Attitudes and Beliefs among Mexican Americans about Type 2 Diabetes

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Abstract: Hispanics in the United States have a disproportionately high risk for non–insulin-dependent diabetes mellitus (type 2 diabetes) compared with non-Hispanic whites. Little is known of the attitudes and beliefs about diabetes in this group. Using data from six focus groups of 42 Mexican Americans (14 men and 28 women), we characterized perceptions about the causes of and treatments for type 2 diabetes. Many participants believed diabetes is caused by having a family history of the disease, eating a diet high in fat or sugar, and engaging in minimal exercise. Experiencing strong emotions such as fright *(susto),* intense anger *(coraje),* or sadness and depression *(tristeza)* was also thought to precipitate diabetes. Nearly all participants expressed the belief that it is important to follow doctors' recommendations for diet and exercise, oral medication or insulin; many also cited herbal therapies, such as prickly pear cactus *(nopal)* and aloe vera *(savila)* as effective treatments. These findings may be useful in designing interventions to reduce the burden of diabetes in Hispanic populations.

Key words: diabetes mellitus, Hispanics, Mexican Americans, *susto, coraje, tristeza,* natural remedies, herbal treatments, health beliefs.

Hispanics in the United States have a disproportionately high prevalence of non–insulin-dependent diabetes mellitus (type 2 diabetes)[1] compared with non-Hispanic whites. Data from 2000 from the American Diabetes Association show that about 2 million Hispanics are diagnosed with type 2 diabetes; this figure represents 10.2 % of all Hispanics; 7.8 % of non-Hispanic whites are diagnosed with the disease.[2] Overall, Hispanics are 1.9 times more likely to have diabetes than non-Hispanic whites of similar ages.[2,3] In both groups, there has been a steady and substantial increase in incidence of the disease recently: in 1997, there were 878,000 new cases; this figure rose to 1,104,000 by 2000.[4] As is the case with other health conditions, the reasons for ethnic disparities in the prevalence of diabetes remain poorly understood, but it has been hypothesized that they include genetic and environmental factors.

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Research studies identifying a genetic sequence associated with excess risk for diabetes are compelling.[5–8] That familial history of diabetes is a known risk factor for the disease is compatible with this evidence of a genetic link.[6] Environmental factors are also associated with excess risk for type 2 diabetes; studies on migrant populations show sharp rises in diabetes incidence among immigrants in the U.S. over a 10-year period, suggesting that lifestyle factors (such as diet and exercise) may contribute to the elevated risk.[9,10] Limited access to health care (because of limited health care coverage, lack of transportation or child care, or lack of Spanish-speaking medical personnel) and limited access to culturally appropriate health information are important environmental factors that confront many Hispanics.

A growing body of research has begun to suggest that Hispanics may experience and think about diseases differently from other population subgroups, including the physicians who treat them. Loewe and colleagues,[11] comparing physician narratives with patient stories, report that physicians generally believe that the onset of diabetes is a long, slow process, Hispanic patients generally attribute the onset of diabetes to a precipitating event or trigger, such as trauma due to the break up of a business or the stress of migrating to the U.S., or anger resulting from an episode of betrayal or domestic violence. In one recent study, Hispanic women with diabetes related the onset of their illness to the emotional stress of witnessing a son being shot or seeing a child get seriously injured on a playground.[12] The unique features of Hispanic beliefs about diabetes led Jezewski[13] to develop an explanatory model. The model posits that two belief systems shape the way Hispanics think about diabetes. One system, the biomedical system, attributes the causes of diabetes to genetic and lifestyle factors. A second system, the folk belief system, attributes the causes of diabetes to experiencing strong emotions.[13]

Beliefs about the effectiveness of treatment strategies for diabetes may vary across ethnic groups. They are particularly important in light of medical recommendations for both behavior modification and, for some diabetics, regular monitoring of blood sugar levels. However, little is known about Hispanic health beliefs about diabetes treatment or how they differ from beliefs held by other groups. A limited number of investigators have reported that a smaller share of Hispanics than non-Hispanic whites has a usual source of health care,[14] and that Hispanics are more likely than non-Hispanic whites to seek care from traditional healers, take dietary supplements, or use home remedies.[15] Research on this topic is scarce.

In this study, we use data from focus groups to characterize beliefs about the causes of type 2 diabetes and the effectiveness of prevention and treatment strategies among Hispanics of Mexican origin living in rural areas of Washington State. The data obtained from this report may be useful in the development of data collection instruments and intervention programs for Hispanics with or at risk for type 2 diabetes. From these data, we build on the explanatory model presented by Jezewski[13] and present perceptions about diabetes risk factors and treatments held by Hispanics. In this report, we use Hispanic to refer to the ethnicity of our study population; however, it is important to note that our participants are all of Mexican origin. We recognize that there are considerable differences in health beliefs and practices across subgroups of Hispanics, but we were unable to explore such differences in this study.

Methods

Setting. The Hispanic community in Washington State is concentrated in Yakima County, where 2002 U.S. Census estimates place the number of Hispanics at 84,000 (37.4% of the population).[16] Yakima Valley