paniagua, 2005)</li> <li>• Create a warm, inviting atmosphere by using music to facilitate a sense of community (Manuel, 1994)</li> </ul>

Effective communication requires compatible use of language, and is especially important in diabetes health communications (AADE, 2012). Minimizing Spanish language barriers requires a bilingual speaker to conduct interventions or assistance from an interpreter. Hispanic food preferences and practices are rooted in culture and are a vital part of cultural

identity (Sanjur, 1995). Sharing traditional Hispanic foods and dishes is customary at appropriate social gatherings (i.e., church potlucks) and reinforces socio-cultural cohesion (Sanjur, 1995). To effectively influence dietary health behavior change that addresses diabetes risk in Puerto Ricans, culturally relevant interventions must teach food selection and preparation skills that preserve traditional Puerto Rican foods while improving less healthy food choices and dietary behaviors. Social gatherings provide a rich cultural environment for participants to learn, empowering retention of behaviors by being compatible with cultural identity and what it means to be Puerto Rican.

### ***Spirituality as a Socio-Cultural Construct***

Spirituality is defined as a belief in and relationship with God or a higher power that gives meaning to life, and may or may not involve a religious affiliation (Musgrave, Allen, & Allen, 2002). Diabetes prevention programs conducted in African American churches or other faith-based organizations that include spiritual messages have had significant positive health outcomes (Newlin, Dyess, Allard, Chase, & Melkus, 2011). Culturally tailored diabetes prevention that addresses spirituality for Puerto Ricans has not been explored. However, it is likely that spiritual content in a faith-based setting will play an important role because 61% of Hispanics report that spirituality is very important in their everyday lives (Pew Research Center, 2012). Thus, a spiritually tailored diabetes prevention program for Puerto Ricans that includes religious practices of scripture reading and prayer in a faith-based setting may positively influence dietary behavior change (Musgrave et al., 2002).

## **Influencing Factors**

Influencing factors of acculturation and spirituality may moderate relationships between outcomes (i.e., severity, susceptibility, and self-efficacy) and behavior change. Acculturation may produce a positive or negative moderating effect on behavioral outcomes depending on which culture participants identify with more (i.e., Puerto Rican or Anglo-American).

Spirituality may also produce a positive or negative moderating effect on behavioral outcomes.

## ***Acculturation***

Acculturation for Puerto Ricans is the extent to which individuals identify with characteristics of Puerto Rican or Anglo-American cultures (Cortes Rogers, & Malgady, 1994). It is a dynamic process in which members of one cultural group adopts customs, beliefs, and behaviors of another cultural group (Perez-Escamilla & Putnik, 2007). Few studies have examined the relationship between acculturation and diet in Hispanics, and those that exist have produced conflicting findings, making it difficult to know what influence acculturation has on diet (Perez-Escamilla & Putnik, 2007). For example, higher levels of acculturation to Anglo-American culture have been associated with less healthy dietary behaviors (i.e., less fruits and vegetables, and more dietary fat and sugar intake; Negy & Woods, 1992; Neuhauser, Thompson, Coronado, & Solomon, 2004), and with healthier dietary behaviors (i.e., more fruits and vegetables; Lin, Bermudez, & Tucker, 2003). Hence, it is important to examine the influence acculturation has on dietary behavior change, given the association between diet and culture and the implications for dietary health behaviors.

### ***Spirituality as an Influencing Factor***

As an influencing factor, spirituality is the extent to which individuals identify with being spiritual and having a relationship with a God or a higher power. Spirituality varies among individuals and may influence motivation for dietary behavior change. Puerto Ricans view spirituality or identification with things spiritual as a source of strength that plays an important role in health and well-being (Campesino & Schwartz, 2006). Research indicates that Hispanic women view health and well-being as part of the spiritual nature of a person, and spirituality has been associated with positive health behavior change in women (Musgrave et al., 2002). Thus, it is possible that these components may work better for women who have high spirituality.

### **Research Study Results Paper**

This faith-based research study tested the impact and feasibility of a health threat message and dietary skill building (food selection and preparation) components that were culturally tailored and incorporated spirituality. Following Institutional Review Board approval by the University of Central Florida, 24 participants enrolled in the study. The study consisted of 6-weekly meetings that lasted 60-90 minutes each. The meetings included baseline data collection, delivery of a diabetes health threat message, skill building exercises (food selection and preparation), focus group interviews, posttest data collection, and a potluck gathering. Quantitative and qualitative data were collected and analyzed to address the specific study aims and research questions. Chapter Three provides details of the study and its findings.

### **Lessons Learned Paper**

The planning and implementation of a culturally-tailored diabetes prevention intervention for Puerto Ricans adults who were at risk for diabetes presented unique challenges in a real-

world, faith-based environment. The lessons that were learned provided useful information for future research regarding preventive health programs in a faith-based environment and gaining access to Puerto Rican population. Issues and lessons learned related to conducting research appropriate for this population and environment are addressed in Chapter Four.

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## **CHAPTER TWO: STATE OF THE SCIENCE**

### **Abstract**

Type 2 diabetes is a chronic disease epidemic that disproportionately affects Hispanics. Although it is a major health threat, it is largely preventable. At present, there are few primary diabetes prevention interventions for Hispanics. This state of the science paper examines representative research on the topic of community-based primary diabetes prevention interventions involving Hispanics adults in the United States. The interventions were examined using a cultural sensitivity framework to identify relevant findings in the literature. The research highlights the importance of using a combination of surface and deep structure cultural dimensions such as: (a) language concordance; (b) including subgroup specific dietary preferences; (c) incorporating Hispanic cultural values; (d) conducting interventions in community-based settings, especially churches; (e) incorporating spirituality; and (f) using a collaborative research approach in interventions aimed at reducing diabetes risk in Hispanic adults.

### **Introduction**

Type 2 diabetes (hereafter referred to as diabetes) is a chronic disease that has come to be recognized as a growing urgent public health problem (Healthy People 2020, 2013a). It is the seventh leading cause of death in the United States (US) and constitutes a major risk factor for heart disease and stroke, hypertension, blindness and eye problems, kidney disease, nervous system disease, amputations, and dental disease (Centers for Disease Control and Prevention [CDC], 2014c). Emerging evidence has also linked it to cognitive impairments and increased cancer risk (Health People 2020, 2013a). Among the general population, approximately one in

eleven Americans (nearly 29.1 million) has diabetes (CDC, 2014d), and by the year 2050, as many as one in three Americans are predicted to have the disease (CDC, 2010).

A major source of the projected increase in diabetes is the estimated 86 million Americans who have pre-diabetes (CDC, 2014d) and are at increased risk by having elevated blood glucose levels that are not quite high enough to diagnose diabetes (CDC, 2014c). Diabetes risk is strongly associated with being overweight and with obesity stemming from poor health behaviors with respect to diet and physical activity. Pre-diabetes presents a mounting challenge because the vast majority of people who are at-risk are unaware of the fact. In 2010, the CDC estimated that one in every three American adults were at-risk for diabetes. It has been projected that unless preventive steps are taken, 15% to 30% of at-risk individuals will likely progress to develop diabetes within five years (CDC, 2014c).

While diabetes and its precursor pre-diabetes constitute serious health threats to the general US population, epidemiological data indicate that racial and ethnic minority groups exhibit a higher prevalence and are particularly at-risk for developing both (CDC, 2014b). As the largest and fastest growing minority group in the US, Hispanics have been found to have the greatest lifetime risk for diabetes (Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003), and are nearly twice as likely to have diabetes as non-Hispanic Whites (CDC, 2014b). Among Hispanics, Puerto Ricans have had the highest rate of diabetes since 1997 (CDC, 2013) and have among the highest risk for developing diabetes along with Mexican Americans (Reyes, Van de Putte, Falcon, & Levy, 2004).

Hispanic health disparities in diabetes risk call attention to the need for effective preventive behavioral health interventions (CDC, 2009; Chin, Walters, Cook, & Huang, 2007), especially for interventions that focus on higher risk Hispanic subcultural groups (Barrera,

Castro, Strycker, & Toobert, 2013). Over the past decade, limited research has been conducted with Hispanics at-risk for diabetes (Kramer, Cepak, Venditti, Semler, & Kriska, 2013; Rosal, Borg, Bodenlos, Tellez, & Ockene, 2011) and most diabetes-related studies involving Hispanics have examined interventions for diabetes management and glycemic control (Gonzalez, Berry, & Davison, 2013). The bulk of diabetes-related research has focused primarily on Mexican Americans; few studies have identified other Hispanic subgroups in this area of research (Rosal et al., 2011). Considering the ongoing growth in the Hispanic population, their increased risk for diabetes, and the escalating problem it presents, it is essential to examine the intervention literature for Hispanic adults who are at-risk for diabetes to determine the current state of the science. Hence, this paper seeks to critically examine community-based primary diabetes prevention interventions for Hispanic adults living in the US by identifying how the interventions were implemented in this population.

Within the context of this paper, primary diabetes prevention is defined as interventions that aim to eliminate or postpone diabetes onset by reducing risk in individuals that do not yet have the disease (Husseini, 2002; National Public Health Partnership [NPHP], 2006). This paper focuses on community-based interventions because they have been found to be effective for reducing health disparities in general among racial and ethnic minority groups, and diabetes in particular (Chin et al., 2007). The advantages of using community-based settings in prevention interventions are that they can be uniquely tailored to local environments. Community-based settings can also reach individuals outside of conventional health care settings by offering convenience and location familiarity where people have high levels of contact (Healthy People 2020, 2013b).

This review focused on community-based primary prevention of diabetes in US Hispanics over the age of 18 and excluded interventions for the purposes of managing established Type 1, Type 2, or gestational diabetes. A thorough review of original intervention research published in peer-reviewed English language journals from January 1987 to May 2014 yielded only 8 articles published in 2010 or later. Given the limited number of community-based primary diabetes prevention studies conducted exclusively with Hispanics, we included relevant studies with multiethnic samples that reported involving Hispanic subsamples. We are confident that these articles fairly represent the state of the science for this topic because a variety of search terms was employed (e.g., diabetes prevention, intervention or program in combination with Hispanic(s), Latino/a, Mexican, and Puerto Rican) querying all relevant databases (e.g., MEDLINE, CINAHL, Cochrane Library, PsychINFO, Chicano Database, Health Source: Nursing/Academic Edition, and the Web of Science). In addition, reference lists for the intervention studies were reviewed, but no new articles were identified.

We begin by providing an overview of our approach to reviewing these articles and describe relevant aspects of Hispanic cultural context because this paper focuses on community-based interventions set within a distinct culture. We then briefly discuss early primary diabetes prevention research because it provides the foundation for many of the interventions we reviewed. This is followed by a review of the intervention literature and discussion about cultural approaches used in primary diabetes prevention interventions for Hispanic adults. Finally, we conclude with a summary about the current state of the science and identify direction for future research on this topic.



## **Overview and Hispanic Cultural Context**

In the late 1980s, health researchers increasingly recognized that culture plays an important role in health interventions and began to define cultural terms and create conceptual frameworks for developing, implementing, and evaluating health interventions (Resnicow, Baranowski, Ahluwalia, and Braithwaite, 1999). One such framework that was used to guide our understanding of interventions involving Hispanics was the cultural sensitivity framework by Resnicow et al. (1999). This framework is noted to be important for evaluating culturally adapted behavioral health interventions in the field of public health (Castro, Barrera, & Martinez, 2004). The main concepts in the framework involve two dimensions of culture: *surface structure* and *deep structure*. Surface structure pertains to important external cultural characteristics such as language translation of intervention materials, the use of bilingual research staff, the inclusion of ethnic foods, and the influence of intervention settings. Surface structure impacts how well the intervention fits a specific culture. Deep structure pertains to internal cultural characteristics such as cultural values, family involvement in interventions, and beliefs or individual perceptions that influence the target health behavior. Both structures are posited to influence health behavior interventions, with surface structure addressing feasibility issues and deep structure addressing the efficacy or impact of the intervention. Much of the research using this conceptual framework has focused on African Americans and Hispanic populations (Resnicow et al., 1999). Because cultural context affects health perceptions, this paper will next describe those aspects of Hispanic culture that could impact the effectiveness of interventions.

Hispanics represent an ethnic population group that is culturally and racially diverse. They are distinguished by country of origin or heritage, Spanish language idioms, dietary

preferences, and unique health beliefs. The three largest Hispanic subgroups in the US are comprised of individuals who self-identify as Mexican American (64.9%), Puerto Rican (9.2%), or Cuban (3.7%; Pew Hispanic Center, 2012a). US states and territories with the highest prevalence of diabetes among Hispanics are California, Florida, Illinois, New York/New Jersey, Texas, and Puerto Rico (CDC, 2004).

Differences and commonalities among Hispanic subgroups provide both challenges to diabetes prevention and the means to aid in its implementation. The differences among these subgroups can constitute a barrier to implementing effective prevention interventions. For example, language idioms vary among subgroups and the benign meaning of a word in one group may lead to misunderstanding or social uneasiness due to its use in the presence of members belonging to another subgroup, thus impairing communications. Hispanic subgroups also differ in regards to traditional dietary preferences. For example, traditional Puerto Rican diets are generally mild in flavor and largely consist of refined carbohydrates, excess fats, starchy root vegetables, limited intake and varieties of vegetables, and high-sodium seasonings that are unlike spicy flavors preferred in traditional Mexican diets (Syracuse, 2010). Dietary behaviors are closely bound to culture and are a major contributing, but modifiable risk factor for overweight and obesity (Reyes, Van de Putte, Falcon, & Levy, 2004). In addition, although there is limited research on Hispanic subcultural health beliefs, some differences have been noted with regards to beliefs related to perceived causes of diabetes and perceptions about God's role in disease (Caban & Walker, 2006).

In general, Hispanics from all subgroups share commonalities in language and socio-cultural values related to family (*familismo*), communication style (*personalismo*), and spirituality. *Familismo* is a core cultural value for many Hispanics, characterized by strong

social cohesion among nuclear and extended family members, and close friends that make up one's "family." These close attachments include a dependence on family and need to involve the family in decision making (Marin & Marin, 1991). *Personalismo* is a valued communication style focusing on warm, sincere, and friendly interpersonal relationships (Andrés-Hyman et al., 2006; Marin & Marin, 1991). Communication interactions that strengthen *personalismo* are those that are attentive, are conducted face-to-face, and share mutual trust (Andrés-Hyman et al., 2006; Paniagua, 2005). Spirituality or identification with spiritual things as a source of strength plays an important role in Hispanic perceptions about health and well-being (Campesino & Schwartz, 2006). Moreover, 61% of Hispanics report that spirituality plays an important role in their everyday lives (Pew Research Center, 2012b).

The differences and commonalities among Hispanics support primary diabetes prevention interventions that match subgroup uniqueness of language idioms and dietary preferences, and are culturally informed to match the Hispanic values of *familismo*, *personalismo*, and spirituality. Addressing cultural and subcultural contextual concerns are important in increasing the receptivity of health behavior messages and conveying salience (Resnicow et al., 1999).

### **Early Primary Diabetes Prevention Research**

Beginning in the late 1990s, several international randomized controlled clinical trials were conducted to test lifestyle strategies to reduce diabetes risk in individuals at increased risk for developing diabetes (Ahmad & Crandall, 2010). These clinical trials demonstrated compelling evidence supporting lifestyle behavioral changes for the primary prevention of diabetes (Ahmad & Crandall, 2010). Among these studies, the Diabetes Prevention Program (DPP) was the largest multicenter trial conducted in the US, with a multiethnic sample of 3,234

persons at-risk for diabetes (Knowler et al., 2002). Over a three-year period, the DPP monitored fasting blood glucose and oral glucose tolerance levels in three intervention groups—placebo, lifestyle change (i.e., involving diet and physical activity), and the anti-hyperglycemic medication, metformin—to measure the development of diabetes. The intensive lifestyle intervention consisted of one-on-one health coaching to participants over an initial 16-week period using a core curriculum based on diet and physical activity behavior modification. Monthly meetings and a long-term maintenance program were instituted following the curriculum. Consequently, the DPP found that lifestyle behavioral changes resulting in at least a 7% weight loss reduced the incidence of diabetes by 58%; in contrast, administration of metformin resulted in only a 31% reduction in diabetes incidence (Knowler et al., 2002). Based on the success of the DPP, numerous subsequent studies have adapted and translated the intervention to less controlled, “real-world” community-based settings to extend the benefits of primary diabetes prevention. Implementing adaptations to the DPP and other similarly effective diabetes prevention interventions into real-world settings has been urged as a means to reduce diabetes risk disparities for Hispanics (Chin et al., 2007).

### **Community-Based Primary Diabetes Prevention Interventions Involving Hispanic Adults**

All of the eight studies in this review set out to test community-based, behavior-oriented group interventions. Although some of these studies used randomized control designs, others used one group, pre-test, post-test designs to assess existing interventions that were adapted for primary prevention purposes in studies involving Hispanics. Six of these eight studies assessed adaptations to primary diabetes prevention programs and two assessed adaptations to diabetes management and control programs. The next section, describes the interventions and how they

were culturally adapted to address surface and deep structures of Hispanic culture before summarizing study outcomes.

### **Description of the Adapted Primary Diabetes Prevention Interventions**

Six primary diabetes prevention interventions were identified. Five used an adaptation of the DPP (Kramer et al., 2013; Kutob, Siwik, Aickin, & Ritenbaugh, 2014; Ockene et al., 2012; Ruggiero, Oros, & Choi, 2011; Vincent et al., 2014), and one was an adaptation of a non-DPP, faith-based program that was originally designed for primary diabetes prevention purposes among African Americans (Gutierrez et al., 2014).

The main study objective in five of the six studies that adapted the DPP was weight loss to decrease diabetes risk. Weight loss goals in these studies were either the same as those set in the original DPP (i.e., 7%; Kramer et al., 2013; Ruggiero et al., 2011) or were not clearly stated. The DPP adapted studies were conducted over a period of time ranging from 5 months (Vincent et al., 2014) to 12 months (Kramer et al., 2013; Ockene et al., 2012; Ruggiero et al., 2011). The Hispanic sample sizes in these studies were as few as 14 participants (Kutob et al., 2014) to as many as 312 participants (Ockene et al., 2012). Most of the studies that reported Hispanic subgroup data were conducted with participants of Mexican heritage (Kramer et al., 2013; Kutob et al., 2014; Vincent et al., 2014). Only one study was conducted with Caribbean Hispanics, combining Dominicans (60% or  $N = 187$ ) and Puerto Ricans (40% or  $N = 125$ ; Ockene et al., 2012).

The study objective in the one study that adapted a non-DPP intervention (Gutierrez et al., 2014) was also to decrease diabetes risk, but rather than focusing on weight loss, the goal was to improve overall diet and physical activity. This non-DPP study was conducted over a 12-

week period, and was the shortest of all of the interventions adapted from a primary diabetes prevention intervention. The Hispanic sample size in this multiethnic study was 76 participants and Hispanic subgroup data was not reported.

Most of the participants in the six primary diabetes prevention interventions were females between the ages of 35 and 64. Although a majority of participants across the adapted DPP and non-DPP studies were at-risk for diabetes, two studies included a small number of participants with diabetes either as primary participants, who were included in the data analysis (17% of the Hispanic sample; Gutierrez et al., 2014), or as support persons that were not included in the data analysis (Kutob et al., 2014).

### **Description of the Adapted Diabetes Management and Control Interventions**

Two diabetes management and control programs for primary prevention purposes were located. One was an adaptation of the “Diabetes Empowerment Education Program” (DEEP; Millard et al., 2011) and the other was an adaptation of the “Chronic Disease Self-Management Program” (Parikh et al., 2010). The primary goals of both adapted programs were a reduction of body mass index (BMI) for primary prevention purposes (Millard et al., 2011), and weight loss in overweight adults identified as being pre-diabetic (Parikh et al., 2010). Both programs were shorter than the adapted primary diabetes prevention interventions previously discussed and lasted 8 weeks (Millard et al., 2011) or 10 weeks (Parikh et al., 2010).

The Hispanic samples in the studies differed, with Millard et al. (2011) involving a homogeneous sample of 91 Mexican immigrants and Parikh et al. (2010) using a multiethnic sample that involved 88 Hispanic adults. Similar to the gender mix discussed in the previous studies, females with a mean age of 35.5 years were better represented than males. Although

inclusion in the Parikh et al. (2010) study was limited to those with pre-diabetes and excluded low-risk non-diabetes and diabetes, Millard et al. (2011) had broader inclusion criteria and did not state the criteria with respect to diabetes status of the primary participants. Because these interventions were originally intended for diabetes management and control, they required modifying the content to present pre-diabetes and diabetes risk issues in addition to other cultural adaptations made to the interventions.

### **Surface Structure Cultural Adaptations of the Interventions**

A review of these eight interventions revealed five adaptations specific to the surface structure elements of participant's culture. The first element pertained to the need for communication in the same language as the participants. Because a majority of the studies consisted largely of Spanish-speakers with limited English-speaking abilities, the translation of program materials into Spanish was essential. Nearly all of the programs used trained bilingual or bicultural, lay or community health workers (CHW) to deliver all or part of the interventions; a common approach used in interventions for Hispanics with diabetes. The exception to the use of trained cultural workers was the study of a DPP adaptation conducted by Kutob et al. (2014) that used English-speaking physicians and a dietician to deliver the intervention, and provided only English language materials to the English-speaking Hispanics that comprised the sample (R. M. Kutob, personal communication, April 2, 2014).

The second surface structure element was that of recruitment. Several recruitment strategies were used to attract participants, including the distribution of flyers or posters (Kramer et al., 2013; Kutob et al., 2014; Ockene et al., 2012; Vincent et al., 2014); Spanish television, radio, and newspaper advertisements (Ockene et al., 2012); social media announcements

(Vincent et al., 2014); church health presentations (Parikh et al., 2010; Vincent et al., 2014); community health screening fair events (Ruggiero et al., 2011); physician referral letters to patients (Ockene et al., 2012); health clinic referrals (Kutob et al., 2014); and face-to-face endorsements during clinic visits (Kramer et al., 2013), and from community leaders (Parikh et al., 2010) and CHW (Millard et al., 2011). Recruitment strategies that incorporated a more personal approach (i.e., physician referral letters, health clinic referrals, or personal endorsements) reported high participant recruitment rates of 78% (Ockene et al., 2012) and 68% (Parikh et al., 2010).

The third type of adaptation at the surface structure level was related to diet—a central component of primary diabetes prevention—and included food choices and preparation methods. General approaches used to improve dietary behaviors highlighted basic principles of reducing portion sizes, sugary foods, carbohydrates, and fats. Ockene et al. (2012) and Vincent et al. (2014) adapted traditional or familiar Hispanic foods using healthy preparation techniques—such as baking instead of frying. Engaging participants in dietary-related activities included reading food labels (Gutierrez et al., 2014; Millard et al., 2011; Vincent et al., 2014), supermarket tours that focused on healthy food selections (Ockene et al., 2012), cooking demonstrations (Gutierrez et al., 2014; Ockene et al., 2012; Vincent et al., 2014), taste testing (Millard et al., 2011; Vincent et al., 2014), and portion size demonstrations (Gutierrez et al., 2014; Kramer et al., 2013; Kutob et al., 2014; Parikh et al., 2010). Additionally, recipe books were culturally adapted for Hispanics (Ruggiero et al., 2011) or were developed specifically for Mexican Americans (Vincent et al., 2014). Ockene et al. (2012) also offered dietary advice to Dominicans and Puerto Ricans on how to customize recipes using familiar Hispanic Caribbean foods. The dietary behavioral outcomes of the studies were self-reported and significant findings included increased



dietary knowledge and skills (i.e., food label reading), decreased dietary fat intake, increased consumption of fruits and vegetables, and improvements in dietary self-efficacy. Overall, the interactive dietary activities fostered a high level of satisfaction, engagement, and positive attitudes towards behavior change (Millard et al., 2011; Vincent et al., 2014).

The fourth surface structure element was physical activity. Time for physical activity was allocated during intervention sessions in all of the studies, with an emphasis placed on the need for regular, moderate physical activity, and a preference for walking. Some studies provided participants with pedometers to record steps taken. Addressing cultural forms of physical activity, Vincent et al. (2014) encouraged Mexican American study participants to engage in dance. Although physical activity was a main component in the interventions, only one study found significant improvements in self-reported walking at the 6-month follow-up point (Ruggiero et al., 2011). Moreover, Vincent et al. (2014) noted that the lack of significant improvements in physical activity in Hispanics was consistent with other studies measuring physical activity in Hispanic with diabetes.

The fifth surface structure element was location and community-based settings. The majority of the studies were conducted in or around major urban communities in the states of New York, Massachusetts, Illinois, Arizona, and Texas that are known to have large concentrations of Hispanics. Within these locations, several of the studies identified a variety of community-based settings for the interventions including churches—Protestant and Catholic—(Gutierrez et al., 2014; Vincent et al., 2014), city offices for women, infants and children (WIC) program (Kramer et al., 2013), health care provider's office (Kutob et al., 2014), senior center (Ockene et al., 2012), and a combination of schools, a cultural center, and a hospital (Ruggiero et al., 2011). Consequently, Parikh et al. (2010) found that study participation in community-based

settings was influenced by trust in the person or local organization conducting the study and by the desire for participants to help their local community. Corresponding to the use of church-based settings is a close relationship to the deep structure of spirituality that will be discussed in the next section.

### **Deep Structure Cultural Adaptations of the Interventions**

In terms of impact to internal Hispanic culture, four adaptations were made to the interventions at the deep structure level. Beginning with the process of developing culturally adapted intervention approaches, the studies used several theoretical frameworks to guide the research, including social cognitive theory (SCT) or frameworks that integrated SCT with other theories relevant to Hispanic culture or behavior change, such as the theory of social support, the stages of change theory, and principles of patient-centered counseling. Another relevant approach to research in communities that was used with the stages of change theory and with SCT was community-based participatory research (CBPR). CBPR is a research approach that contributes to cultural congruence because researchers work very closely with community stakeholders to develop relevant content by verifying perceptions about programs with members of the target population (Gutierrez et al., 2011; Millard et al., 2011; Parikh et al., 2010; Ruggiero et al., 2011). Moreover, Millard et al. (2011) noted that a participatory research approach facilitated communications about cultural tailoring intervention needs and empowered communities and participants by providing a sense of program ownership: a finding that was supported in the other studies using CBPR. In these studies, a CBPR approach helped discover deep structure level cultural adaptations needed for Hispanics. Examples of adaptations that resulted from a CBPR approach were incorporation of Hispanic cultural values (Millard et al.,

201; Parikh et al., 2010), spirituality and the use of spiritual messages in an intervention (Gutierrez et al., 2011), and recipe books that were culturally adapted for Hispanics (Ruggiero et al., 2011). In addition to endorsing a more emic perspective, studies that used trained, bicultural lay or CHW noted positive contributions to program acceptability (Ockene et al., 2012; Ruggiero et al., 2011; Vincent et al., 2014).

The second deep structure element that emerged from the studies was the use of innovative materials and content that addressed low-literacy issues in Hispanics and conveyed messages that aimed to influence perceptions about diabetes by using visual story illustrations. For example, Ockene et al. (2012) used short, Spanish-language *novelas* (videotaped soap operas) to target cultural perspectives about diabetes prevention because watching *novelas* is a popular activity among Caribbean Hispanics. Whereas, Vincent et al. (2014) used PowerPoint slides to present short, Spanish-language *fotonovela* episodes (photographic stories with dialogue bubbles) to depict Mexican American families making lifestyle changes to reduce diabetes risk. The combination of visual stories with simple language in Ockene et al. (2012) and Vincent et al. (2014) helped explain complex information about diabetes risk and depicted lifestyle change as relevant to Hispanics.

The third deep structure element pertained to the Hispanic cultural values of *familismo* and *personalismo*. *Familismo* was integrated into the studies by encouraging participants to have family and friends attend program meetings with them. Studies that included diabetics in the sample found social support of family and friends to be important in meeting primary diabetes prevention goals (Gutierrez et al., 2014; Kutob et al., 2014). Similarly, Millard et al. (2011) and Vincent et al. (2014) found that having participants invite family and friends to attend the program meetings was viewed favorably by participants. The cultural value of *personalismo* was

integrated in interventions by providing ample time for social interactions, allowing participants to share mutual trust with each other and with the research staff, thus fostering group support (Kutob et al., 2014; Vincent et al., 2014). Combining *personalismo* with healthier versions of traditional Hispanic foods, Vincent et al. (2014) ended program sessions by sharing meals prepared with participants during the cooking demonstrations, while they engaged in informal discussions. Millard et al. (2011) found that end-of-project healthy meals prepared by participants at home to share with program attendees (i.e., study participants, research staff, and accompanying family and friends) were a powerful reinforcement of dietary program content. Sharing healthy meals together was positively received and effectively incorporated Hispanic cultural values of *familismo* and *personalismo*.

The fourth deep structure element identified in the literature was spirituality. As a Hispanic cultural value, it impacts beliefs and individual perceptions about health. Of the studies conducted in church-settings, Gutierrez et al. (2014) appropriately utilized churches to integrate spiritual messages and religious teachings to enhance and support diabetes awareness and healthy behavior change content that targeted the deep structure of spirituality. The infusion of spirituality into diabetes prevention content was supported by church communities and was well received by participants who were motivated to engage in positive behavior change.

### **Summary of Outcomes**

All of the studies reported significant behavioral health outcomes. However, the interpretation of weight loss outcomes was complicated by diversity of anthropometric measures used across the different studies. For example, some studies reported weight loss in terms of pounds or kilograms and/or percentages, waist circumference, percentage body fat, and/or BMI.

Studies that measured weight loss at 12 months (the longest point of follow-up) reported average weight loss ranging from 2.8 pounds (Ruggiero et al., 2011) to 7.2 pounds (Parikh et al., 2010). Although few studies reported clinical outcomes (i.e., fasting blood glucose, casual blood glucose, hemoglobin A1C, or fasting insulin levels), there were some significant reductions in fasting insulin levels and hemoglobin A1C in Kutob et al. (2014) and Ockene et al. (2012). There were some statistically significant outcomes in the studies, but it was difficult to combine and compare results across studies because of the use of different variable measures and lack of effect size reporting. The following section presents the state of the science for this topic and discusses implications that can guide future interventions.

### **State of the Science and Future Directions for Primary Diabetes Prevention Research for Hispanic Adults**

Research on community-based primary diabetes prevention in Hispanic adults living in the US is in its early phases, as evidenced by the limited number of studies in the literature and the lack of research conducted at the efficacy trial level. Despite these limitations, the interventions that have been studied show promise. Moreover, the preliminary evidence suggests that delivery of culturally adapted or tailored primary diabetes prevention interventions for Hispanic adults in community-based settings may be an effective and practical way to reach this at-risk ethnic population.

The current state of the science highlights the importance of surface and deep structure cultural dimensions in interventions to address program feasibility and efficacy. Fundamental in these interventions is the need for language concordance of program delivery and materials. To address barriers to reading and understanding associated with low-literacy levels in Hispanics, the use of innovative *novelas* and *fotonovelas* (Ockene et al., 2012; Vincent et al., 2014) were

developed to not only be literacy sensitive, but to also target deeper perceptions about diabetes and health behavior change. Although it would seem that the use of low-literacy strategies would help promote positive health outcomes in primary diabetes prevention involving Hispanics, relationships between these variables were not examined. Hence, further research should examine the impact these strategies may have on behavioral outcomes.

From the interventions that were reviewed, findings promote the following three approaches that emphasize surface and deep Hispanic cultural structures. Dietary behavior change is a main tenet in diabetes prevention efforts that is affected by culture. As such, the literature supports the use of a variety of interactive dietary learning activities for Hispanics. Encouraging participants to invite family and friends to attend intervention meetings is an important feature of *familismo* that should be included in future diabetes prevention interventions involving Hispanics. Recruitment has been a challenge for researchers in other health-related studies with Hispanics (Chasan-Taber, Fortner, Hastings, & Marenson, 2009; Yancey, Ortega, & Kumanyika, 2006). In terms of these interventions, the literature supports using recruitment strategies that are more personal (i.e., face-to-face), rather than non-personal (i.e., distribution of flyers, media advertisements). For example, recruitment strategies that were most effective with Hispanics were those that used physician referral letters to patients, health clinic referrals, and personal endorsements. Personalized recruitment approaches are congruent with both surface structure appeal and with the deep structure cultural value of *personalismo*.

CBPR was an effective approach in program development and implementation that resulted in relevant cultural adaptations. Corresponding to a collaborative approach is mounting evidence supporting the use of bicultural CHW in diabetes interventions to help eliminate Hispanic health disparities (CDC, 2014a). Although some of studies in this review included

CHW, much of the evidence in support of CHW has come from interventions involving Hispanics that have diabetes. Hence, future longitudinal studies should explore feasibility of using CHW to sustain primary prevention programs over longer periods of time and examine the impact it may have on Hispanic diabetes risk disparities.

The limited number of geographical locations reflected in the current intervention literature argues for limited generalizability of the interventions themselves. Most of the studies were conducted with middle aged, Mexican women living in Texas and Arizona, and as such are unlikely to address Spanish language diversity and unique food preferences among Hispanic subgroups, particularly with respect to Puerto Ricans. To provide access to larger numbers of at-risk Hispanics, researchers should consider future primary diabetes prevention research locations in areas with higher prevalence of diabetes among Hispanics, such as Florida, and Puerto Rico. Furthermore, researchers should be encouraged to use more rigorous designs to evaluate interventions; in particular, larger studies involving multiple groups in multiple locations.

In terms of community-based settings, church-based interventions were well received and compatible with the Hispanic cultural value of spirituality. Although the interventions did not explore relationships between church-based settings and/or spirituality and outcomes, it is possible that incorporating spirituality into interventions may influence self-efficacy for health behavior change. Further research should explore the effects church and faith-based settings may have on health behavior change outcomes, the infusion of spiritual messages and prayer, and the role, if any, spirituality plays in motivating health behavior change in Hispanic adults.

The current state of the science also identified gaps in knowledge about what impact diabetes threat content may have on health behavior change in this high risk population.

Diabetes threat and health threat perceptions were not addressed in these studies. However, it is

possible that interventions that increase perceptions of diabetes threat (i.e., severity and susceptibility) may help motivate behavior change. Aiming to increase these perceptions should be combined with appropriate skill building elements that provide participants with tools for dealing with health threat perceptions. Hence, it is recommended that future research examine the effects a diabetes health threat message may have on behavior change motivation.

In conclusion, diabetes risk is often an occult, but significant health problem disproportionately affecting Hispanics adults living in the US. Primary diabetes prevention interventions that match surface and deep structure levels of Hispanic culture are essential to corresponding with the needs of the population and determining program impact. The current state of the science is limited but promising, and further research concerning community-based, primary diabetes prevention for at-risk Hispanics is strongly recommended.

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## **CHAPTER THREE: RESEARCH STUDY**

### **Abstract**

This feasibility study presents the results of a faith-based diabetes prevention intervention for Puerto Rican adults who are at-risk for diabetes. A pretest-posttest, concurrent mixed methods design was used to test two diabetes prevention components—a health threat message and dietary skill-building exercises—that were culturally tailored for Puerto Rican adults. Wilcoxon matched-pairs signed rank test found significant increases or improvements in perceived diabetes severity, self-efficacy, and dietary patterns at posttest in comparison to baseline. Spearman’s rank correlations found moderate to strong relationships between key constructs and behavioral outcomes. The qualitative findings contribute to the understanding of participants’ perspectives relative to a diabetes health threat message, dietary skill building exercises, and the importance of incorporating cultural elements and spirituality in lifestyle behavior change programs to reduce diabetes risk in Puerto Rican adults. The intervention was well received and had an average attendance rate of 58%, supporting feasibility.

### **Introduction**

A chronic disease that affects one out of every eleven people in the United States (US), Type 2 diabetes (hereafter referred to as diabetes) poses an even greater threat to certain minority groups. Diabetes constitutes the seventh leading cause of mortality among the general US population, but ranks fifth in causes of mortality among Hispanics (Heron, 2013), who are twice as likely to develop diabetes as non-Hispanic Whites (Centers for Disease Control and Prevention [CDC], 2014). It is also a major contributing risk factor in a number of other chronic diseases with high morbidity and mortality rates (CDC, 2014). Hispanics are the largest and

fastest growing minority group in the US (Ennis, Rios-Vargas, & Albert, 2011), so the level of diabetes incidence within this population represents a growing and urgent health problem for the country.

Hispanics are a racially and culturally diverse ethnic population group representing 20 different Spanish-speaking countries (Lopez, Gonzalez-Barrera, & Cuddington, 2013), each with differing combinations of genetic backgrounds including European, African, and Native American ancestry (Hanis, Hewett-Emmett, Bertin, & Schull, 1991). The prevalence and risk for developing diabetes vary among Hispanic subgroups, and is partially attributed to the combined effects of genetics (Hanis et al., 1991) and distinct socio-cultural factors that affect health behaviors (Caballero, 2011).

In the US, Puerto Ricans exhibit the highest prevalence for diabetes of any Hispanic subgroup (CDC, 2014) and have among the highest risk for developing the disease (Reyes, Van de Putte, Falcon, & Levy, 2004). This within group disparity calls attention to the need for effective behavioral health interventions that focus on Puerto Ricans (Barrera, Castro, Strycker, & Toobert, 2013). To date, the bulk of diabetes-related research has focused primarily on Mexican Americans, and few studies have focused on Puerto Ricans at-risk for diabetes (Rosal, Borg, Bodenlos, Tellez, & Ockene, 2011). Hence, many of the diabetes prevention intervention approaches are not specific to Puerto Rican culture and do not address dietary preferences or language idioms. In addition, because 90% of people who are at-risk are not aware of their condition and susceptibility to diabetes (CDC, 2014), there is a need for interventions that educate and motivate at-risk individuals of the benefits of risk factor modifications and positive health behavior.

This paper reports the results of a preliminary faith-based, culturally tailored intervention that combines a health threat message and skill-building exercises (i.e., in food selection and preparation) to motivate behavior change in Puerto Rican adults at-risk for developing diabetes. This intervention was designed to supplement an existing diabetes prevention intervention targeting Hispanic adults.

### **Background**

Modification of lifestyle behavior by at-risk individuals has been shown to dramatically decrease progression to diabetes. Several randomized clinical trials have examined incidence of the disease in at-risk (pre-diabetic) individuals who participated in diabetes prevention programs aimed at changing diet and physical activity behaviors (Ahmad & Crandall, 2010). In contrast to members of control groups, who did not modify lifestyle behaviors, these individuals achieved reductions in diabetes incidence ranging from 31%-58% (Ahmad & Crandall, 2010). The largest of these clinical trials to date was the Diabetes Prevention Program (DPP), a multicenter study, incorporating a diverse multiethnic sample comparing three intervention treatment groups—control or placebo, intensive lifestyle change, and the anti-hyperglycemic medication, metformin—to measure the development of diabetes (Diabetes Prevention Program Research Group [DPPRG], 2002). Over a three-year period, the DPP provided lifestyle coaching and one-on-one counseling to the intensive lifestyle change group that encouraged participants to improve their overall diets by reducing fat intake, increasing fiber intake, and exercising 150 minutes per week. Achieving modest weight loss goals of 7%, the intensive lifestyle change participants had a 58% reduction in diabetes incidence (DPPRG, 2002).



The current recommended dietary standards for diabetes prevention include reducing fat and caloric intake, and increasing fiber (American Diabetic Association [ADA], 2014).

Additional overall dietary recommendations for diabetes prevention advise substituting vegetables, fruits, whole grains, legumes, and dairy products for carbohydrate sources that are high in fats, sugars, or salt (ADA, 2014).

### **Necessary Factors in a Prevention Intervention Program for Hispanics**

Researchers have been urged to translate effective diabetes prevention research interventions such as the DPP to real world, community-based settings (Chin et al., 2007). Such real-world programs are needed to address disease incidence disparities among racial and ethnic minority groups and the alarming growth of diabetes among members of these groups. Attempts to tailor intervention programs specifically to Hispanic subgroups have consisted primarily of translating programs into Spanish (Gutierrez et al., 2014; Kramer et al., 2013; Millard et al., 2011; Ockene et al., 2012; Parikh et al., 2010; Ruggiero, Oros, & Choi, 2011; Vincent, McEwen, Hepworth, & Stump, 2014) and/or incorporating elements that are important to Hispanic culture, such as social support (Kutob, Siwik, Aickin, & Ritenbaugh, 2014), family participation (Parikh et al., 2010; Vincent et al., 2014), allowing time for warm and friendly interpersonal communications (Millard et al., 2011; Vincent et al., 2014), the use of customized Spanish recipes (Ockene et al., 2012; Ruggiero et al., 2011; Vincent et al., 2014), low-literacy materials (Vincent et al., 2014), and addressing cultural beliefs about diabetes prevention (Ockene et al., 2012).

Cultural relevance is a key element to the success of any diabetes related initiative designed to promote positive health behaviors within ethnically diverse populations (American

Association of Diabetes Educators [AADE], 2012a), so recognizing significant cultural variations within the Hispanic subgroups is necessary to achieve cultural relevance. Puerto Ricans and other Hispanics share cultural values concerning *familismo* (strong attachment and dependence on family and close friends; Marin & Marin, 1991), *personalismo* (communication style that focuses on warm and friendly interpersonal relationships; Andrés-Hyman et al., 2006; Marin & Marin, 1991), and spirituality, or identification with spiritual things (Campesino & Schwartz, 2006; Pew Research Center, 2012). However, Hispanic subgroups differ in key cultural areas, among them, language idioms and dietary preferences.

Although Hispanics share the same language, idioms are unique to each subgroup, and communications can be misunderstood when they involve a word having different meanings within different Hispanic subgroups. For example, the term *una china* for Puerto Ricans means “an orange.” However, for other Hispanics the term is *una naranja* means “an orange,” and the term *una china* means “a Chinese woman.” In addition, among Hispanics, Puerto Ricans are known for their fast speech and tendency to shorten words that then bear little resemblance to the original Spanish word.

Socio-cultural factors also heavily influence dietary practices, a major contributing risk factor for diabetes (Caballero, 2011; Sanjur, 1995), and traditional Hispanic dietary preferences vary according to subgroup. For example, Puerto Ricans tend to prefer mild flavored foods consisting primarily of refined carbohydrates (white rice), excess fats, starchy root vegetables, limited intake and varieties of vegetables, and high-sodium seasonings (Syracuse, 2010b). Mexicans tend to prefer spicy foods consisting primarily of corn products, beans, excess fats, and limited intake of fruits and vegetables (Syracuse, 2010a). Hence, a diabetes prevention

intervention developed specifically for Mexican Americans would not generalize to Puerto Ricans without adaptations to language and diet.

Most intervention programs involving Hispanics have concentrated solely on the lifestyle behaviors that constitute major risk factors for diabetes and so have promoted changes in diet and physical activity only. Few have reported on attempts to educate at-risk individuals in disease severity and susceptibility, which research indicates are central motivators in preventive health behaviors (Leventhal, Weinman, Leventhal, & Phillips, 2008; Rosenstock, Strecher, & Becker, 1988). However, because the nature of diabetes risk is occult, individuals' perceptions of their susceptibility and consequences of developing the disease may be inaccurate, and so fail to promote feelings of urgency in instituting requisite behavior modification.

A study examining awareness of diabetes risk and prevention strategies among low-income, non-diabetic, primarily Dominican and Puerto Rican Hispanics found this group to have little or no awareness of diabetes risk factors (Rosal et al., 2011). On the other hand, another study conducted in Mexico found diabetes risk perceptions to be associated with the preventive behavior of blood glucose screening in non-diabetics (Lavielle & Wachter, 2014). Thus, perceptions of diabetes risk appear to be largely absent among some Hispanics. However, including content about diabetes severity and susceptibility in prevention interventions may increase risk perceptions and so motivate engagement in preventive health behaviors.

Another essential part of a diabetes intervention program is building self-efficacy with respect to dietary behavior, which is a ubiquitous key component in effective diabetes prevention interventions (Ahmad & Crandall, 2010). Evidence-based guidelines recommend that diabetes interventions incorporate healthy dietary skills content (AADE, 2012b; AADE, 2012c) and interactive dietary skill-building exercises (i.e., food preparation) that have been found to

increase perceived dietary self-efficacy when combined with information about nutritional content (Carpenter, Finely, & Barlow, 2004; Condrasky, Hegler, & Sharp, 2011; McMurry et al., 1991; Levy & Auld, 2004). Such learning experiences can be vicarious (observation of someone engaging in a behavior) or direct (personally experienced; Bandura, 2006).

As discussed above, prevention intervention programs aimed at Hispanics, particularly Puerto Ricans are needed, but implementation faces significant challenges, some of which can be addressed by incorporating elements largely ignored in previous programs. These include addressing the unique socio-cultural makeup of Puerto Ricans, including language and traditional diet; incorporating content about diabetes severity and personal susceptibility as motivation for change; and promoting self-efficacy in dietary behavior change through skill building exercises.

### **Theoretical Framework**

This study used a theoretical framework that integrated key constructs from the extended parallel process model (EPPM; Witte, 1992) and social cognitive theory (SCT; Bandura, 1977). The framework provided support for culturally tailored intervention components of a health threat message and skill building exercises for Puerto Ricans, to increase the likelihood of motivating dietary behavior change (Mier, Ory, & Medina, 2010). The key constructs were measureable and included severity and personal susceptibility, self-efficacy, and factors of acculturation and spirituality that influence behavior change actions (Figure 1 in Chapter one).

In the EPPM, health threat message elements include severity and susceptibility content pertaining to personally relevant harm or danger (Witte, 1992). Health threat messages are messages intended to be persuasive or motivating and aim to increase perceptions of severity and susceptibility, resulting in a greater likelihood of behavior change. Cognitive assessment of a

health threat message leads to perceptions or beliefs about the severity or seriousness of the threat, and perceptions or personal beliefs pertaining to the likelihood that one will experience the threat. Health threat messages are most effective in health promotion and disease prevention when they combine high threat messages (severity and susceptibility) with high efficacy messages (self-efficacy and response efficacy; Maloney, Lapinski, & Witte, 2011; Witte & Allen, 2000).

In SCT, self-efficacy is a person's belief in his/her ability to perform a particular behavior (Bandura, 1977). Self-efficacy is a major determinant in behavior change (Strecher, DeVellis, Becker, & Rosenstock, 1986) and increases through skill building exercises that may be direct or vicarious (Bandura, 2006). Combining hands-on dietary skill building exercises with information about nutritional content is recommended for increasing self-efficacy in dietary behavior change interventions (Carpenter, Finely, & Barlow, 2004; Condrasky, Hegler, & Sharp, 2011; McMurry et al., 1991; Levy & Auld, 2004).

Acculturation and spirituality are factors that may influence the relationship between outcomes (i.e., severity, susceptibility, and self-efficacy) and behavioral change (see Figure 1). Acculturation is a process by which members of one cultural group adopt customs and behaviors of another cultural group (Perez-Escamilla & Putnik, 2007). In Puerto Ricans, acculturation is the extent to which an individual identifies with characteristics of Puerto Rican or Anglo-American cultures (Cortes Rogers, & Malgady, 1994). Research on acculturation and diet in Hispanics is limited and has produced conflicting findings, contributing to a poor understanding of the influence acculturation has on diet (Perez-Escamilla & Putnik, 2007). For example, higher levels of acculturation have been associated with both less healthy dietary behaviors in Mexicans immigrants (i.e., less intake of fruits and vegetables and higher intake of fat and sugar;

Neuhauser, Thompson, Coronado, & Solomon, 2004) and with healthier dietary behaviors in Puerto Rican and Dominican elders (i.e., higher intake of fruits and vegetables; Lin, Bermudez, & Tucker, 2003). These differences may be attributed to a number of factors including country of origin, age, socioeconomic status (Perez-Escamilla & Putnik, 2007), and methodological differences in scales used to measure acculturation (Negy & Woods, 1992). Thus, it is important to examine the role acculturation may have on diet in Puerto Ricans, to facilitate a better understanding that may inform dietary behavior change interventions.

Spirituality is a belief and/or relationship with God or a higher power that assigns meaning to life, and may or may not be associated with religion (Musgrave, Allen, & Allen, 2002). Puerto Ricans view spirituality or identification with spiritual things as a source of empowerment that is important to health and well-being (Campesino & Schwartz, 2006). Diabetes prevention studies in African American faith-based settings that address spirituality have reported significant positive health outcomes (Newlin, Dyess, Allard, Chase, & Melkus, 2011). Although research has not specifically explored the relationship between spirituality in Puerto Ricans and diabetes prevention behaviors, it is likely that spiritual content in a faith-based setting will play an important role, because 61% of Hispanics report that spirituality plays an important role in their lives (Pew Research Center, 2012). Thus, an intervention for Puerto Ricans that incorporates faith-based practices of scripture reading and prayer in a supportive faith-based environment may positively influence dietary behaviors (Musgrave et al., 2002).

The purpose of this preliminary study was to test the impact and evaluate feasibility of two key diabetes prevention components—a health threat message and skill-building exercises (food selection and preparation)—that were tailored to address socio-cultural factors of cultural relevance and spirituality for Puerto Rican adults at-risk for diabetes. The specific aims of this

faith-based study were to (1) examine the impact of a diabetes health threat message targeting Puerto Rican adults who are at-risk for diabetes,(2) evaluate the impact and feasibility of skill-building exercises (food selection and preparation), and (3) evaluate the influences of acculturation and spirituality on the intervention.

## **Methods**

### **Design and Setting**

This study used a one-group, pretest-posttest, concurrent mixed methods design to gather preliminary efficacy data and test feasibility of a health threat message and dietary-related skill building exercises delivered in a faith-based settings for Puerto Ricans at-risk for diabetes. Combining quantitative measures with rich qualitative measures for facilitates a deeper understanding and complementary aspects of the variables (Denzin, 1978; Johnson & Onwuegbuzie, 2004; Patton, 2001).

This faith-based study was conducted at a Spanish-speaking Protestant church in Central Florida (Altamonte Springs, Florida), where Puerto Ricans comprise a majority of the 800 parishioners that regularly attend one of two main services held on Saturday mornings. The Puerto Ricans population in Florida is highest in Central Florida, where they account for 11% of the overall population and 49% of the Hispanic population (US Census Bureau, 2010).

### **Sample and Recruitment**

A purposive rather than random sample was chosen because it was congruent with the feasibility aims and context of the study. Inclusion criteria for participation were: (1) self-identify as Puerto Rican, (2) ages 25-70, (3) attend the church at least twice/monthly, and (4) family history of diabetes or belief that they are at-risk for diabetes. Exclusion criteria were: (1)

diagnosis of type 1, type 2 diabetes, or gestational diabetes at any time, (2) current pregnancy, (3) participation in a diabetes education program within the past 12 months, (4) current medications that might alter blood glucose levels (i.e., corticosteroids, nicotinic acid, hypoglycemic agents), and (5) a random screening finger-stick blood glucose levels of 200mg/dL or greater. The sample size for this study was determined a priori using a power analysis that called for a sample of 28 to detect a moderate effect size ( $f = .25$ ), assuming a power of .80 and an alpha of .05.

Recruitment took place over six weeks using bilingual flyers that were inserted into church bulletins and distributed at church functions. The church ministers also announced the study during the church announcements. Potential participants self-identified and met with the researcher one-on-one before or after the service to learn about the study. After written consent was obtained, the participants were screened for eligibility using inclusion/exclusion criteria. If inclusion criteria was met, participants were asked to sign up for the meetings. A total of 24 participants enrolled in the study and signed up for the meetings.

## **Procedure**

Approval for the study was obtained from the University of Central Florida Institutional Review Board. The study was facilitated by a nurse researcher and two research assistants (RA: a nurse and a medical student), all of Caribbean descent and fluent in the Puerto Rican dialect. After completing human subjects research training, the RAs received 4-hours of training by the researcher on data collection procedures.



## ***Intervention***

Six weekly meetings lasting 60-90 minutes each included baseline data collection, the health threat message meeting, the skill-building meeting, focus group interviews, post-test, and potluck gathering (Table 2). For each meeting, the researcher and an RA used a warm, friendly approach (*personalismo*) to welcome each participant. Church appropriate, Spanish music was played in the background just prior to the start of each meeting. Spirituality was addressed by reading scripture that supported the importance of good health and a few words about health. This was followed by prayer before addressing the weekly content. Participants were encouraged to bring a family member or friend to the meetings (*familismo*). Each participant also received a folder for program handouts.

Table 2: Flow of Weekly Meetings

	<b><i>Week 1</i></b>	<b><i>Weeks 2</i></b>	<b><i>Week 3</i></b>	<b><i>Week 4</i></b>	<b><i>Week 5</i></b>	<b><i>Weeks 6</i></b>
Enrollment sign-up →	Baseline data	Health threat message	Skill building (food selection and preparation)	Focus group interviews	Post-test data	Potluck gathering

## ***Health Threat Message***

The health threat message was designed to raise perceptions about diabetes severity and personal susceptibility by presenting mortality and morbidity statistics for Hispanics that targeted data for Puerto Ricans; and discussing what diabetes is, the risk factors, signs and symptoms, and complications. A PowerPoint slide presentation depicted real life complications such as leg amputations, blindness, kidney disease and dialysis, neurological deficits post-stroke, heart

disease, and a shortened life span. Slides that were more graphic included photographs of gangrenous toes and amputations of lower extremities that were preceded by a warning that the photographs may be disturbing. The content on mortality and morbidity used strong, personal language (i.e., use of first person pronouns) about disease severity and susceptibility, and emphasized how diabetes affects individuals and families by re-telling stories of others with diabetes complications. Participants were asked to return the following week with a family member or friend to learn about prevention and were asked to collect and bring food labels from home.

### ***Skill-Building Exercises (Food Selection and Preparation)***

The skill building exercises emphasized the need to increase consumption of whole grains, fruits and vegetables, and decrease consumption of fats and sodium. The church's kitchen was used for activities that included food label reading exercises, food preparation demonstrations with information about nutritional content, opportunities to engage in hands-on food preparation, taste-testing, recipe sharing, and discussions about traditional recipes and ways to modify them to improve diet (i.e., switching from refined grains to whole grains, baking instead of frying, use of herbs to seasoning and reduce salt intake, and eating greener salads).

### ***Focus Group Interviews***

Two focus groups were conducted with 10 to 14 participants per group and lasted 60 minutes each. Each group included enrolled participants and a family member or friend. The researcher moderated the focus groups using a conversational style to ask open-ended questions that were guided by an interview guide designed to explore what participants thought about the

program. The interviews were digitally recorded and later transcribed verbatim. Field notes were also taken by the RA.

### ***Potluck Gathering***

Potluck meals are common in this church and the potluck gathering marked the celebratory end of the study. Participants were invited to bring a healthy dish they prepared at home to share with others. The attendees were encouraged to bring recipe cards for the dish they prepared. The recipe cards were collected and later compiled into a small booklet given to participants and attendees two weeks after the study ended.

### ***Data Collection***

Quantitative and qualitative data were collected concurrently. Baseline quantitative data were self-reported surveys of demographics, acculturation, spirituality, health threat perceptions (severity and susceptibility), dietary self-efficacy, dietary patterns, and biological measures of weight, BMI, and FBG. Posttest data included health threat perceptions (severity and susceptibility), dietary self-efficacy, dietary patterns, weight, BMI, and FBG (see Table 2). To obtain FBG levels, participants were instructed to refrain from eating or drinking anything except water for 8 hours prior to finger-stick glucose testing on the morning of data collection before church began. Following FBG testing, participants were offered healthy breakfast foods before they completed the written measures. Qualitative observational data were collected in field notes taken by the researcher and RA during each meeting using the field note guide. Additional artifact data (recipes) were collected.

## **Study Measures**

The measures were translated from English to Spanish and back translated from Spanish to English before they were pretested with a small sample of key bilingual informants that matched study inclusion criteria. This group suggested simpler terms and less formal language for use with Puerto Ricans. The final paper and pen surveys incorporated suggestions made by the pretest group. The measures had a less than sixth-grade reading level (i.e., Flesch-Kincaid Grade Level = 5.7) when checked by Microsoft Word.

### ***Screening Questionnaire***

A 10-item screening questionnaire was used to determine eligibility by asking ethnic heritage, age, church attendance frequency, family history of diabetes and family member(s) with diabetes, perceived risk of diabetes, pregnancy status, diabetes diagnosis, history of diabetes education in the past year, medications currently taking or taken within the past 30 days. The AccuChek Aviva<sup>®</sup> blood glucometer was used to test random and fasting finger-stick blood glucose levels. Precision and accuracy of the AccuChek Aviva<sup>®</sup> was 73%, and outperformed other commonly used glucometers for hospitalized patients (Voulgari & Tentolouris, 2011).

### ***Demographics***

A five-item demographic survey was used to characterize the sample by birthplace, age, gender, relationship status, education, and health insurance status. The demographic items were translated into Spanish by the researcher and back translated into English by a key bilingual informant.

### ***Acculturation***

Acculturation was measured using 20-item Puerto Rican Biculturalism Scale to assess acculturation in both Puerto Rican and American cultures (Cortes, Rogler, & Malgady, 1994). The items asked about language preference, values, ethnic pride, food preferences, and child-rearing practices. Minor revisions were made to the directions: two questions that had a two-sentence question asking about raising children were revised to include a lead in question, “Do you have children?” followed by “Yes” or “No” item stem question; and two item stems were revised from, “How many days a week would you like to eat (American or Puerto Rican) food?” to “How often do you enjoy (American or Puerto Rican) food?” Ten questions asked about involvement in American culture and 10 questions asked about involvement in Puerto Rican culture. Response options rated agreement on a 4-point scale. Scores were summed and higher scores suggested a higher degree of acculturation to the culture measured. Cronbach’s alphas for the revised version of the scale were .64 for American culture and .63 for Puerto Rican culture in this sample. These reliability scores were lower than previous scores reported in the literature (American culture  $\alpha = .78$  and Puerto Rican culture  $\alpha = .78$ ; Cortes et al., 2003) and may have been affected by wording revisions.

### ***Spirituality***

The Daily Spiritual Experience Scale (DSES) is a 16-item scale that was used to describe and measure spirituality (Underwood & Teresi, 2002). The DSES measures everyday spiritual experiences characterized by subjective feelings related to awareness of transcendent connections and includes constructs of awe, gratitude, and mercy (Underwood, 2011). Response options were rated on a 6-point scale for items 1-15 and a 4-point scale for item 16. Response

values were summed with higher scores indicating high spirituality levels (Underwood, 2006). Cronbach's alphas were .95 in this sample, and were consistent with previous scores reported in the literature ( $\alpha = .89-.95$ ; Underwood, 2011).

### ***Health Threat***

Perceptions of severity and susceptibility were measured using a 12-item Risk Behavior Diagnosis Scale (RBD; Witte, McKeon, Cameron, & Berkowitz, 1995). The RBD scale measured the impact of the health threat message with response options rated on a 5-point scale with 3-items for perceived severity, 3-items for perceived susceptibility, 3-items for self-efficacy, and 3-items for response efficacy. Responses were summed for each perceived severity and susceptibility and higher scores indicated higher perceptions of severity and susceptibility. The scale was translated into Spanish by the researcher and back translated into English by a key bilingual informant. In this sample, Cronbach's alphas for severity were .90-.98, and .75-.87 for susceptibility, and were consistent with previous scores reported in the literature (severity  $\alpha = .88-.91$  and susceptibility  $\alpha = .85-.91$ ; Gore & Bracken, 2005).

### ***Dietary Patterns***

The Latino Dietary Behaviors Questionnaire (LDBQ) was used to assess eating patterns in Hispanics with diabetes (Fernandez, Olendzki, & Rosal, 2011). Minor revisions were made to simplify wording. For example, "How often do you eat regular white rice or white bread (not whole grain)?" was revised to "How often do you eat white rice or white bread (not brown rice or whole grain bread)?" Six items were added (for a total of 19-items) to assess frequency of green vegetables consumption (not including iceberg lettuce); other vegetables (not including potatoes, tomatoes, or corn); fresh fruits or berries; frequency of eating home cooked meals; and

intake of desserts and sweets with regular sugar or honey. All revisions were translated to Spanish by the researcher and back translated into English by a key bilingual informant. The response options in this measure varied with items 1-8 using a 6-point scale, items 9-17 used a 4-point scale, item 18 used a 3-point scale, and item 19 used a 4-point scale. Seven items were reverse scored for analysis. Cronbach's alphas for the total scale in this sample were (.50-.60) and were only slightly improved from the Cronbach's alphas previously reported in the literature (.47-.48; Fernandez et al., 2011).

### ***Dietary Self-Efficacy***

The 23-item Eating Habits Confidence Survey (EHC) was used to measure dietary self-efficacy (Sallis, Pinski, Grossman, Patterson, & Nader, 1988). This measure was relevant to dietary behavioral constructs in this study. Minor revisions were made to some original item stems to reflect Puerto Rican culture and common eating related behaviors. For example, the term "party" was modified to "when eating with friends or co-workers" to reflect the cultural value of socializing (*personalismo*). Minor revisions were also made to be consistent with broader applications of healthy eating principles. For example, the item stem, "How sure are you that you can stick to your low fat, low salt foods when dining with friends and co-workers?" was modified to, "How sure are you that you can stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when eating with friends or co-worker?" Three items were added to be consistent with study goals of eating more varieties of vegetables, whole grain cereals instead of refined grains, and brown rice and whole grain bread instead of white rice and white bread. Response options were rated on a 5-point scale and scores were summed. Higher

scores indicated greater self-efficacy. Cronbach's alphas were .81-.95 in this sample and were consistent with previous scores reported in the literature ( $\alpha = .85-.93$ ; Sallis et al., 1988).

### ***Weight and BMI***

Weight was measured using a calibrated balance-beam scale with a stadiometer. BMI was calculated by multiplying the weight in pounds (lbs) by 703 and dividing the product by the height in inches squared ( $BMI = \text{weight (lbs)} \times 703 / \text{inches}^2$ ). To decrease potential errors, a standard BMI chart was used to double-check calculated values.

### ***Field Notes***

A structured field note guide was used to systematically document observations made during the meetings. The field notes contained specific descriptive details about (1) attendance, (2) setting, (3) participant interactions, narratives, and behaviors, (4) physical behaviors and body language, (5) affective responses of facial and verbal expressions, (6) the potluck gathering, and (7) reflections about what worked and did not work well with regards to each meeting.

### ***Interview Guide***

A semi-structured interview guide was used for the focus group discussions. Open-ended questions were asked about the health threat message and skill-building exercises in addition to questions about cultural relevance and spirituality. Health threat component questions explored perceptions of severity and susceptibility and gathered feedback for modifying the message by asking questions such as, what was learned or will be remembered about diabetes, and how the strength of the message was perceived (i.e., strong, weak, no effect). Skill-building component questions explored perceptions related to dietary changes and gathered feedback for modifying



the skill building component by asking about facilitators and challenges to dietary change. Spirituality questions explored what role participants thought spirituality played in a faith-based program. Cultural relevance questions explored cultural fit of language, traditional foods used in skill building, and incorporation of cultural values such as *familismo* (inviting family and friend to attend) and *personalismo* (warm greetings). Finally, questions explored what they liked best or least about the overall program, program features they would add or change, and what else about diabetes they would like to learn.

### ***Feasibility Assessment Criteria***

Three criteria were used to assess feasibility: (1) attendance, (2) perceived barriers to attending, and (3) participation. Attendance was assessed in percentages by dividing the number of participants present by the total number of study participants. Perceived barriers to attending was assessed by asking participants why they thought other people were not coming (if absent), and what they liked best or least about the program. Participation was measured by observing participants verbal and non-verbal interactions recorded in the field notes.

### **Data Management and Analysis**

Descriptive statistics (frequencies, mean, median, range, standard deviation, as appropriate) were used to characterize the participants at baseline. Due to the sample size ( $n < 25$ ) and non-normal data distribution, nonparametric tests were indicated. A Wilcoxon matched-pairs signed rank test was used to compare baseline and posttest perceptions of severity and susceptibility, dietary self-efficacy with behavioral outcomes of dietary patterns, weight, BMI, and FBG. Spearman's rank order correlation coefficients were used to investigate relationships between posttest perceived severity and susceptibility, posttest dietary self-efficacy,

acculturation, and spirituality with posttest behavioral outcomes of dietary patterns, weight, BMI, and FBG. Cronbach's alphas were computed and compared to previous scales. Analyses were conducted using SPSS software for Windows version 22 (SPSS IBM Inc.) and statistical significance was defined at a  $p$  value  $< .05$ .

After reviewing the qualitative data (field notes, focus group transcripts, reflective memos, and artifacts), the researcher identified common themes using an iterative process of comparison, sorting, and reducing data for selective coding. Selective coding was used in this research to describe participant perceptions of the intervention. An audit trail was retained to provide a description of steps taken to manage and analyze the data.

## **Results**

### **Demographic Characteristics**

Twenty-four participants enrolled in this study that was conducted between November and mid-December 2013 (Table 3). All of the participants self-identified as being Puerto Rican, with most born in Puerto Rico (75%). The sample was predominately female (70.8%) with an average age of 55.5 years. A majority of the participants were married (70.8%) and had health insurance through their employer (50%) or Medicare (25%). Only three participants reported no health insurance. One-third of the sample were college educated (33.4%) and only 12.5% had less than a high school education. Regular church attendance was high with 58.3% of the sample reporting attendance several times a week. Most participants had a family history of diabetes (87.5%), and a majority of those had a parent with diabetes (58.3%). More than two-thirds of the sample (66.7%) believed they were at-risk for diabetes.

Table 3: Demographic Characteristics of the Participants

	<b>N = 24</b>	<b>% or SD</b>
<b>Gender</b>		
Female	17	70.8%
Male	7	29.2%
<b>Age</b>		
Mean years	55.5 years	13.71
Median	60 years	
Range	26 -70 years	
Puerto Rican heritage/ancestry	24	100%
<b>Birthplace</b>		
Puerto Rico	18	75%
A state in the United States	6	25%
<b>Marital Status</b>		
Married	17	70.8%
Divorced	5	20.8%
Widowed	1	4.2%
Never married	1	4.2%
<b>Education</b>		
Less than high school	3	12.5%
High school or G.E.D.	5	20.8%
Some college, no degree	5	20.8%
Trade, technical, or vocational	3	12.5%
Associate's degree	3	12.5%
Bachelor's degree	4	16.7%
Master's degree	1	4.2%
<b>Health insurance</b>		
Through employer	12	50%
Medicare	6	25%
Medicaid	1	4.2%
Other	2	8.3%
No	3	12.5%
<b>Church attendance</b>		
Several times a week	14	58.3%
Once a week	5	20.8%
Twice a month	1	4.2%
< Twice a month	4	16.7%
Family history of diabetes	21	87.5%
Parent with diabetes	14	58.3%

	<b>N = 24</b>	<b>% or SD</b>
Believe they are at risk for diabetes		
Yes	16	66.7%
No	8	33.3%

## **The Impact of the Intervention**

### ***Health Threat Message***

Qualitative themes that emerged from the data were the reality of life with diabetes and personal susceptibility. The health threat presentation was viewed by a majority of the participants and only one person turned her head and covered her eyes. Active engagement in the health threat meeting was exhibited by lively discussions and note taking. The discussion centered around the reality of diabetes complications and several expressed surprise at how bad diabetes could be, and how awful it would be to live without legs or sight. One participant viewed diabetes as a “*muerte lenta*” (slow death). Experiences were shared about living with diabetic family members. For example, one woman shared how her mother has “bad” diabetes requiring dialysis, and how that impacts the entire family. Focus group data revealed that participants felt it was important, “to hear or see what diabetes could lead to, and its seriousness to help them prevent it.” A Wilcoxon matched pairs signed-rank test revealed that perceived severity increased significantly on a 5-point scale from baseline (median = 9.0) to posttest (median = 12.0; difference between medians = 3.0), with a 95% Hodges-Lehman confidence interval (CI) for median differences = 1.75 (1.5-3.0),  $z = 3.496$ ,  $p < .01$  (Table 4).

The discussion about susceptibility was less than the discussion about severity, and tended to engage participants who knew they had pre-diabetes or had a diabetic family member with complications. For example, one man with known pre-diabetes shared how he lost 100

pounds over the past year to reduce his risk. A Wilcoxon matched pairs signed-ranks test found no significant changes in perceived susceptibility ( $z = .96, p = .34$ ; Table 4). Additional analyses using Spearman's rank correlations revealed moderate to strong, negative relationship between perceived severity and weight ( $r_s = -.44, n = 24, p = .03$ ). However, no other significant relationships were found between perceived severity and susceptibility and behavioral outcomes of dietary patterns, weight, BMI, or FBG (Table 5).

### ***Skill-Building Exercises (Food Selection and Preparation)***

The qualitative analysis for skill-building exercises found this content to be well received. Data centered around positive feelings towards the food label reading, use of traditional foods, and the familial atmosphere that was conducive to mutual sharing. Feedback from the label reading activities was summed up by one participant who said, "I learned to read food labels and figure out portion sizes and fat, sugar, and salt content which I did not know how to before." About half of the participants brought food labels from home to review. While sampling the foods during these exercises, discussions among participants focused on how to modify traditional dishes to be healthier and still retaining "*buen sabor*" (good flavor). There was an atmosphere of mutual sharing as they talked among themselves and with the research staff. During the focus groups, several participants stated that they had "already started making changes at home, by switching from white rice to brown rice or quinoa," and their family really liked the food. Some mentioned that dietary changes can be challenging because "if the family does not like the food, so it is important to keep similar flavors." The potluck gathering was also well attended and all of the participants present brought a dish, with nearly one-third bringing a

recipe card to share. Analysis of the recipes, revealed most were healthy versions of Puerto Rican and American foods.

The quantitative results using a Wilcoxon matched pairs signed-rank test found a statistically significant change in the 5-point scale of dietary self-efficacy from baseline (median = 109) to posttest (median = 110; difference between the medians = 1.0) with a 95% Hodges-Lehman CI for the median differences = 7.5 (2.5-12.5),  $z = 3.05$ ,  $p = .002$  (Table 4). In addition, the Spearman's rank correlation revealed a moderate, positive relationship between dietary self-efficacy and healthy dietary patterns ( $r_s = .43$ ,  $n = 23$ ,  $p = .04$ ) and a moderate to strong, negative relationship between dietary self-efficacy and FBG ( $r_s = -.45$ ,  $n = 23$ ,  $p = .03$ ). Other behavioral outcomes were not significantly correlated with dietary self-efficacy (Table 5). Additional analysis using a Wilcoxon matched pairs signed-rank test found a significant change in dietary patterns from baseline (median = 24.5) to posttest (median = 25) with a small difference between the medians (.05) that had a 95% Hodges-Lehman CI for the median differences = 2 (.5-4.0),  $z = 2.321$ ,  $p = .02$  (Table 4).

### ***Influence of Acculturation and Spirituality***

The interactions between the research team and participants were warm and genuine (*personalismo*) exhibited in verbal and nonverbal communications. Several themes emerged from the qualitative data. Most of the participants spoke only Spanish and stated they preferred a Spanish-speaking, bicultural, bilingual person to lead out because, "They understand our culture and can be more effective." They also stated that being able to bring a family member or friend, "makes it easier to come if I can bring someone with me" (*familismo*). In discussing the importance of using traditional foods, a middle-age lady said, "Just because we are Puerto Rican,

we feel that we have to keep eating the same unhealthy foods our past generations ate, without making changes to improve our health. We know more today and should be open to change." Further probing of this statement found that nearly one-third of the focus participants agreed. Spearman's rank correlation revealed a strong positive relationship between the variables of American acculturation and weight ( $r_s = .51, n = 21, p = .02$ ). There were no other significant relationships found between acculturation to American or Puerto Rican cultures and behavioral outcomes measured (i.e., dietary patterns, weight, BMI, and FBG; Table 5).

Examination of the qualitative data identified several themes relevant to spirituality. Most participants viewed the inclusion of God or faith as essential to health behavior change programs conducted in a church, and quoted scripture to support their belief. They thought it was important to have each meeting start with scripture and prayer. Most agreed that health and faith go together and said they, "Would feel comfortable bringing a non-church member with them to a health meeting." Many also thought that a prevention program for at-risk Puerto Ricans could be conducted in a different community setting, but should include some form of spirituality, because it empowers lifestyle changes. Analysis of quantitative data did not find significant relationships between acculturation to American or Puerto Rican cultures and behavioral outcomes.

Table 4: Comparison of Baseline and Post-Intervention Measures

	<b>Baseline Median</b>	<b>Posttest Median</b>	<b>Difference between Medians</b>	<b>Standard- ized Test Statistic <i>z</i></b>	<b>P values</b>	<b>95% CI of Median Difference<sup>†</sup> (Lower, Upper)</b>
Perceived Severity	9	12	3	3.496	< .001*	1.75 (1.50-3.00)

	<b>Baseline Median</b>	<b>Posttest Median</b>	<b>Difference between Medians</b>	<b>Standard- ized Test Statistic z</b>	<b>P values</b>	<b>95% CI of Median Difference<sup>†</sup> (Lower, Upper)</b>
Perceived Susceptibility	5.5	6.5	1	.959	.337	.50 (-.50-2.00)
Dietary Self-Efficacy	109	110	1	3.050	.002*	7.50 (2.50-12.50)
Dietary Patterns	24.5	25	.05	2.321	.02*	2.0 (.50-4.0)
Weight	155.7	155.8	.1	-1.279	.20	-.80 (-1.4-.40)
BMI	28.6	28.55	.005	-1.109	.267	-1.25 (-2.5-.10)
FBG	98.5	100	1.5	-1.514	.13	-2.5 (-7.50-.50)

\*  $p < .05$ ; † = 95% Hodges Lehman confidence intervals (CI) of median difference.

Table 5: Spearman's Rank Order Correlations between Constructs and Post-Intervention Behavioral Outcomes

<b>Constructs</b>	<b>Dietary Patterns</b>	<b>Weight</b>	<b>Body Mass Index</b>	<b>Fasting Blood Glucose</b>
Perceived severity posttest	.31	-.44*	-.25	-.22
Perceived susceptibility posttest	.03	-.19	.36	.38
Dietary self-efficacy posttest	.43*	-.01	-.03	-.45*
American acculturation	.07	.51*	.30	.30
Puerto Rican acculturation	-.34	.10	.32	.22



<b>Constructs</b>	<b>Dietary Patterns</b>	<b>Weight</b>	<b>Body Mass Index</b>	<b>Fasting Blood Glucose</b>
Spirituality	-0.12	.08	-.17	.22

\*  $p < .05$

### **Feasibility**

The average attendance rate at each meeting was 14 participants (58%). In addition, an average of seven family members or friends attended each meeting. Attendance for the skill building (food selection and preparation) meeting was highest with 17 participants and an additional seven family members or friends attending. Barriers to attending meetings were forgetfulness, having to help with a church function, or other schedule conflicts. The program aspect they liked best was the entire skill-building meeting. What a few participants liked least about the programs was that it was for Puerto Ricans, stating “this type of program benefits all of us, even though we understand why Puerto Ricans are first because of their risk.” Nearly one-third of the participants agreed and said they would like to see this type of program made available to Hispanics of other subgroups that include a variety of Spanish foods, appropriate for most Hispanics. Overall, the program was well-received and fostered positive interactions amongst participants and the research staff.

### **Discussion**

This faith-based prevention intervention for Puerto Rican adults who are at-risk for diabetes tested the impact and feasibility of two novel components: a health threat message and skill building exercises (food selection and preparation) to motivate dietary behavior change. These findings indicate that the intervention had a positive impact on participants and

implementation was feasible. However, the constructs of diabetes severity and susceptibility in the health threat message may not have fully impacted feelings of urgency for dietary behavior change. Following the health threat message, perceptions of severity increased, suggesting that the message sufficiently stressed the seriousness of diabetes and its complications; but no significant changes in perceptions of susceptibility were found. This may be due to 66.7% of the sample that believed they were at risk for diabetes at baseline (see Table 3). It is therefore unclear if the lack of change in susceptibility was due to already high feelings of susceptibility or whether the susceptibility message was strong enough or perceived as personal enough. Nonetheless, the health threat message did not frighten participants or cause harm as evidenced by positive feedback regarding what they learned about diabetes severity, and higher participation rates at the following meeting. Except for a correlation between perceived severity and weight loss, no other significant correlations were found. Although statistically significant, this correlation may not be of clinical importance, as no significant changes in median weight from baseline to posttest were found due to the short time between the intervention and post-intervention data collection. Future studies using multiple groups of at-risk Puerto Ricans to compare perceptions of severity and susceptibility with different strengths (i.e., high and low) of a health threat message are recommended.

In this study, increases in dietary self-efficacy through skill building exercises (food selection and preparation) and improved dietary patterns were reflected in the diet changes participants reported in the qualitative data. Additionally significant correlations between dietary self-efficacy and improved dietary patterns and FBG may also be suggestive of diet changes reported in the focus groups. The festive atmosphere during the skill building meeting and potluck gathering involving food were important to participants and provided examples of

healthy Puerto Rican flavored foods. Future studies with additional skill building meetings and longer follow-up periods are recommended to examine the effects of dietary self-efficacy on dietary patterns.

A culturally tailored approach that included an all-Spanish program and Hispanic cultural values of *familismo*, *personalismo*, and spirituality was important to participants in this study. The strong positive correlation between acculturation to American culture and weight suggests a relationship between increases in American acculturation and weight. Although there were no other relationships between acculturation and behavioral outcome, the discussions that arose about the need to change traditional Puerto Rican diets to be healthier raises questions about other factors besides acculturation that may contribute to ease of changing diet, such as socio-economic status and age. Spirituality was viewed as an important feature of a health behavior change intervention for Puerto Ricans, regardless of the type of community-based setting (i.e., whether it be a church, a community center, or school).

Several limitations were identified in this study. First, despite active attempts to recruit an adequate sample, our sample was less than we planned. Obtaining an adequate Hispanic sample for diabetes prevention research is a common challenge reported in the literature (Parikh et. al., 2010). Moreover, it is likely that sample size was affected by the busy, end-of-the-year holiday season, and it may not have been an ideal time for a dietary behavior change program. Second, because few measures for quantifying dietary patterns in Hispanics exist, we used a measure that was developed for Hispanic with diabetes. The measure may not have fully captured the content presented in the program for at-risk Hispanics, even with the minor revisions that were made. Finally, this study was limited to Puerto Rican adults living in Central Florida and findings may not generalize to other Hispanics.

## Conclusion

To the best of our knowledge, previous studies have not tested the components of health threat perceptions and skill building exercises (food selection and preparation) to motivate behavior change in Puerto Rican adults who are at-risk for diabetes. Using a mixed methods approach helped capture the nuances of Puerto Rican culture in a faith-based setting to gain a better understanding about diabetes risk and prevention perspectives in adults that do not yet have diabetes. Hence, the current study contributes new insights to the science of diabetes prevention in Hispanics. Despite study limitations, findings from this feasibility study support future research trials on these components that involve larger samples of Puerto Ricans, using multiple faith-based community settings.

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## **CHAPTER FOUR: LESSONS LEARNED**

### **Abstract**

There is a need for diabetes prevention interventions for at-risk Puerto Ricans adults, who have the highest rate of diabetes among Hispanics. Few interventions involving Hispanics have been conducted in faith-based environments. In addition, interventions have overlooked health threat perceptions of disease severity and susceptibility as motivators in preventive health behaviors. This paper describes lessons learned from the experience of planning and implementing a faith-based, diabetes prevention study for Puerto Rican adults that incorporated cultural values and spirituality into two key components: a health threat message and dietary skill building exercises. The lessons learned focus on gaining access to a faith-based environment, recruitment, conducting preventive health research in a faith-based environment that incorporated spirituality into a health message, translation and cultural tailoring, delivering a diabetes health threat message, and minimizing risk when working with food.

### **Introduction**

It is estimated that 86 million people in the United States (US) are at-risk for diabetes and as many as 90% of them are unaware of their susceptibility for developing the disease (Centers for Disease Control and Prevention [CDC], 2014). Type 2 diabetes (hereafter referred to as diabetes), which accounts for 90-95% of all diabetes cases, is associated with high morbidity and mortality, and disproportionately affects Hispanics (CDC, 2014). As a rapidly growing population group representing diverse cultures and countries of origin, Hispanics in the US present complex research challenges and opportunities for addressing diabetes prevention strategies. Diabetes prevalence varies among Hispanics and is highest in Puerto Rican adults,

ages 20 years and older (CDC, 2014). Despite diabetes disparities for Hispanics and the higher prevalence in Puerto Ricans, few prevention interventions exist for adults of Puerto Rican heritage who are at-risk for diabetes (Rosal, Borg, Bodnelos, Tellez, & Ockene, 2011).

There is mounting evidence demonstrating the effectiveness of health behavior change in preventing or delaying the onset of diabetes (Ahmad & Crandall, 2010). Randomized clinical trials for diabetes prevention have recently been translated or adapted for interventions involving Hispanics to better suit feasibility in community-based settings and improve access to preventive health programs (Kramer, Cepak, Venditti, & Kriska, 2013; Kutob, Siwik, Aickin, & Ritenbaugh, 2014; Ockene et al., 2012; Ruggiero, Oros, & Choi, 2011; Vincent et al., 2014). Although a variety of community settings have been used, few have been conducted in faith-based environments. Faith-based environments are well suited for health interventions in Hispanic communities because weekly church attendance is high among Hispanic Catholics (40%) and Protestants (62%; Pew Research Center, 2014).

In addition, previous diabetes prevention studies involving Hispanics have been guided by several theoretical frameworks including social cognitive theory, theory of social support, stages of change theory, principles of patient-centered counseling, and community-based participatory research approaches, but have not focused on health threat perceptions of disease severity and susceptibility. Perceptions of severity (i.e., the belief about seriousness a health threat is) and susceptibility (i.e., the belief that one will experience the health threat) are central motivators in preventive health behaviors and are aroused by health threat messages (Leventhal, Weinman, Leventhal, & Phillips, 2008; Rosenstock, Strecher, & Becker, 1988; Witte, 1992).

Health threat messages are defined as persuasive messages aimed at increasing perceptions of severity and susceptibility (Maloney, Lapinski, & Witte, 2011), and have been

used in health promotion and disease prevention campaigns such as smoking cessation, breast cancer prevention, and drinking and driving prevention, among other preventive health concerns (Witte & Allen, 2000). Messages that focus on health threats are most effective at motivating behavior change when combined with efforts to increase efficacy (Witte & Allen, 2000). Self-efficacy is a concept related to an individual's belief in his/her ability to perform a particular behavior (Bandura, 1977) and increases through skill building exercises (Bandura, 2006; Strecher, DeVellis, Becker, & Rosenstock, 1986). A preventive health program that combines a health threat message with skill building exercises may help people persist in preventive health behaviors if motivated by appropriate threat perceptions.

This paper discusses lessons learned from a faith-based, diabetes prevention study that examined two key components: (1) a diabetes health threat message and (2) dietary skill building for Puerto Rican adults, at-risk for diabetes. The intervention was designed to motivate dietary behavior change as a supplement to an existing diabetes prevention intervention for pre-diabetic Hispanic adults (see Chapter Three). The experience of planning and implementing the intervention provided useful information regarding gaining access to a population of Hispanics of Puerto Rican heritage and the uniqueness of offering a preventive health program in a faith-based environment.

## **Background**

This section provides some background on Puerto Ricans and their health patterns relative to diabetes prevention as well as other contextual factors. It also briefly describes the study, its two key components, and summarizes the study findings.

## **Puerto Ricans and Contextual Factors**

Puerto Ricans are the second largest Hispanic subgroup in the US, representing 9.6% of the country's Hispanic population (Ennis, Rios-Vargas, & Albert, 2011). Unlike other Hispanics, Puerto Ricans that are born in Puerto Rico are considered American citizens by birth. When migrating to the US, they are likely to reside in the northeast or southern regions (Cohn, Patten, & Lopez, 2014). Although a large number of Puerto Ricans born in the US mainland reside in New York (23%), island-born Puerto Ricans are more concentrated in Florida (25%; Cohn et al., 2014). Recent social and economic problems in Puerto Rico have led to population declines on the island and increased migration to central Florida, making Orange County, Florida the third largest county for Puerto Ricans in the country (Cohn et al., 2014).

The Puerto Rican culture strongly influences the language, dietary preferences, and values of Puerto Ricans. The ability to speak Spanish is highly regarded by Puerto Ricans, with an emphasis placed on preserving the language. Although, many Puerto Ricans are bilingual speakers, English language skills of Puerto Ricans living in Florida are slightly lower (77%) than English language skills of Puerto Ricans living in other parts of the US (80%; Collazo, Ryan, & Bauman, 2010).

Dietary behaviors are closely tied to culture and are modifiable, contributing risk factors for overweight and obesity (Reyes, Van de Putte, Falcon, & Levy, 2004). The traditional Puerto Rican diet consists largely of mild flavored, refined, low-fiber carbohydrates, such as white rice and fried foods, limited intake of mostly starchy root vegetables, and high-sodium seasonings (Syracuse, 2010). As a result of poor dietary behaviors, Puerto Ricans, regardless of how long they have lived in the mainland US, have had a significant increase in overweight prevalence,

with US-born Puerto Ricans having had the highest increase (40.7%) as compared with recent (17.2%) and long-term (16%) immigrants (Singh, Siahpush, Hiatt, & Timsina, 2011).

Puerto Rican cultural values relevant to diabetes prevention interventions relate to family (*familismo*), communication styles (*personalismo*), and spirituality. *Familismo* is a core Puerto Rican value, characterized by strong social connections to the family unit, and cohesion among nuclear and extended family members and close friends. These close attachments foster a dependence on the family and a need to include the family in decision-making (Marin & Marin, 1991). *Personalismo* is a warm and friendly interpersonal communication style (Andrés-Hyman, Ortiz, Añez, Paris, & Davidson, 2006; Marin & Marin, 1991; Paniagua, 2005) that is strengthened by interactions that are attentive to verbal and non-verbal cues, involve shared mutual trust, and the use of appropriate touch (i.e., hugs, greetings with a kiss).

Spirituality is integral to Puerto Rican values and cultural matrix, and is defined as a belief in God or a higher power that gives meaning to life and may be independent of a religious affiliation (Musgrave, Allen, & Allen, 2002). For Puerto Ricans, spirituality is a source of strength that plays an important role in perceptions about health and well-being (Campesino & Schwartz, 2006). A large majority of Hispanics (73%) believe that God grants good health to those who have faith (Pew Hispanic Center, 2007). Puerto Rican families dealing with health issues often use their faith to communicate with God through prayer to petition support in making important health decisions (Coffey, Cloutier, Meadows-Oliver, & Terrazos, 2011). Spirituality and faith-based beliefs also allow Puerto Ricans to construct meaning out of illness and helps in reinforcing health-seeking behaviors (Allen et al., 2014).



### ***Health Intervention Settings***

The use of community-based settings for health interventions aimed at reducing health disparities among racial and ethnic minority groups, such as Puerto Ricans, is strongly recommended (Chin, Walters, Cook, & Huang, 2007; Health People 2020, 2013) because they offer convenience and familiarity where people live and permit the tailoring of interventions for hard-to-reach populations that are outside of conventional health care settings (Healthy People 2020, 2013). Faith-based environments, in particular, provide more than just a convenient physical space for conducting health interventions by facilitating positive social networks that aim to support and strengthen faith and spirituality (Asomugha, Derose, & Lurie, 2011; Campbell et al., 2007). Many faith-based organizations include health as part of their ministry and participate in community outreach health promotion programs, such as blood pressure screenings (Campbell et al., 2007). Partnerships with leaders of faith-based organizations also have the potential to disseminate health information beyond the congregation because the leaders are often trusted and respected in the community and have extensive connections and influence in other community organizations (Campbell et al., 2007).

### **The Intervention and Key Components**

This faith-based, diabetes prevention study was culturally tailored for at-risk Puerto Rican adults by incorporating Hispanic cultural values and spirituality into the intervention approach. The cultural values of *familismo* and *personalismo* were incorporated by inviting family members and friends to attend and engage in the study activities in an environment created to facilitate warm interpersonal communications by using active listening and allowing ample opportunities for mutual sharing. Spirituality was incorporated by using scripture reading

and prayer, and encouraging discussions about the role of faith in important life and health decisions. The study was conducted in a Spanish-speaking Protestant church located in the Orlando, Florida area. Further details pertaining to study methods and results have been previously reported (see Chapter Three). The two key components of the intervention are briefly described next.

### ***Diabetes Health Threat Message***

The diabetes health threat message aimed to raise perceptions about diabetes severity by defining diabetes, identifying its risk factors, differentiating between the two types of diabetes and causes, outlining signs and symptoms, and discussing its complications. To connect perceptions of diabetes severity to Puerto Ricans' perceived susceptibility, PowerPoint slides demonstrated diabetes morbidity and mortality statistics by showing graphic photos of diabetes complications, such as lower extremity infections, amputations, impaired vision and blindness, chronic kidney disease and long-term dialysis treatments, strokes and residual deficits, heart disease, and early death. The diabetes health threat message used first person pronouns to emphasize the effects of diabetes on individuals and their families, and shared experiences of other Puerto Ricans, who like the participants, were once at risk for diabetes, but developed diabetes and were burdened by long-term complications that they may have been able to prevent with health behavior changes.

### ***Dietary Skill Building***

The dietary skill building exercises in the diabetes prevention intervention stressed healthy dietary principles of increasing the intake of fiber, whole grains, fruits, and vegetables, and decreasing the intake of fats and sodium. Food label reading exercises in the intervention

demonstrated how to select food items by identifying serving sizes, calories, fat and cholesterol content, sodium, carbohydrates and sugar, fiber, and protein content. Food demonstrations coupled with information about nutritional content were followed by opportunities for participants to engage in hands-on food preparation and taste testing. Discussions about food centered on ways to modify traditional Puerto Rican recipes to make them healthier by selecting less processed foods, frying less by using other cooking methods, eating more green vegetables, eating foods with more fiber and less refined carbohydrates, and selecting and preparing foods with less salt. In addition, an end-of-program potluck gathering allowed participants to share a meal that they prepared at home.

### ***Brief Summary of the Study Findings***

The intervention results previously reported (see Chapter Three) found significant increases in perceptions of diabetes severity, improvements in dietary self-efficacy, and improved dietary patterns. Significant moderate to strong correlations of post-intervention measures were found between perceptions of diabetes severity and weight loss, dietary self-efficacy and dietary patterns, dietary self-efficacy and fasting blood glucose levels, and between American acculturation and weight. Qualitative data analysis, generated from field notes and focus group interviews, showed that the diabetes health threat message, dietary skill building exercises, and incorporation of cultural values and spirituality were well received. Both quantitative and qualitative data supported feasibility of the faith-based intervention that had an attendance rate of 58% each week and no attrition.

## **Lessons Learned**

The issues encountered during the course of planning and implementing the study provided valuable lessons that can be applied in future studies with Puerto Ricans in faith-based environments and perhaps more broadly. The lessons learned were identified in the field notes, reflective memos, and observations made by the research team. They include what was learned about gaining access to a faith-based environment, recruitment, conducting preventive health research in a faith-based environment that incorporated spirituality into a health message, translation and cultural tailoring, delivering a diabetes health threat message, and minimizing risk when working with food (Table 6).

### **Gaining Access**

Gaining access to a faith-based community for health promotion programs provides unique opportunities to impact health behaviors that are closely tied to beliefs systems and social norms. In this study, gaining access to the church required a referral from a friend in the Hispanic community to a key informant, who introduced the researcher to the associate minister. Contact with the key informant and minister separately, took place over a three month period prior to recruitment and involved providing written information about the proposed study, several phone discussions, and face-to-face meetings to become acquainted and discuss the study.

Characteristics of the key informant included (1) active church membership and familiarity with the culture of the church, (2) having held a position of influence as a church board member, and (3) having many social connections within the church. Prior to obtaining a letter of support for the study from the minister, the researcher attended the church as a guest of

the informant on several occasions and was asked to volunteer with blood pressure screenings as part of a community outreach health fair program conducted by the church. The researchers' interest in weekly church events and the health fair were important for building trust, and helped facilitate frequent communications about the study with the minister (gatekeeper). Lessons that emerged from working to gain access to a faith-based environment were (1) the importance of partnering with a key informant that was well connected, and (2) that trust was an essential component that takes time to develop.

## **Recruitment**

Participant recruitment was a challenge in this study. The *a-priori*, four-week recruitment plan included distributing study flyers, posting study information on church bulletin boards and the church website, and making weekly announcements from the pulpit with the minister, in addition to meeting with potential participants before, between, and after church services on Wednesdays and Friday evenings, and throughout the day on Saturday. The study aimed to recruit a sample of 40 to obtain a final enrollment of 28 eligible participants.

Recruitment did not proceed as planned. The busy church agenda and limited space provided no access to the church bulletin boards or website. Moreover, plans to make weekly announcements with the minister were reduced to only one announcement made by the minister during the fourth week of recruitment. Nevertheless, we were able to distribute black-and-white flyers on colored paper with information about eligibility, study purpose, location, and who was conducting the study. Because national pride runs high among Puerto Ricans and there is an affinity to their flag, the bilingual flyers (English on one side, Spanish on the other) included a picture of the flag. In addition to flyer handouts, two larger, colored versions of the flyers were

displayed on a small table in the foyer, where people entered and exited, and drew the attention of mostly Puerto Ricans and Cubans, who share the same flag design with reversed colors.

Additional recruitment challenges were the introduction of a new senior minister and the time of year. Although much of the planning for recruitment was done with the associate minister, there was a new senior minister introduced to the church just as recruitment began. Despite regular communications with both ministers that maintained support for the study, they were not able to fully endorse the study as planned, due to circumstances associated with the new senior ministers' unfamiliarity with the culture of the congregation. Further, planning to conduct a health behavior change study near the end of the year was not ideal timing, because of the busy church agenda and the approach of the Christmas holiday. In particular, several community outreach programs were conducted by the church during the recruitment period, such as evangelistic meetings, and a *Let's Get Moving Kids* event. Given the proposed timing for the study, planning meetings with the ministers resulted in the decision to proceed with recruitment concurrent with the multiple outreach programs, because they recognized the need for this kind of study and offered assurances of feasibility. However, as the study start date approached, only 12 people were enrolled and the researcher and ministers decided to extend recruitment two more weeks.

In spite of the challenges, combined strategies allowed successful recruitment of a sample of 29, of which 24 were eligible and enrolled in the study. The five that were ineligible did not meet inclusion criteria for age or ethnicity, but were encouraged to attend the study meetings as friends or family members of study participants. Even though the sample was smaller than planned, program satisfaction and acceptability were high and no participants were lost to attrition.

The lessons that were learned from recruiting in a faith-based environment were the need to be flexible beyond a set *a-priori* plan and work closely with the church planners or ministerial staff. We also learned that including a flag on the flyers drew necessary attention to the study and prompted discussions about the problem of diabetes in the Hispanic community, even though the black-and-white flyers may have confused Hispanics of Cuban heritage. Lastly, we learned that recruiting for a health behavior change study to be completed near the end of the year was not ideal timing, due to a busy church agenda and approach of the Christmas holiday season.

### **Conducting Preventive Health Research in a Faith-Based Environment and Incorporating Spirituality into a Health Message**

Spanish church congregations in the US are often composed of Hispanics from diverse backgrounds and countries of origin. Churches exist for the purpose of faith and spirituality and draw people together to form strong social networks. Because this study focused on Puerto Ricans, a few participants initially voiced concerns about excluding others that might be at risk for diabetes based on study criteria. Having the researcher provide a brief explanation of the increased problem of diabetes in Puerto Ricans and repeating the invitation for participants to bring family and friends helped resolve study exclusion concerns. Consequently, nearly one-fourth of the visitors accompanying participants were other Hispanics, and not Puerto Rican.

Incorporating spirituality into the intervention fit well with Puerto Rican participants in this faith-based environment, who were accustomed to openly discussing issues of faith. Churches are places where people come to deepen their faith in God and receive empowerment to address life's challenges. Many of the participants felt that the inclusion of spirituality in health programs with Hispanics (Puerto Ricans) dealing with health behavior change added an ability to empower, even if the intervention is not in a faith-based environment.

Spirituality is congruent with the scope of nursing practice that recognizes the interrelated physical, emotional, and spiritual dimensions of a person. As a researcher, it was important to be familiar with the underlying religious beliefs and worship norms for study participants in this environment that included prayer, scripture reading, and references to faith in God. Incorporating spirituality and supporting participants' beliefs did not present difficulties related to spotlighting the researcher's personal beliefs that might be similar or different than those of the participants. Instead, incorporating spirituality engaged participants in sharing their beliefs and how those beliefs related to health practices. For example, immediately following the scripture reading by the researcher, many participants made positive unsolicited remarks about the meaning of the scripture and God's will for their lives, including His desire that they be well. In addition, several participants also volunteered to pray aloud.

Four consistent themes emerged from conducting research in a Spanish faith-based environment that incorporated spirituality. First, faith-based environments are uniquely suited for health promotion interventions by providing social networks that are united by shared faith and value for spirituality. Second, spirituality was viewed as empowering for positive health actions. Third, spirituality informs health beliefs, thus nurses should not be afraid to incorporate the dimension of spirituality into health interventions for Hispanics. Lastly, nurses involved with community health promotion practice and research should be familiar with spiritual and health beliefs of their community participants and integrate these components into their interventions.

### **Translation and Cultural Tailoring**

Challenges related to the use of measures included the need for Spanish language materials and issues with data collection burden. The need for Spanish language materials



required translation of some of the measures from English to Spanish and back translation from Spanish to English (see Chapter Three). Following the translation process, the measures were pretested with a small group of bilingual informants that met study inclusion criteria. The pretest group suggested using simpler Spanish terms for easier understanding and the use of less formal language throughout the measures to be more agreeable with the Puerto Rican dialect. The measures took the pretest group between 17-22 minutes to complete. However, the study sample took nearly twice as long to complete the measures, ranging from 30-40 minutes. This may have been due to more distractions in a room with more people, which may have contributed to data collection burden. The time differences in completing the measures may have also been due to differences in literacy levels between the pretest group and study sample that were not measured in this study.

Despite pre-testing, three participants mentioned to the bilingual research assistant (RA) of Caribbean Hispanic descent that they felt burdened by filling out so many forms. Two of the three participants found the multiple page consent form to be the most burdensome. In these instances, the RA was able to assist participants by reading the consent forms and questions, freeing the participants to think about the content and complete the forms. All of the study materials were available in English and Spanish and three-fourths of the participants chose Spanish language materials over English ones.

A warm social atmosphere with church friends and family members created a culturally tailored approach that emphasized healthy dietary principles and discussions about ways to modify traditional Puerto Rican recipes. Participants enjoyed talking about their favorite dishes, and the end-of-program potluck gathering allowed them to proudly share their healthier versions of traditional recipes, such as rice and beans made with brown rice and less oil and salt.

Lessons learned from translating study materials were the importance and need to pre-test measures with informants that met inclusion criteria to have an accurate indication about the appropriate use of Puerto Rican terms and understandable common language. Relative to data collection was the importance of outlining procedures that anticipate data collection burden and ways to assist participants with fatigue associated with reading and the length of the measures.

### **Delivering a Diabetes Health Threat Message**

Designed to increase perceptions of severity and susceptibility for diabetes, the diabetes health threat message presented basic information about the disease and focused on the reality of life with diabetes complications. Following an advisory warning about the graphic nature of the photos shown in a PowerPoint slide presentation, participants were allowed to either step out of the room or cover their eyes, so they would not have to view the photos.

In addition to the photos, life experiences of Puerto Ricans living with diabetes complications were shared. This was followed by participants spontaneously sharing experiences of family members living with kidney failure that required dialysis treatments. Sharing these experiences opened the discussion to the topic of other diabetes complications.

Although graphic, the photos did not cause many participants to look away. Only one participant covered her eyes. We had expected more people would choose not to view the photos following the advisory warning. This may be because a majority of the participants had a family history of diabetes, and may have had exposure to similar real life complications. The overall response to the diabetes health threat message was positive, and study findings suggest there was a desire to learn more about diabetes and ways to prevent it. Lessons learned about presenting a diabetes health threat message from this study were that despite the possibility of turning

participants away or scaring them, photos and discussions about diabetes complications were welcome in a study population with exposure to people with diabetes.

### **Minimizing Risk When Working With Food**

Sharing food is customary in faith-based environments and is important for reinforcing socio-cultural connections. However, the increased risk for potential food-borne illnesses presented some concerns for research, particularly in regards to obtaining Institutional Review Board (IRB) approval. In this study, consultations with the IRB before proposal submission helped address study risk concerns and highlighted the need to outline detailed procedures for safe food handling. The detailed procedures addressed in the proposal included having access to designated hand washing sinks and directing participants to wash their hands prior to handling food during the dietary skill building exercises; providing access to hand sanitizer; detailed descriptions of sanitizing procedures for countertops and tables before and after handling food; and the use of individual food kits using plastic bowls that contained pre-washed and cut servings of store-bought ingredients for preparing recipes.

In addition, to decrease the potential for food-borne illnesses in the foods prepared by the participants to share during the potluck gathering, the IRB suggested presenting information about safe food handling. As part of the intervention leading up to the potluck meal, a short, safe food handling information session covered the topics of proper hand washing, avoiding cross-contamination by washing cutting boards and food prior to cutting, safe cooking temperatures, and proper refrigeration and food storage. The session was well received and subsequent feedback from the potluck gathering was very favorable with no reports of food-borne illnesses.

Lesson learned from submitting a successful research proposal that included food preparation were to consult with the IRB prior to proposal submission for assistance with minimizing potential food-borne risks to participants. Incorporating a safe food handling information session in an intervention working with food was essential, especially when more than one person was preparing food to share with others.

Table 6: Summary of Lessons Learned From Preventive Health Research in a Faith-Based Environment with Puerto Ricans

Main Themes	Lessons Learned
Gaining access to a faith-based environment	<ul style="list-style-type: none"> <li>▪ Partner with a key informant that is well connected in the faith environment</li> <li>▪ Establishment of trust is vital and takes time to nurture</li> </ul>
Recruitment	<ul style="list-style-type: none"> <li>▪ Be flexible to adjust <i>a-priori</i> plans</li> <li>▪ Development of collaborative partnerships with church planners are essential</li> <li>▪ Puerto Rican national flags on flyers attract attention</li> <li>▪ Careful consideration of time of year and church agenda is necessary, especially for health behavior change interventions</li> </ul>
Conducting preventive health research in a faith-based environment and incorporating spirituality	<ul style="list-style-type: none"> <li>▪ Faith-based environments provide unique support for preventive health interventions</li> <li>▪ Spirituality empowers health behavior change actions</li> <li>▪ Nursing should incorporate spirituality into health promotion education for Hispanics</li> <li>▪ Familiarity with spiritual beliefs and practices of participants are necessary</li> </ul>
Translation and cultural tailoring	<ul style="list-style-type: none"> <li>▪ Spanish-language translation does not guarantee correct intended meaning</li> <li>▪ Pretest all measures with a smaller group that meets study inclusion criteria</li> <li>▪ Anticipate data collection burden and include plans to minimize the burden</li> </ul>
Delivering a diabetes health threat message	<ul style="list-style-type: none"> <li>▪ Advisory warnings should precede the showing of graphic photos depicting disease states</li> <li>▪ Graphic photos and discussions about diabetes complications</li> </ul>

Main Themes	Lessons Learned
Minimizing risk when working with food	<p>were welcome</p> <ul style="list-style-type: none"> <li>▪ Consult the IRB prior to submitting a proposal that requires working with food</li> <li>▪ Plan to include safe food handling information as part of an intervention that includes an end-of-program potluck meal</li> </ul>

### Discussion

This paper describes the lessons learned from a faith-based diabetes prevention study that tested a diabetes health threat message and dietary skill building for pre-diabetic Puerto Rican adults aimed at motivating dietary behavior change. Research with Hispanics is benefited by an understanding of unique cultural contexts for diverse Hispanic subgroups. The research experience provided valuable lessons that could be applied in future studies involving Puerto Ricans in faith-based environments.

Research access to a faith-based environment requires an introduction by someone who is well acquainted with the church and has connections to the gatekeeper and or stakeholders, and requires time to establish trust and between the researcher and church decision makers. Community-based participatory research (CBPR) is an approach that has been used successfully in community-based diabetes prevention research with Hispanics (Gutierrez et al., 2011; Millard et al., 2011; Parikh et al., 2010; Ruggiero, Oros, & Choi, 2011). It involves collaboration between community stakeholders and researchers in the development and implementation of research that is relevant to the target population (Millard et al., 2011). Future studies with Puerto Ricans in faith-based environments may benefit from a CBPR approach that involves more stakeholders and not just gatekeepers.

Recruiting an adequate sample was a problem in this study, attributed to changes in church leadership and the time of year the study was conducted. Although study challenges relative to church leadership may have been unique, recruitment issues resulting in small sample sizes have been reported in other diabetes prevention studies with Hispanics (Parikh et. al., 2010). Ongoing communications with the ministers, creativity with flyer designs, and flexibility of the researcher were essential to increasing study enrollment and resulted in positive behavior change outcomes. Future studies conducted in faith-based environments should consider timing health promotion interventions during times of the year that are less busy for church agendas. Additional research in community and faith-based health promotion interventions with community or parish nurses may help minimize challenges associated with recruitment and improve access for Hispanics in need of preventive health education and services.

Although several diabetes prevention studies involving Hispanics at risk for diabetes have been conducted in faith-based environments, to the best of our knowledge, only one other study incorporated spiritual messages and practices into the intervention (Gutierrez et al., 2014). Based on the findings from this present study, spirituality and spiritual beliefs are important for researchers to incorporate in diabetes prevention interventions for Puerto Ricans because it is viewed as a way to empower health behavior change and can be a positive asset to preventive health interventions. These findings support previous research (Gutierrez et al., 2014) and extend the knowledge about incorporating spirituality into diabetes prevention intervention for Puerto Ricans.

Conducting research with mostly Spanish-speaking Puerto Ricans required additional time preparing study measures, using translation and back translation procedures. Measurement issues affect instrument validity, and errors can be minimized with pre-testing. In addition, the

potential for data collection survey burden requires vigilance to reduce potential errors and inaccuracies (Waltz, Strickland, & Lenz, 2010). Developing a culturally tailored diabetes prevention intervention approach for Puerto Ricans that fostered a supportive environment for mutual sharing was essential for optimizing dietary behavior change among participants and their invited guests.

Our success with obtaining IRB approval for working with food on a first submission was facilitated by the helpful suggestions of the IRB staff. Minimizing risk while working with food necessitated a detailed plan for reducing the potential for illness from food-borne pathogens. What was learned about specific steps to take for handling food handling, hand hygiene, and surface preparation may be of help to other researchers who would like to incorporate more direct hands-on food related activities in health behavior change interventions. To the best of our knowledge, no other diabetes prevention studies have discussed direct food preparation experiences with Puerto Ricans, IRB concerns, and resolutions resulting in IRB approval.

In conclusion, faith-based diabetes prevention programs for Puerto Rican adults that include a health threat message and skill building exercises are feasible to incorporate in interventions for Hispanics with who are at risk for diabetes. Future faith-based intervention research in diabetes prevention that examines health threat messages and dietary improvement strategies for Puerto Rican adults and other Hispanics who are at risk for diabetes is strongly recommended.

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## **APPENDIX A: PASTORAL LETTER OF SUPPORT**

## Forest City Spanish Seventh-Day Adventist Church

1226 Bunnell Rd • Altamonte Springs, FL 32714 • 407-293-2971

July 9, 2013

Sylvia Torres-Thomas, MSN, RN  
[REDACTED]  
[REDACTED]

Dear Sylvia,

As a pastor of the Forest City Spanish SDA Church, I am pleased that you want to partner with us on your project (*Diabetes Prevention Components in Non-Diabetic Puerto Ricans: A Feasibility Study*) to study diabetes prevention in Puerto Ricans. I too am concerned about the health of my congregation and would like to work to decrease diabetes. I firmly believe that God requires us to do what we can to maintain our health.

I understand that this project involves Puerto Ricans and is intended for those who do not yet have diabetes. Our congregation is well-suited for your project because we have a large number of Puerto Ricans in our congregation and community.

In partnering with you, our church is happy to provide the space necessary for this project including meeting rooms, a church kitchen and fellowship hall, and ample parking. We can work with you on inserting announcements in the church bulletin that you provide. In addition, we will support you in this project by promoting it to our members and visitors and will direct them to you for questions they may have. I am here to be of service and look forward to working with you on this very important project.

Sincerely,

  
Pastor Jorge Figueroa

## **APPENDIX B: IRB APPROVAL**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Human Research

From: **UCF Institutional Review Board #1  
FWA00000351, IRB00001138**

To: **Sylvia Torres-Thomas**

Date: **August 27, 2013**

Dear Researcher:

On 8/27/2013, the IRB approved the following human participant research until 8/26/2014 inclusive:

Type of Review: UCF Initial Review Submission Form  
Project Title: Diabetes Prevention Components in Non-Diabetic Puerto Rican Adults: A Feasibility Study  
Investigator: Sylvia Torres-Thomas  
IRB Number: SBE-13-09563  
Funding Agency:  
Grant Title:  
Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 8/26/2014, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a signed and dated copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewska, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 08/27/2013 02:26:40 PM EDT

IRB Coordinator



**APPENDIX C: RECRUITMENT FLYER (ENGLISH AND SPANISH)**

—Invitation to Participate in a Research Study—



## Diabetes Prevention Components in Non-Diabetic Puerto Rican Adults: A Feasibility Study

*Do you think you may be at risk for diabetes?*

### Who?

If you:

- Are Puerto Rican or of Puerto Rican heritage?
- Are between the ages of 25 and 70?
- Do NOT have diabetes?
- Have a family history of diabetes *-OR-* think you may be at risk for diabetes?
- Are willing to participate by attending 6 weekly meetings, have finger-stick blood sugar testing, and be part of focus group interviews?

Then, participation in this research study may be of interest to you.

### What is this study about?

This study tests and evaluates diabetes prevention program components for non-diabetic Puerto Rican adults. The results of this study will be used to create a more complete diabetes prevention program for non-diabetic Puerto Rican adults. No medications will be given. Participants will receive all aspects of the study free of charge.

### Where?

Forest City Spanish SDA Church  
1226 Bunnell Rd.  
Altamonte Springs, FL 32714

For more information or to volunteer, please contact:

**Sylvia Torres-Thomas, MSN, RN** (doctoral student in nursing at the University of Central Florida)

██████████  
██



This research study is being conducted as a dissertation requirement at the University of Central Florida, College of Nursing. For more information, you may contact Anne Norris, PhD, RN, FAAN at ██████████ or ██████████. **\*\*NOTE:** This research was approved by the UCF Institutional Review Board.

—Invitación para Participar en un Estudio de Investigación—



**Componentes de un Programa de Prevenir  
Diabetes en Adultos Puertorriqueños Sin  
Diabetes: Un Estudio de Viabilidad**

*¿Crees que puede estar en peligro de tener diabetes?*

¿Quién?

Si usted:

- ¿Es Puertorriqueño(a) o de herencia Puertorriqueño(a)?
- ¿Está entre las edades de 25 a 70?
- ¿No tienes diabetes?
- ¿Tiene familiares con diabetes -Q- si crees que puede estar en peligro de tener diabetes?
- ¿Está dispuesto(a) a participar, asistiendo a 6 reuniones semanales, tener pruebas de azúcar con sangre del dedo, y ser parte de grupos de entrevistas enfoque?

Entonces, participación en este estudio de investigación puede ser de interés para usted.

¿De qué se trata este estudio?

Este estudio prueba y evalúa componentes de programa de prevención de diabetes para Puertorriqueños adultos que no tienen diabetes. Los resultados de este estudio serán usados para crear un programa de prevención más completa para Puertorriqueños. No se dará medicamentos. Los participantes recibirán todos los aspectos del estudio de forma gratuita.

¿Adonde?

Iglesia Adventista de Forest City  
1226 Bunnell Rd.  
Altamonte Springs, FL 32714

Para participar o obtener más información, pongase en contacto con:

**Sylvia Torres-Thomas, MSN, RN** (estudiante de doctorado en enfermería en la Universidad de Central Florida)

██████████  
████████████████████



Este estudio de investigación que se adelanta como un requisito de tesis en la Universidad de Florida Central, escuela de enfermería. Para obtener más información, puede comunicarse con Anne Norris, PhD, RN, FAAN en ██████████ o ██████████.

\*\* NOTA: Esta investigación fue aprobada por la Junta de Revisión Institucional de UCF.

**APPENDIX D: STUDY CONSENT (ENGLISH AND SPANISH)**



## **Diabetes Prevention Components in Non-Diabetic Puerto Rican Adults: A Feasibility Study**

### **Informed Consent**

Principal Investigator: Sylvia Torres-Thomas, MSN, RN

Faculty Supervisor: Anne E. Norris, PhD, RN, FAAN

Investigational Site: Forest City Spanish Seventh-Day Adventist (SDA) Church  
1226 Bunnel Rd.  
Altamonte Springs, FL 32714

**Introduction:** Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to volunteer and take part in a research study. You are being invited to take part in a research study which will include about 40 people from the surrounding Orlando area. You have been asked to take part in this research study because you:

- Are Puerto Rican or of Puerto Rican descent
- Are between the ages of 25-70
- Have a family history of diabetes or think you may be at-risk for diabetes
- Are not currently pregnant
- Attend the Forest City Spanish SDA church at least twice a month

The person doing this research is Sylvia Torres-Thomas, a registered nurse and doctoral student in the College of Nursing. This research will also include the help of a research assistant who is also a registered nurse. Because the researcher is a graduate student, she is being guided by Dr. Anne Norris, a UCF faculty supervisor in the College of Nursing.

#### **What you should know about a research study:**

- Someone will explain this research study to you.
- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should take part in this study only because you want to.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.

- Whatever you decide it will not be held against you.
- Feel free to ask all the questions you want before you decide.

**Purpose of the research study:** The purpose of this study is to test and evaluate diabetes prevention program components for non-diabetic Puerto Rican adults. Even though diabetes is common among Puerto Ricans, there are no diabetes prevention programs specifically designed for Puerto Ricans who do not have diabetes. The results of this study will be used to create a more complete diabetes prevention program for Puerto Rican adults.

**What you will be asked to do in the study:**

Screening

To know if you are a candidate for this research study, we will ask you to complete a screening survey using a paper and pen form that asks 10 questions to help us determine if you are eligible to participate. Because blood sugar is an indicator of diabetes, we will also need to check your blood sugar by having the Principal Investigator or Research Assistant take a small drop of blood from your fingertip. You do not need to fast from eating for this test. The results of this blood sugar check will only be used to screen for study participation and is not a diagnosis of diabetes or medical treatment. These results will not be shared with anyone else.

- I give permission to check my blood sugar to know if I can take part in this study.
- I do **not** give permission to check my blood sugar to know if I can take part in this study.

If your blood sugar is greater than 200 mg/dL, you will not be able to participate in this study. Instead, you will be referred to see either your primary care doctor or health care provider, urgent care clinic, or a Shepherd's Hope health clinic for medical care follow-up.

If your blood sugar is 200 mg/dL or less you may take part in this study.

Study Process

Please note that during the study process, you do not have to answer any question you are not comfortable answering. It is also okay if you do not want to answer every question or complete every task. You will not lose any benefits if you skip questions or tasks. Below is a description and outline of the study process and what you can expect:

	Purpose for meeting	How to prepare for this week?	Procedures and details about what will be done	With whom will people in this study be interacting?
Week 1	Researchers will collect information	You will be asked not to eat or drink	1. Fasting blood sugar check. 2. Healthy breakfast foods and juice will be provided for	Principal Investigator, Research

	Purpose for meeting	How to prepare for this week?	Procedures and details about what will be done	With whom will people in this study be interacting?
	and measurements before the study begins.	anything except water for 8 hours before we check your fasting blood sugar with a drop of blood from your fingertip.	you after your blood sugar is checked. 3. You will be seated at a table and asked to fill out 6 separate paper and pen questionnaires with 5-23 questions each. 4. Measurements of weight and calculations of body-mass index will be done in private.	Assistant, and others in this study
Week 2	Presentation about diabetes in Puerto Ricans	Invite a family member or friend to attend with you.	Listen to a presentation. Interaction and discussion with researchers and other participants is optional.	Principal Investigator, Research Assistant, others in this study, and a family member or friend you invite to attend with you
Week 3	Presentation and interaction with food	1. Invite a family member or friend to attend with you. 2. Bring nutritional food labels from food items you have had during the past week.	1. Food label reading activities. 2. Healthy food preparation demonstrations. 3. Opportunity to prepare recipes using ingredients that will be provided, if you choose to. 4. Sampling of the food you prepare if you choose. 5. Discussion of how to prepare healthier PR foods. 6. Social time	Principal Investigator, Research Assistant, others in this study, and a family member or friend you invite to attend with you
Week 4	Focus group interviews	Think about what was presented during the last 2 weeks of meetings.	A group of 7-10 people sitting around a table to discuss what they thought about the program sessions, and how to make them more user-friendly.	Principal Investigator, Research Assistant, and others in this study



University of Central Florida IRB  
 IRB NUMBER: SBE-13-09563  
 IRB APPROVAL DATE: 8/27/2013  
 IRB EXPIRATION DATE: 8/26/2014

	Purpose for meeting	How to prepare for this week?	Procedures and details about what will be done	With whom will people in this study be interacting?
Week 5	Researchers will collect follow-up information and measurements	You will be asked not to eat or drink anything except water for 8 hours before we check your fasting blood sugar with a drop of blood from your fingertip.	<ol style="list-style-type: none"> <li>1. Fasting blood sugar check.</li> <li>2. Healthy breakfast foods and juice will be provided for you after your blood sugar is checked.</li> <li>3. You will be seated at a table and asked to fill out 3 separate paper and pen questionnaires with 12-23 questions each.</li> <li>4. Measurements of weight and calculations of body-mass index will be done in private.</li> </ol>	Principal Investigator, Research Assistant, and others in this study
Week 6	Potluck gathering	<ol style="list-style-type: none"> <li>1. If you would like, you can prepare a dish to share.</li> <li>2. Write your recipe on index cards provided.</li> </ol>	Social gathering time to interact, share food and recipes.	Principal Investigator, Research Assistant, others in this study, and a family member or friend you invite to attend with you

**Location:** The study will be held at Forest City Spanish SDA Church in Altamonte Springs, Florida.

**Time required:** We expect that you will be in this research study for 6 weeks. Each weekly session will last between 1 to 1½ hours each.

**Audio taping:** The focus group interview discussions will be audio-taped in order to capture what is said and ensure accuracy. If you participate in the study, you may request that the taping be paused at any time. You may choose how much or how little you want to speak during the group. You may also choose to leave the focus group at any time. No identifying information will be attached to the interviews. The audio-recording will be kept in a locked and safe place and will be destroyed after it has been analyzed.



**Risks:** The potential risks to taking part in this study are small to minimum and no greater than participation in daily activities. The risks are to confidentiality, temporary fingertip discomfort or pain, anxiety about diabetes, emotional distress, and possible upset stomach.

There are risks to confidentiality because of group participation. However, all participants will be directed to protect each other's confidentiality. The risk to confidentiality of survey questionnaire information is minimal because no names will be attached to the data or forms at any time, ensuring that participants' privacy will be protected.

There is a small risk that participants may experience temporary discomfort or pain from the blood sugar tests that will be done before the study, and at Weeks 1 and 5. However, the risk will be minimal because a small drop of blood will be obtained from the fingertip. If participants experience fingertip discomfort or pain, please tell the researcher and she will provide an ice bag to be applied until the discomfort or pain subsides.

There is a risk that seeing photographs about diabetes severity may make participants feel anxious or upset. However, all participants will be warned about the graphic nature of the photographs prior to showing them and will be given the option of closing or covering their eyes, or skipping the photographs by sitting in an adjacent room until the content is shown.

There is a risk that getting weighed will lead to emotional distress. We will try to minimize this by weighing all participants individually in a separate, private room behind a closed door. However, you do not have to be weighed if they do not wish to be weighed.

Although sharing prepared dishes at potluck gatherings is a common practice at Forest City churches and in the Hispanic culture, there is a small risk that sampling foods prepared during the study meeting (Week 3) or potluck gathering (Week 6) may cause an upset stomach for those who eat the food. The risk will be minimized by: (1) directing participants and the research team to hand-washing sink station before handling food, (2) having hand sanitizer available, (3) using proper food handling and refrigeration at the church, (4) sanitizing all surfaces that may come in contact with food, (5) having prior discussions and giving written instructions about proper food handling and safety, and (6) using separate "kits" containing store-bought, pre-cut ingredients and all supplies needed to make a serving size. Participants will also be reminded that they do not have to take part in food preparation during the meeting, sample food, or prepare a potluck dish if they do not want to take part in food activities.

**Benefits:**

We cannot promise any direct benefits to you or others from your taking part in this research. However, potential benefits you may experience from participating in this research are gaining knowledge about diabetes and improving your food selection and preparation skills.

Your participation may also benefit other Puerto Ricans adults and families that you may or may not know by helping us understand what to include and change in the diabetes components of a

health threat message about diabetes and food selection and preparation skills for use in a diabetes prevention program for Puerto Rican adults.

**Alternatives:** You can choose not to take part in this research study.

**Compensation or payment:** We will not pay you for the time you volunteer while being in this study. However, approximately two weeks following the last study meeting, all participants will receive a recipe booklet that includes recipes collected from those who chose to share recipes prepared during the research study as a token gift of thank you.

**Confidentiality:** We will limit your personal data collected in this study to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of UCF.

**Study contact for questions about the study or to report a problem:** If you have questions, concerns, or complaints, or think the research has hurt you, talk to:

- Sylvia Terres-Thomas, Doctoral Student in Nursing, College of Nursing at UCF, [REDACTED]
- OR-
- Dr. Anne Norris, Faculty Supervisor, College of Nursing at [REDACTED] or by email at [REDACTED]

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

**Withdrawing from the study:** Your participation in this research study is voluntary. It is up to you to decide if you want to take part in this study. If you decide to participate, you are free to withdraw at any time and without giving a reason. You are free to skip questions or activities if you choose.

Your signature below indicates your permission to take part in this research.

**DO NOT SIGN THIS FORM AFTER THE IRB EXPIRATION DATE BELOW**

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Signature of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of person obtaining consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of person obtaining consent



## **Componentes de un Programa de Prevenir Diabetes en Adultos Puertorriqueños Sin Diabetes: Un Estudio de Viabilidad**

### **Consentimiento Informado**

Investigadora Principal: Sylvia Torres-Thomas, MSN, RN  
Supervisora de la Facultad: Anne E. Norris, PhD, RN, FAAN  
Sitio de Investigación: La Iglesia Adventista de Forest City  
1226 Bunnel Rd.  
Altamonte Springs, FL 32714

**Introducción:** Los investigadores en la Universidad de Central Florida (UCF) estudian muchos temas. Para hacer esto necesitamos la ayuda de la gente que están desacuerdo de ofrecerse voluntariamente a participar en un estudio de investigación. Usted está invitado a participar en un estudio de investigación que incluirá a aproximadamente 40 personas del área de Orlando. Se le ha pedido a tomar parte en este estudio de investigación porque usted:

- Es Puertorriqueño(a) o de ascendencia Puertorriqueña
- Están entre las edades de 25-70
- Tiene familiares con diabetes o cree que puede estar en riesgo de diabetes
- No está actualmente encinta (embarazada)
- Asiste a La Iglesia Adventista de Forest City al menos dos veces al mes

La persona que está haciendo esta investigación es Sylvia Torres-Thomas, una enfermera registrada y estudiante de doctorado en el Colegio de Enfermería. Esta investigación también contará con la ayuda de una asistente de investigación, que también es una enfermera registrada. Debido a que la investigadora es una estudiante posgrado, está siendo dirigida por la Dra. Anne Norris, facultad de UCF en el Colegio de Enfermería.

#### **Lo que usted debe saber acerca de un estudio de investigación:**

- Alguien te explicará este estudio de investigación.
- Un estudio de investigación es algo para que el cual se ofrece.
- Si o no usted toma parte depende de ti.



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- Debe tomar parte en este estudio sólo porque quieres.
- Usted puede elegir no participar en el estudio de investigación.
- Puede consentir en participar ahora y más tarde cambiar de opinión.
- Cualquiera decisión que usted ase no se sostendrá contra usted.
- No dude en hacer todas las preguntas que quieres antes de decidir.

**Propósito de la investigación:** El propósito de este estudio es para poner a prueba y evaluar componentes de programa de prevención de diabetes para los Puertorriqueños adultos que no tienen diabetes. Aunque la diabetes es común entre Puertorriqueños, no hay programas de prevención de la diabetes expresamente diseñados para aquellos que no tienen diabetes. Los resultados de este estudio serán usados para crear un programa de prevención de la diabetes más completo para adultos Puertorriqueños.

**¿Qué se le pedirá que haga en el estudio:**

Determinar elegibilidad:

Para saber si usted es un candidato para este estudio de investigación, nosotros le pediremos que complete una encuesta de 10 preguntas mediante papel y pluma para ayudarnos determinar si es elegible para participar. Porque la azúcar en la sangre es un indicador de diabetes, también tendremos que tener la Investigadora Principal o Asistente chequear su nivel de azúcar con una gota pequeña de sangre de la yema del dedo. No es necesario ayunar de comer para esta prueba. Los resultados de este cheque de azúcar en la sangre comprobar sólo para la detección y participación en el estudio, no es un diagnóstico de diabetes o tratamiento médico. No vamos a compartir sus resultados con otras personas.

- Doy permiso para comprobar mi nivel de azúcar en la sangre para saber si puedo tomar parte en este estudio.
- No doy permiso para comprobar mi nivel de azúcar en la sangre para saber si puedo tomar parte en este estudio.

Si su nivel de azúcar es más alto que 200 mg/dL, no será capaz de participar en este estudio. En su lugar, usted será referido(a) a su médico, clínica de atención urgente, o clínica de Shepherd's Hope para atención médica.

Si su azúcar es de 200 mg/dL o menos, usted puede participar en este estudio.

Proceso de estudio

Por favor, tenga en cuenta que durante el proceso de estudio, no tiene que contestar a cualquier pregunta que usted no se siente cómodo(a) contestando. También está bien si no quieres contestar todas las preguntas o completar cada tarea. No perderá ningún beneficio si se salta preguntas o tareas. A continuación es una descripción del proceso de estudio y lo que puede esperar:



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	Propósito de la reunión	¿Cómo prepararse para esta semana?	Procedimientos y detalles sobre lo que se hará	¿Cuales son las personas con quien se reunirán?
Semana 1	Investigadores recogerán información y medidas antes del comienzo de el estudio.	Se le pedirá dejar de comer o beber nada excepto agua durante 8 horas antes de que comprobemos su azúcar en sangre en ayuna, con una gota de sangre de la yema del dedo.	<ol style="list-style-type: none"> <li>1. Prueba de azúcar en la sangre en ayuno.</li> <li>2. Desayuno saludable y jugo se proporcionara después de la prueba de azúcar</li> <li>3. Será sentado(a) en una mesa y se pedirá que conteste 6 cuestionarios con 5-23 preguntas cada uno.</li> <li>4. Medidas de peso y índice de masa corporal se hará en privado.</li> </ol>	Investigadora Principal, Asistente de Investigación, y otros en este estudio
Semana 2	Presentación sobre diabetes en Puertorriqueños	Invitar a un miembro de la familia o amigo asistir a con usted	Escuchar la presentación. Interacción y discusión con los investigadores y otros participantes es opcional	Investigadora principal, Asistente de investigación, otros en este estudio, y miembro de familia o amigo invitado a asistir con usted
Semana 3	Presentación e interacción con alimentos	<ol style="list-style-type: none"> <li>1. Invitar a un miembro de la familia o amigo asistir a con usted</li> <li>2. Traer etiquetas de los alimentos nutritivos que ha tenido durante la semana pasada.</li> </ol>	<ol style="list-style-type: none"> <li>1. Actividades de lectura de la etiqueta de los alimentos.</li> <li>2. Demostraciones de preparación de la comida sanas</li> <li>3. Oportunidad para preparar recetas con los ingredientes que será proporcionado, si usted elige.</li> <li>4. Probar la comida que ha preparado</li> <li>5. Discusión de cómo preparar alimentos más saludables</li> <li>6. Tiempo para compartir</li> </ol>	Investigadora principal, Asistente de investigación, otros en este estudio, y miembro de familia o amigo invitado a asistir con usted
Semana 4	Entrevistas de	Pensar en lo	Un grupo de 7-10 personas	Investigadora



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	Propósito de la reunión	¿Cómo prepararse para esta semana?	Procedimientos y detalles sobre lo que se hará	¿Cuales son las personas con quien se reunirán?
	grupo de enfoque	que se presentó en las últimas 2 reuniones semanales.	sentadas alrededor de una mesa a discutir qué piensan acerca de las sesiones del programa y cómo hacerlas más fácil de usar.	Principal, Asistente de Investigación, y otros en este estudio
Semana 5	Los investigadores recolectaran información de seguimiento y mediciones	Se le pedirá dejar de comer o beber nada excepto agua durante 8 horas antes de que comprobemos su azúcar en sangre en ayuna, con una gota de sangre de la yema del dedo.	<ol style="list-style-type: none"> <li>1. Prueba de azúcar en la sangre en ayuno.</li> <li>2. Desayuno saludable y jugo se proporcionara después de la prueba de azúcar</li> <li>3. Será sentado(a) en una mesa y se pedirá que conteste 6 cuestionarios con 5-23 preguntas cada uno.</li> <li>4. Medidas de peso y índice de masa corporal se hará en privado.</li> </ol>	Investigadora Principal, Asistente de Investigación, y otros en este estudio
Semana 6	Reunion de cena	<ol style="list-style-type: none"> <li>1. Si usted desea, puede preparar un plato de comida saludable para compartir.</li> <li>2. Escribe tu receta en tarjetitas proporcionado</li> </ol>	Tiempo de reunión social para interactuar, compartir comida y recetas.	Investigadora principal, Asistente de investigación, otros en este estudio, y miembro de familia o amigo invitado a asistir con usted

**Lugar:** El estudio va hacer realizado en La Iglesia Adventista de Forest City Spanish en Altamonte Springs, Florida.

**Tiempo requerido:** Esperamos que usted sea en este estudio de investigación durante 6 semanas. Cada sesión semanal durará entre 1 a 1½ horas cada vez.

**Grabaciones de audio:** Las discusiones de entrevistas del grupo de en enfoque serán grabadas en cinta para capturar lo que se dice y asegurar la exactitud. Si participa en el estudio, puede solicitar que la grabación se haga una pausa en cualquier momento. Usted puede elegir lo mucho

o lo poco que quieres hablar durante el grupo. También puede dejar el grupo de enfoque en cualquier momento. Ninguna información de identificación se unirá a las entrevistas. La grabación de audio se guardará en un lugar cerrado con llave y seguro y se destruirá después de que se ha analizado.

**Riesgos:** Los riesgos de tomar parte en este estudio son pequeños a mínimo y no mayores que la participación en las actividades diarias. Los riesgos son de confidencialidad, malestar o dolor temporal de la yema del dedo, ansiedad sobre la diabetes, angustia emocional, y posible malestar del estomago.

Hay riesgos de confidencialidad, puesto de participación en el grupo. Sin embargo, todos los participantes serán dirigidos a proteger la confidencialidad de cada uno. El riesgo para la confidencialidad de la información de los cuestionarios es mínimo porque ningunos nombres se adjuntan a los datos o formas en cualquier momento, asegurando que la privacidad de los participantes será protegido.

Existe un pequeño riesgo de que los participantes puedan sentir incomodidad o tener dolor temporalmente de las pruebas de azúcar en la sangre que se hará antes del estudio, y en las semanas 1 y 5. Sin embargo, el riesgo será mínimo porque se obtendrá una pequeña gota de sangre de la yema del dedo. Si los participantes experimentan dolor o molestia, por favor dígame a la investigador y le proporcionará y bolsa de hielo que se aplicará hasta que la molestia o el dolor disminuye.

Existe el riesgo de que al ver las fotografías sobre la severidad de la diabetes puede hacer que los participantes se sentirán ansiosos o preocupados. Sin embargo, todos los participantes serán avisados sobre que las fotos son gráficas antes de que aparezcan y se le dará la opción de cerrar o cubrir sus ojos, o saltar para sentarse en un cuarto contigua hasta que muestra el contenido de las fotos gráficas.

Hay un riesgo que pesarse lleve angustia emocional. Trataremos de minimizar este sentimiento en lo cual vamos a pesar todos los participantes individualmente en un cuarto separado, privado detrás de una puerta cerrada. Sin embargo, los participantes no tienen que ser pesado si no lo desean.

Aunque el compartimiento de platos preparados en reuniones de la comida es una práctica común en la iglesias de Forest City y en la cultura Hispana, hay un pequeño riesgo de que los alimentos preparados durante la reunión de estudio (Semana 3) o comida preparado por todos (Semana 6) puede causar malestar estomacal para todos los que comen la comida. El riesgo será minimizado por: (1) dirigir los participantes y el equipo de investigación a lavar sus manos antes de manipular los alimentos, (2) con desinfectante de manos disponibles, (3) mediante una adecuada manipulación de los alimentos y refrigeración en la iglesia, (4) desinfectar todas las superficies que pueden entrar en contacto con los alimentos, (5) haber conversaciones anteriores y dar instrucciones por escrito acerca de la manipulación de los alimentos, y (6) utilizando "kits" que contiene ingredientes comprados, pre-corte, y todos los necesarios para hacer tamaño de



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porción. También recordarán a los participantes que no tienen que tomar parte en la preparación de los alimentos durante la reunión, probar comida, o preparar un plato de comida si no quieren tomar parte en las actividades de la comida.

**Beneficios:**

No podemos prometer ningún beneficio directo a usted o a otros de su participación en esta investigación. Sin embargo, los beneficios potenciales que puede experimentar de participar en esta investigación es ganar el conocimiento sobre la diabetes y mejoran sus habilidades de preparación y selección de la comida.

Su participación también puede beneficiar a otros Puertorriqueños adultos y familias que usted conoce o no conoce por ayudarnos comprender qué es lo que hay que incluir y modificar en los componentes de la diabetes de una amenaza para la salud mensaje acerca de diabetes y selección de comida y conocimientos de preparación para su utilización en un programa de prevención de la diabetes para Puerto Rico adultos.

**Alternativos:** Usted puede elegir no participar en este estudio de investigación.

**Compensación o pago:** No le pagaremos para el tiempo que se ofrece para estar en este estudio. Sin embargo, aproximadamente dos semanas después de la última reunión de estudio, todos los participantes recibirán un libro de recetas que incluye recetas recogidas de los que decidieron compartir recetas preparadas durante el estudio de investigación como un regalo de gracias.

**Confidencialidad:** Vamos a limitar los datos personales recogidos en este estudio a las personas que tienen la necesidad de revisar esta información. No podemos prometer secreto total. Las organizaciones que pueden inspeccionar y copiar su información incluyen el IRB y otros representantes de la UCF.

**Contacto de estudio para preguntas sobre el estudio o relatar un problema:** Si tiene preguntas, preocupaciones o quejas, o cree que la investigación ha hecho daño a usted, diríjase:

- Sylvia Torres-Thomas, Estudiante de Doctorado en Enfermería, Colegio de Enfermería en UCF, [REDACTED] o por correo electrónico: stthomas@knights.ucf.edu
- O-
- Dr. Anne Norris, Supervisora de Facultad, Colegio de Enfermería, [REDACTED] o por correo electrónico: [REDACTED]

**IRB contacto acerca de sus derechos en el estudio o para reportar una queja:** Investigación en la Universidad de Florida Central con participantes humanos se lleva a cabo bajo la supervisión de la Junta de revisión institucional (IRB UCF). Esta investigación ha sido revisada y aprobada por el IRB. Para obtener más información sobre los derechos de las personas que toman parte en la investigación, por favor póngase en contacto con: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research

Parkway, Suite 501, Orlando, FL 32826-3246 o por teléfono (407) 823-2901. Usted también puede hablar con ellos para cualquiera de los siguientes:

- Sus preguntas, preocupaciones o quejas no son respondidas por el equipo de investigación.
- No puede comunicarse con el equipo de investigación.
- Desea hablar con alguien además del equipo de investigación.
- Desea obtener información o proporcionar información acerca de esta investigación.

**Retirarse del estudio:** Su participación en este estudio de investigación es voluntaria. Depende de usted para decidir si quiere participar en este estudio. Si decide participar, es libre de retirarse en cualquier momento y sin dar una razón. Eres libre de omitir preguntas o actividades si elige.

Su firma abajo indica su permiso para tomar parte en esta investigación.

**NO FIRME ESTA FORMA DESPUES DE LA FECHA DE EXPIRACION DE IRB ABAJO**

_____	
Nombre del participante	
_____	_____
Firma del participante	Fecha
_____	_____
Firma de la persona obteniendo consentimiento	Fecha
_____	
Nombre impreso de la persona obteniendo consentimiento	

## **APPENDIX E: STUDY MEASURES (ENGLISH AND SPANISH)**

## SCREENING QUESTIONNAIRE

Directions: These questions will help determine if you meet the criteria to take part in this study. Please answer by placing a "✓" or "X" by the answer that best describes you. When you are done answering questions 1-11, we would like to test your blood sugar using a drop of blood to see if you are a candidate for this study.

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1. What is your heritage?
  - Puerto Rican
  - Other: *Please describe* \_\_\_\_\_
  
2. How old are you? \_\_\_\_\_
  
3. How often do you attend this church?
  - Several times a week
  - Once a week
  - Twice a month
  - Once a month
  - Only on religious holidays or special occasions
  - Other: *Please describe* \_\_\_\_\_
  
4. Do you have family members with diabetes?
  - Yes  No  Not sure

**\*\*If No or Not sure, please SKIP Question #6\*\***
  
5. Who in your family has had diabetes? (Check all that apply)
  - Mother
  - Father
  - Sister
  - Brother
  - Grandmother
  - Grandfather
  - Aunt
  - Uncle
  - Cousin
  - Other: *Please describe* \_\_\_\_\_
  
6. Do you think you may be at risk for getting diabetes?
  - Yes  No

***If you are a Female:***

7. Are you currently pregnant?
  - Yes  No

8. Have you ever been diagnosed or told that you have type 1 diabetes, type 2 diabetes, or diabetes during a pregnancy?

Yes  No

9. Have you had any type of diabetes education classes in the past 12 months?

Yes  No

10. Please list all the medications you are currently taking or have taken in the past 30 days:

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## ENCUESTA PARA EVALUACIÓN

Instrucciones: Estas preguntas nos ayudarán a determinar si usted cumple con los criterios para participar en este estudio. Por favor responde colocando una marca de "✓" o "X" por la respuesta que te describa mejor. Cuando haya terminado de contestar preguntas 1-11, nos gustaría probar el azúcar en su sangre usando una gota de sangre para ver si usted es candidato para este estudio.

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1. ¿Cuál es su herencia étnica?
  - Puertorriqueño(a)
  - Otro: Por favor describa \_\_\_\_\_
  
2. ¿Cuál es su edad? \_\_\_\_\_
  
3. ¿Con que frecuencia asiste usted a esta iglesia:
  - Varias veces a la semana
  - Una vez a la semana
  - Dos veces al mes
  - Una vez al mes
  - Sólo en las festividades religiosas o ocasiones especiales
  - Otro: Por favor describa \_\_\_\_\_
  
4. ¿Tiene familiares con diabetes?
  - Sí  No  No estoy seguro

**\*\*Si ha contestado No o No está seguro, por favor pase a la Pregunta #6\*\***
  
5. ¿Quien en su familia tiene diabetes? (por favor ponga una marca X verificando todo los miembros de su familia con diabetes)
  - Madre
  - Padre
  - Hermana
  - Hermano
  - Abuela
  - Abuelo
  - Tía
  - Tío
  - Primo
  - Otro: Por favor describa \_\_\_\_\_
  
6. ¿Cree que está en riesgo de desarrollar diabetes?
  - Sí  No

### **Si eres Mujer:**

7. ¿Esta embarazada (en cinta)?
  - Sí  No

8. ¿Alguna vez ha sido diagnosticado o ha tenido un médico decirle que tiene diabetes (azúcar) tipo 1, diabetes tipo 2, o diabetes durante un embarazo?

Sí  No

9. ¿Ha tomado parte en clases de educación sobre la diabetes en los últimos 12 meses?

Sí  No

10. Por favor liste los medicamentos que está tomando o ha tomado en los últimos 30 días:

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## DEMOGRAPHIC SURVEY

Directions: These questions help describe people in this study. Please read each question or statement and put a “✓” or “X” by the answer that best describes you.

---

1. Where were you born?

- Puerto Rico
- A state in the United States (for example, New York, Florida, etc.)
- Other place: \_\_\_\_\_

2. Gender:

- Female
- Male

3. What is your relationship status?

- Married
- Living with boyfriend or girlfriend
- Divorced
- Separated
- Widowed
- Never married

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

- Less than high school
- High school graduate/GED
- Some college credit, no degree
- Trade/ technical/ vocational training
- Associate degree
- Bachelor's degree
- Master's degree
- Doctorate degree

5. Do you have health insurance?

- Yes ***Please specify type of coverage***
  - Health insurance through my employer or spouse's employer
  - Health insurance I pay for myself
  - Medicaid
  - Medicare
  - Veteran's or military coverage
  - OTHER: *Please describe* \_\_\_\_\_

No



## ENCUESTA DEMOGRAFICA

Instrucciones: Estas preguntas ayudan a describir a los individuos que se encuentran en este estudio. Por favor, lea cada frase y marque la respuesta que te describa mejor con una "✓" o "X."

---

1. ¿Dónde nació usted?
  - Puerto Rico
  - Un Estado dentro de los Estados Unidos (por ejemplo, Nueva York, Florida, etc.)
  - Otro lugar: \_\_\_\_\_
  
2. Sexo:
  - Mujer     Hombre
  
3. ¿Cuál es su estado civil?
  - Casado
  - Viviendo con mi novio o novia
  - Divorciado
  - Separado
  - Viudo(a)
  - Nunca me ha casado
  
4. ¿Cuál es el nivel de educación más alto que ha completado?
  - Menos de escuela secundaria
  - Graduado de escuela secundaria / GED
  - Algunos créditos universitarios, sin título
  - Comercio / técnica / formación profesional
  - Grado de Asociado
  - Grado de Bachillerato
  - Grado de Maestría
  - Doctorado
  
5. ¿Tienes seguro de salud?
  - Si **Por favor, especifique el tipo de seguro**
    - Plan de seguro privado a través de mi trabajo o el trabajo de mis cónyuges
    - Plan de seguro privado que pago por mi mismo
    - Medicaid
    - Medicare
    - Veterano o seguro militar
    - OTRO: Por favor describa \_\_\_\_\_
  - No

## ACCULTURATION

Directions: Please read each question and put a “✓” or “X” by the answer that best describes you.

	Not at all	Very little	Some what	Very much
1. How much do you enjoy speaking English?				
2. How much do you enjoy American TV programs?				
3. How comfortable would you be in a group of Americans who do not speak Spanish?				
4. How proud are you of being American?				
5. How much are American values a part of your life?				
6. Do you have any children? <b><i>If YES:</i></b> How important is it to you to raise your children with American values? <b><i>If NO:</i></b> If you had children, how important would it be to raise them with American values?				
7. How important is it to you to celebrate holidays in the American way?				
8. How often do you enjoy American food?				
9. Do you think Americans are kind and generous?				
10. How important would it be for your children to have all American friends?				
11. How much do you enjoy speaking Spanish?				
12. How much do you enjoy Spanish TV programs?				
13. How comfortable would you be in a group of Puerto Ricans who don't speak English?				
14. How proud are you of being Puerto Rican?				
15. How much are Puerto Rican values a part of your life?				
16. Do you have any children? <b><i>If YES:</i></b> How important is it to you to raise your children with Puerto Rican values? <b><i>If NO:</i></b> If you had children, how important would it be to raise them with Puerto Rican values?				
17. How important is it to you to celebrate holidays in the Puerto Rican way?				
18. How often do you enjoy Puerto Rican food?				
19. Do you think Puerto Ricans are kind and generous?				
20. How important would it be for your children to have all Puerto Rican friends?				

## ACULTURACIÓN

Direcciones: Por favor lea cada pregunta y ponga un “✓” o “X” por la respuesta que mejor le describe.

	No	Muy poco	Un poco	Muchísimo
1. ¿Cuánto disfruta hablar inglés?				
2. ¿Cuánto disfruta usted de los programas de la televisión Americana?				
3. ¿Cuán cómodo(a) se sentiría usted entre un grupo de Americanos que no hablan español?				
4. ¿Cuán orgulloso(a) se siente de ser Americano(a)?				
5. Los valores Americanos, constituyen ¿qué parte de su vida?				
6. ¿Tienes hijos? <b>Si SÍ:</b> ¿Qué importante es a usted para criar a sus hijos con valores Americanos? <b>Si NO:</b> ¿Si tuviera niños, cómo importante los debería criar los con valores Americanos?				
7. ¿Cuán importante es para usted celebrar los días festivos de la manera Americana?				
8. ¿Con qué frecuencia comes comida Americana?				
9. Con respecto a la bondad y generosidad, ¿piensa usted que los Americanos son?				
10. ¿Cuán importante sería para usted que todas las amistades de sus hijos fuesen Americanas?				
11. ¿Cuánto disfruta hablar español?				
12. ¿Cuánto disfruta usted de los programas de la televisión Hispana?				
13. ¿Cuán cómodo(a) se sentiría usted entre un grupo de Puertorriqueños que no hablan inglés?				
14. ¿Cuán orgulloso(a) se siente de ser Puertorriqueño(a)?				
15. Los valores Puertorriqueños, constituyen ¿qué parte su vida?				
16. ¿Tienes hijos? <b>Si SÍ:</b> ¿Qué importante es a usted para criar a sus hijos con valores Puertorriqueños? <b>Si NO:</b> ¿Si tuviera niños, cómo importante los debería criar los con valores Puertorriqueños?				
17. ¿Cuán importante es para usted celebrar los días festivos de la manera Puertorriqueña?				
18. ¿Con qué frecuencia comes comida Puertorriqueña?				
19. Con respecto a la bondad y generosidad, ¿piensa usted que los Puertorriqueños son?				

	<b>No</b>	<b>Muy poco</b>	<b>Un poco</b>	<b>Muchísimo</b>
20. ¿Cuán importante sería para usted que todas las amistades de sus hijos fuesen Puertorriqueñas?				

## DAILY SPIRITUAL EXPERIENCE SCALE

Directions: This list includes things you may or may not experience. Please think about how often you have these kinds of experiences and do not concern yourself with whether or not you should have these experiences.

A number of items use the word 'God.' If this word is not comfortable for you, please substitute another word that calls to mind what is divine or holy for you.

	Many times a day	Every day	Most days	Some days	Once in while	Never or almost never
1. I feel God's presence.						
2. I experience a connection to all of life.						
3. During worship, or at other times when connecting with God, I feel joy, which lifts me out of my daily concerns.						
4. I find strength in my religion or spirituality.						
5. I find comfort in my religion or spirituality.						
6. I feel deep inner peace or harmony.						
7. I ask for God's help in the midst of daily activities.						
8. I feel guided by God in the midst of daily activities.						
9. I feel God's love for me directly.						
10. I feel God's love for me through others.						
11. I am spiritually touched by the beauty of creation.						
12. I feel thankful for my blessings.						
13. I feel a selfless caring for others.						
14. I accept others even when they do things I think are wrong.						
15. I desire to be closer to God or in union with the divine.						

	Not close	Somewhat close	Very close	As close as possible
16 In general, how close do you feel to God?				

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## ESCALA DIARIA DE EXPERIENCIA ESPIRITUAL

Instrucciones: Esta lista incluye experiencia con cosas que usted puede o no puede tener. Por favor, piense acerca de la frecuencia que usted tiene este tipo de experiencias y no te preocupes de si debe de tener ir no tiene estas clases de experiencias.

Una serie de artículos usa la palabra 'Dios.' Si usando esta palabra no es cómodo para usted, por favor, sustituye por otra palabra que trae a la mente lo que es divino o sagrado para ti.

	Muchas veces al día	Todos los días	La mayoría de los días	Algunos días	De vez en cuando	Nunca o casi nunca
1. Siento la presencia de Dios.						
2. Siento una conexión con todo lo que es vida.						
3. Mientras estoy adorando, o en otros momentos cuando me conecto con Dios, siento una felicidad o júbilo que me levanta de mis preocupaciones diarias.						
4. Encuentro mi fortaleza en mi religión o creencias espirituales.						
5. Encuentro consuelo en mi religión o espiritualidad.						
6. Siento gran paz interior o armonía.						
7. Le pido ayuda a Dios en medio de mis actividades diarias.						
8. Me siento guiado(a) por Dios en medio de mis actividades diarias.						
9. Siento el amor que Dios me tiene, directamente.						
10. Siento el amor que Dios tiene por mí a través de otros.						
11. La belleza de la creación me mueve espiritualmente.						
12. Me siento agradecido(a) por mis bendiciones.						
13. Siento cariño desinteresado por otros.						
14. Acepto a otros aún cuando hacen cosas que pienso que están mal.						
15. Deseo estar más cercano(a) a Dios o en unión con Dios.						

	Para nada cercano(a)	Algo cercano(a)	Muy cercano(a)	Tan cercano(a) como es posible
16. ¿En general, cuán cercano(a) se siente usted a Dios?				

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### IDEAS ABOUT DIABETES

Directions: Below is a list of ideas people have about diabetes. Please read each statement and put a “✓” or “X” in the box that shows what you think about diabetes. There are no right or wrong answers.

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
1. A healthy diet and eating are effective in preventing diabetes.					
2. Healthy diets work in preventing diabetes.					
3. If I eat healthy foods, I am less likely to get diabetes.					
4. I am able to eat healthy to prevent getting diabetes.					
5. I can maintain a healthy diet to prevent diabetes.					
6. I can easily eat healthy to prevent diabetes.					
7. I believe that diabetes is a severe threat.					
8. I believe that diabetes has serious negative consequences.					
9. I believe that diabetes is extremely harmful.					
10. It is likely that I will get diabetes.					
11. I am at risk for getting diabetes.					
12. It is possible that I will get diabetes.					



## IDEAS SOBRE LA DIABETES

Instrucciones: Aquí es una lista de ideas que la gente tiene sobre la diabetes. Por favor, lea cada frase y marque con una “✓” o “X” la respuesta que muestra mejor lo que usted piensa acerca de la diabetes. No hay respuesta correcta o incorrecta.

	Muy en desacuerdo	Desacuerdo	Ni en desacuerdo ni en acuerdo	Acuerdo	Muy en acuerdo
1. La dieta y la alimentación son efectivos en la prevención de la diabetes.					
2. Dieta trabaja bien en la prevención de la diabetes.					
3. Si como alimentos saludables, soy menos propensas a tener diabetes.					
4. Soy capaz de comer sano para evitar la diabetes.					
5. Puedo mantener una dieta saludable para prevenir la diabetes.					
6. Puedo fácilmente comer sano para prevenir la diabetes.					
7. Creo que la diabetes es una grave amenaza.					
8. Creo que la diabetes tiene grave consecuencia negativas.					
9. Creo que la diabetes es extremadamente perjudicial.					
10. Es probable que voy a desarrollar diabetes.					
11. Yo estoy en riesgo de desarrollar diabetes.					
12. Es posible que voy a tener diabetes.					

## EATING HABITS QUESTIONNAIRE

Directions: Please read each question and put a “✓” or “X” in the box that best describes your eating habits.

	Never	Less than once a week	About once a week	2-5 times/ week	About once a day	2 or more times/ day
1. How often do you eat fried foods?						
2. How often do you drink <u>regular</u> sodas or juices that contain sugar?						
3. How often do you drink <u>diet</u> sodas or juices?						
4. How often do you eat white rice or white bread? (not brown rice or whole grain bread)						
5. How often do you eat fresh green vegetables? ( <u>do not</u> include iceberg lettuce)						
6. How often do you eat other vegetables? ( <u>do not</u> include potatoes, tomatoes, or corn)						
7. How often do you eat fresh fruits or berries?						
8. How often do you eat home cooked meals?						

	Rarely or never	Sometimes	Many times	All the time
9. How often do you drink 1% or skim milk?				
10. How often do you eat desserts, candies, pastries, or ice cream made with real sugar or honey?				
11. How often do you eat deserts, candies, pastries, or ice cream made with artificial sweeteners? (like Splenda, Equal, or Sweet & Low)				
12. How often do you drink coffee or tea <u>without sugar</u> OR <u>with artificial sweeteners</u> (like Splenda, Equal, or Sweet & Low)?				
13. How often do you eat <u>regular sweets</u> including desserts, candies, pastry, and ice cream?				
14. How often do you eat chicken with the skin on?				
15. How often do you try to eat smaller portions?				
16. How often do you change how you prepare your food to make it healthier?				
17. How often do you eat a complete breakfast? ( <u>not just</u> coffee and crackers or sweets)				

	Only one complete meal (Complete breakfast, or lunch, or dinner)	Two complete meals only (Lunch/dinner, or breakfast/dinner, or breakfast/lunch)	Three complete meals (breakfast, lunch, or dinner)
18. How many <u>complete</u> meals do you usually eat during the day? ( <u>do not</u> include snacks or what you nibble on during the day)			

	3 or more times/month	2-3 times/month	1 time/month	Almost never or less than 1 time/month
19. How many times a week or month do you eat a meal prepared at restaurant or fast food place? (including McDonald's, Burger King, Wendy's, Arby's, Pizza Hut, or Kentucky Fried Chicken)				

## CUESTIONARIO DE COSTUMBRES DE COMER

**Instrucciones:** Por favor lea cada pregunta y elegir la respuesta que mejor describa su forma de comer, colocando una marca de “✓” o “X”.

	Nunca	Menos de una vez por semana	Aproximadamente una vez por semana	2-5 veces por semana	Aproximadamente una vez al día	2 o más veces al día
1. ¿Cuántas veces come usted comidas fritas?						
2. ¿Con qué frecuencia beben sodas o jugos regulares <i>que contienen azúcar</i> ?						
3. ¿Con qué frecuencia beben refrescos o jugos <i>de dieta</i> ?						
4. ¿Con qué frecuencia come usted arroz blanco o pan blanco? (no arroz integral o pan de grano entero)						
5. ¿Con qué frecuencia come verduras frescas? (no cuentan lechuga de iceberg)						
6. ¿Con qué frecuencia comen otros vegetales? (no cuentan las patatas, los tomates, o el maíz)						
7. ¿Con qué frecuencia usted come frutas o bayas?						
8. ¿Con qué frecuencia usted come comidas caseras?						

	Rara vez o nunca	Algunas veces	Bastantes veces	Todo el tiempo
9. ¿Con qué frecuencia toma usted leche de 1% o leche descremada?				
10. ¿Con qué frecuencia come postres, dulces, pasteles, o helados <u>hechos con azúcar real o miel?</u>				
11. ¿Con qué frecuencia come postres, dulces, pasteles, o helados <u>hecho con azúcar artificiales?</u> (como Splenda, Equal, o Sweet & Low)				
12. ¿Con qué frecuencia toma usted café o té <u>sin azúcar o con azúcar artificiales?</u> (como Splenda, Equal, o Sweet & Low)				
13. ¿Con qué frecuencia comes <u>dulces regulares</u> , incluyendo postres, dulces, pasteles y helados?				
14. ¿Con qué frecuencia come usted pollo con la piel?				
15. ¿Con qué frecuencia trata de comer porciones más pequeñas?				
16. ¿Con qué frecuencia cambia la forma de preparar la comida para hacerla más saludable?				
17. ¿Con qué frecuencia come usted desayuno completo? ( <u>no sólo</u> café y galletas saladas o galletitas dulce)				

	Una sola comida completa (desayuno completo, o almuerzo, o cena)	Dos comidas completas solamente (almuerzo/ceno, o desayuno/ceno, o desayuno/almuerzo)	Tres comidas completas (desayuno, almuerzo, y cena)
18. ¿Cuántas comidas completas come usted durante el día casi todos los días? (No incluye meriendas durante el día)			

	Más de tres veces al mes	2-3 veces al mes	Una vez al mes	Casi nunca o menos de una vez al mes
19. ¿Cuántas veces a la semana o al mes come una comida preparada en el restaurante o lugar de comida rápida? (Incluyendo McDonald's, Burger King, Wendy's, Arby's, Pizza Hut, o Kentucky Fried Chicken)				

## EATING HABITS CONFIDENCE SURVEY

Directions: Below is a list of things people might do while trying to change their eating habits. There are no right or wrong answers. Please rate how sure you are that you could do these things regularly, *for at least six months*.

### HOW SURE ARE YOU THAT YOU CAN DO THESE THINGS?

(Please circle number that shows how sure you are.)

	I know I cannot		Maybe I can		I know I can		Does not apply
1. Eat fruit instead of cookies, candy, cake, or ice cream for snacks.	1	2	3	4	5	(8)	
2. Eat meatless (vegetarian) meals.	1	2	3	4	5	(8)	
3. Avoid ordering red meat (beef, pork, ham, lamb) at restaurants.	1	2	3	4	5	(8)	
4. Offer to bring a dish of fruits and vegetables to a party.	1	2	3	4	5	(8)	
5. Include your family in meal planning.	1	2	3	4	5	(8)	
6. Read food labels for salt and fat content.	1	2	3	4	5	(8)	
7. Buy less processed and prepared foods (like instant mashed potatoes, instant soups, etc.).	1	2	3	4	5	(8)	
8. Serve low fat and low salt meals to guests at a party or dinner.	1	2	3	4	5	(8)	
9. Stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when you travel.	1	2	3	4	5	(8)	
10. Stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when eating with friends or co-workers.	1	2	3	4	5	(8)	
11. Stick to a healthy diet (more fruits and vegetables, whole grains, and low fat and low salt) when you feel too lazy to prepare something healthy.	1	2	3	4	5	(8)	
12. Stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when you feel depressed, bored, or tense.	1	2	3	4	5	(8)	



	I know I cannot		Maybe I can		I know I can		Does not apply
13. Stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when I am alone and no one is watching me.	1	2	3	4	5	(8)	
14. Stick to a healthy diet (more fruits and vegetables, whole grains, low fat, and low salt) when the only snack close by is from a vending machine.	1	2	3	4	5	(8)	
15. Avoid adding salt to food.	1	2	3	4	5	(8)	
16. Cut down on fried foods.	1	2	3	4	5	(8)	
17. Eat more variety of vegetables.	1	2	3	4	5	(8)	
18. Eat a salad every day.	1	2	3	4	5	(8)	
19. Eat whole grain cereals instead of cereals made with refined grains.	1	2	3	4	5	(8)	
20. Try to eat brown rice and whole grain bread instead of white rice and white bread.	1	2	3	4	5	(8)	
21. Eat smaller portions for dinner.	1	2	3	4	5	(8)	
22. Eat unsalted, unbuttered popcorn.	1	2	3	4	5	(8)	
23. Substitute low or non-fat milk for whole milk.	1	2	3	4	5	(8)	

## CONFIANZA EN COSUTMBRES DE COMER

Instrucciones: Aquí es una lista de cosas que gente pueden hacer al tratar de cambiar sus costumbres de comer. No hay respuestas correctas o incorrectas. Por favor califique lo seguro que está Ud. qué puede hacer estas cosas con regularidad, *por lo menos durante seis meses.*

### ¿QUE TAN SEGURO ESTA DE PODER HACER ESTAS COSAS?

(Por favor, circule un número para cada cosa para calificar su seguridad.)

	Estoy seguro que no puedo		Quizás sí puedo	Estoy seguro que sí puedo		No aplica
	1	2	3	4	5	(8)
1. Comer frutas en vez de galletas, dulces, pastel, o helado para meriendas.	1	2	3	4	5	(8)
2. Comer platillos principales sin carne (vegetarianos).	1	2	3	4	5	(8)
3. Tratar de <u>no</u> ordenar carne roja (res, puerco, jamón, borrego) en restaurantes.	1	2	3	4	5	(8)
4. Ofrecer traer un plato de fruta o verduras a una fiesta.	1	2	3	4	5	(8)
5. Incluir su familia en planear las comidas.	1	2	3	4	5	(8)
6. Leer las etiquetas para el contenido de sal y grasa.	1	2	3	4	5	(8)
7. Comprar menas comidas ya preparadas (como puré de papas instantáneo, sopas instantáneas, etc.).	1	2	3	4	5	(8)
8. Servir comidas bajas en sal y comidas bajas en grasa a mis invitados en una fiesta o una cena.	1	2	3	4	5	(8)
9. Mantener una dieta saludable (más frutas y vegetales, más granos enteros, y baja en sal y grasa) mientras viajo.	1	2	3	4	5	(8)
10. Mantener una dieta saludable (más frutas y vegetales, más granos enteros, y baja en sal y grasa) cuando ceno con compañeros de trabajo.	1	2	3	4	5	(8)
11. Mantener una dieta saludable (más frutas y vegetales, más granos enteros, y baja en sal y grasa) cuando siente demasiado flojero para prepara algo sano.	1	2	3	4	5	(8)
12. Mantener una dieta saludable (más frutas y vegetales,	1	2	3	4	5	(8)

	Estoy seguro que no puedo	Quizás sí puedo	Estoy seguro que sí puedo	No aplica		
más granos enteros, y baja en sal y grasa) cuando siente deprimido, enfadado, o nervioso.						
13. Mantener una dieta saludable (más frutas y vegetales, más granos enteros, y baja en sal y grasa) cuando estoy solo(a) y no nadie me está velando.	1	2	3	4	5	(8)
14. Mantener una dieta saludable (más frutas y vegetales, más granos enteros, y baja en sal y grasa) cuando las únicas meriendas cerca son de una maquina.	1	2	3	4	5	(8)
15. Evitar añadir sal a las comidas.	1	2	3	4	5	(8)
16. Reducir comidas fritas.	1	2	3	4	5	(8)
17. Comer más variedad de vegetales.	1	2	3	4	5	(8)
18. Comer una ensalada al día.	1	2	3	4	5	(8)
19. Comer cereales integrales en lugar de cereales refinados.	1	2	3	4	5	(8)
20. Tratar de comer el arroz integral y pan integral en lugar de arroz blanco y pan blanco.	1	2	3	4	5	(8)
21. Comer porciones más pequeñas a la hora de la cena.	1	2	3	4	5	(8)
22. Comer palomitas de maíz sin mantequilla, sin sal.	1	2	3	4	5	(8)
23. Sustituir la leche baja o sin grasa por la leche entera.	1	2	3	4	5	(8)

**APPENDIX F: PERMISSION FROM AUTHORS TO USE THEIR  
INSTRUMENTS**

## Permission from Dr. Underwood to use the Daily Spiritual Experience Scale

RE: Seeking permission to use the Daily Spiritual Experience Scale  
stthomas  
Mon 7/2/2012 9:54 PM  
Sent Items  
To: Lynn Underwood [REDACTED];  
1 attachment  
Registration for Permission of--Daily Spiritual Experience Scale.docx;

Dear Dr. Underwood,

Attached is my completed registration form. I will keep you informed of results and publications that come from using your scale.

Thank you kindly,  
Sylvia

Sylvia Torres-Thomas, MSN, RN, Nursing PhD candidate  
University of Central Florida  
Orlando, Florida  
Email: [REDACTED]  
Tele: [REDACTED]

---

**From:** Lynn Underwood [REDACTED]  
**Sent:** Monday, July 02, 2012 6:19 PM  
**To:** stthomas  
**Subject:** Re: Seeking permission to use the Daily Spiritual Experience Scale

Dear Sylvia,  
Find attached the permission form for using the scale. The Spanish version can be found on [www.dsescscale.org](http://www.dsescscale.org) or in the Underwood 2006 Archive paper.  
Best wishes in your life and work,  
Lynn

Lynn G. Underwood PhD  
Graduate Faculty, Cleveland State University  
Honorary Fellow, Centre for Reading, Information Systems and Linguistics, University of Liverpool  
Research Integration  
[REDACTED]  
<http://www.researchintegration.org/lynn-home.htm>  
[REDACTED]

---

On Jul 2, 2012, at 4:25 PM, stthomas wrote:

Dear Dr. Underwood,

I would like permission to use the English and Spanish versions of the Daily Spiritual Experience Scale in my dissertation research study. I am a doctoral candidate in nursing working with Puerto Rican adults in a faith-based setting. I am thrilled to find a scale that measures daily spiritual experiences.

I look forward to hearing from you on how to proceed with obtaining permission.

Respectfully,  
Sylvia Torres-Thomas, MSN, RN, Nursing PhD candidate  
University of Central Florida  
Orlando, Florida  
Email: [REDACTED]  
Tele: [REDACTED]

**Permission from Dr. Cortes to use The Biculturalism Scale (American and Puerto Rican Cultural Involvement Scale)**

RE: Biculturalism Scale in Spanish  
Cortes, Dharma E. <[REDACTED]>  
Sun 10/21/2012 3:48 PM  
Inbox  
To: stthomas <[REDACTED]>;  
Categories: Red Category

2 attachments  
accultenglishoriginal.doc; accultoriginalespanol.doc;

Hi Sylvia,  
Attached you will find the Spanish and English version of the scale. Good luck with your dissertation!  
~Dharma

---

From: stthomas [REDACTED]  
Sent: Wednesday, October 17, 2012 10:08 PM  
To: Cortes, Dharma E.  
Subject: Biculturalism Scale in Spanish

Dear Dr. Cortes,

Can you direct me to where I can locate a validated Spanish version of the Biculturalism Scale (American and Puerto Rican Cultural Involvement Scale)? I am a doctoral student and would like to use your scale in my dissertation research with Puerto Rican adults at-risk for diabetes.

I look forward to hearing from you and greatly appreciate your time.

Sincerely,  
Sylvia Torres-Thomas, MSN, RN, Nursing PhD Candidate  
University of Central Florida  
Orlando, Florida  
Email: [REDACTED]  
Phone: [REDACTED]

## Permission from Dr. Witte to use the Risk Behavior Diagnosis Scale

Re: Seeking permission to use The Risk Behavior Diagnosis Scale

stthomas

Fri 9/19/2014 5:47 PM

Sent Items

To: Kimm X Jayne <[REDACTED]>;

Dr. Witte,

Thank you so much!

Sylvia

---

**From:** Kimm X Jayne <[REDACTED]>

**Sent:** Friday, September 19, 2014 5:49 PM

**To:** stthomas

**Subject:** Re: Seeking permission to use The Risk Behavior Diagnosis Scale

Dear Sylvia,

Yes, please feel free to use the scale.

Best,

Kim Witte

---

On 9/19/2014 12:50 PM, stthomas wrote:

Dear Dr. Witte,

I would like permission to use your Risk Behavior Diagnosis Scale in my dissertation work. I am a doctoral student in nursing working with Puerto Rican adults at-risk for diabetes. I am thrilled to find a scale that measures constructs in the EPPM.

I look forward to hearing from you on how to proceed.

Respectfully,

Sylvia Torres-Thomas, MSN, RN, Nursing PhD student

University of Central Florida

Orlando, Florida

Email: [REDACTED]

Tele: [REDACTED]



**Permission from Dr. Rosal and Dr. Fernandez to use the Latino Dietary Behavior Questionnaire:**

Re: Seeking permission to use The Latino Dietary Behaviors Questionnaire

stthomas

Fri 9/19/2014 4:32 PM

Sent Items

To: Rosal, Milagros <[REDACTED]>;

Dr. Rosal,

Thank you so much! I appreciate your research and will review the recently published scale.

Thanks again,  
Sylvia

---

**From:** Rosal, Milagros <[REDACTED]>

**Sent:** Friday, September 19, 2014 4:27 PM

**To:** stthomas

**Subject:** RE: Seeking permission to use The Latino Dietary Behaviors Questionnaire

Sylvia,

You have my permission to use the scale in your dissertation. Please let me know if you have any questions or I can help you in any other way.

You may want to know that we also developed a self-efficacy scale that you may find useful. The reference is below.

Wang ML, Lemon SC, Welch G, Rosal MC. Development and validation of the lifestyle self-efficacy scale for Latinos with diabetes (LSESLD). *Ethnicity & Disease* 2013;23(4):428-435

Best wishes,

Milagros

\*\*\*\*\*

Milagros C. Rosal, M.S., Ph.D.

Professor,

Division of Preventive and Behavioral Medicine

Department of Medicine

Clinical and Population Health Research Doctoral Program

Graduate School of Biomedical Sciences

University of Massachusetts Medical School

[REDACTED]

e-mail: [REDACTED]  
\*\*\*\*\*

**From:** stthomas [mailto:[REDACTED]]  
**Sent:** Friday, September 19, 2014 4:06 PM  
**To:** Rosal, Milagros  
**Subject:** Seeking permission to use The Latino Dietary Behaviors Questionnaire

Dear Dr. Rosal,

I would like permission to use the English and Spanish versions of the Latino Dietary Behaviors Questionnaire in my dissertation work. I am a doctoral student in nursing working with Puerto Rican adults at-risk for diabetes. I am thrilled to find a scale that measures dietary patterns in Latinos.

I look forward to hearing from you on how to proceed.

Respectfully,  
Sylvia Torres-Thomas, MSN, RN, Nursing PhD student  
University of Central Florida  
Orlando, Florida  
Email: [REDACTED]  
Tele: [REDACTED]

---

RE: Seeking permission for use of the Latino Dietary Behaviors Questionnaire  
Senaida Poole <[REDACTED]>  
Mon 9/22/2014 12:21 PM  
Inbox

To:stthomas <[REDACTED]>;

Absolutely Sylvia, and congratulations on getting to this stage in your doctoral training. I'm looking forward to learning about what you find using the LDBQ.

Best regards,  
**Senaida**

Senaida Poole, Ph.D.  
Community Initiatives and Public Health Sciences Program Officer  
California Breast Cancer Research Program  
University of California Office of the President

[REDACTED]  
[REDACTED]  
Phone [REDACTED]  
Fax [REDACTED]

Web site: [www.cabreastcancer.org](http://www.cabreastcancer.org)

**From:** stthomas [REDACTED]  
**Sent:** Friday, September 19, 2014 9:46 AM  
**To:** Senaida Poole  
**Subject:** Fw: Seeking permission for use of the Latino Dietary Behaviors Questionnaire

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**From:** stthomas  
**Sent:** Friday, September 19, 2014 12:44 PM  
**To:** [REDACTED]  
**Subject:** Seeking permission for use of the Latino Dietary Behaviors Questionnaire

Dear Dr. Fernandez,

I would like permission to use the English and Spanish versions of the Latino Dietary Behaviors Questionnaire in my dissertation work. I am a doctoral student in nursing working with Puerto Rican adults at-risk for diabetes. I am thrilled to find a scale that measures dietary patterns in Latinos.

I look forward to hearing from you on how to proceed.

Respectfully,  
Sylvia Torres-Thomas, MSN, RN, Nursing PhD student  
University of Central Florida  
Orlando, Florida  
Email: [REDACTED]  
Tele: [REDACTED]

## **APPENDIX F: PERMISSION TO USE INTERNET PHOTOS**

May 14, 2012

Abilene Family Foot Center  
ATTN: Dr. Albritton

[REDACTED]  
[REDACTED]

Dear Dr. Albritton:

I am a PhD student in nursing at the University of Central Florida in Orlando preparing to do my dissertation study on the role severity and susceptibility plays in motivating dietary behavior changes in pre-diabetic Puerto Ricans. I was searching the internet for photos depicting the horrible nature of diabetic complications and I came across your incredible photo gallery. You have some of the clearest and best pictures I have seen showing what can really happen in uncontrolled diabetes.

I would like to know if I could use some of your photos in my intervention study to raise awareness about diabetes. I think that increasing awareness of diabetes severity and personal susceptibility are important step in disease prevention. If you grant me permission, I will credit your name for each photo.

I appreciate your consideration and have attached my CV for your review. In addition, here is a link providing information about a recent academic honor I received:

[http://order.sded.ucf.edu/docs/booklet\\_2011.pdf](http://order.sded.ucf.edu/docs/booklet_2011.pdf) (see page 8)

Please contact me if you have any questions. Further, if my dissertation study is published in a journal, I will also be sure to give you appropriate credit.

Sincerely,

*Sylvia Torres-Thomas*

Sylvia Torres-Thomas, MSN, RN

706 G [REDACTED]  
[REDACTED]

Phone: [REDACTED]

Fax: [REDACTED]

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**SYLVIA TORRES-THOMAS**

PHONE: [REDACTED]

FAX: [REDACTED]

**FAX COVER SHEET**

TO: <b>Dr. Albritton</b>	FROM: Sylvia Torres-Thomas
FAX NUMBER: [REDACTED]	DATE: 5/14/12
TOTAL NO. OF PAGES INCLUDING COVER: 6	RE: Photos of diabetes complications

URGENT  FOR REVIEW  PLEASE COMMENT  PLEASE REPLY  PLEASE RECYCLE

MESSAGE:

Dear Dr. Albritton,  
Please see attached.  
Thank you kindly,  
Sylvia Torres-Thomas

*Very professionally requested!  
Yes, you may use any of the photos you desire, with proper credit. Please take precautions to avoid allowing anyone else to use them without proper credit. Please keep me posted on your dissertation study, especially if published. Good luck. C. Albritton 5-14-12*

**Privacy Notice**

This fax message may contain private or confidential data.

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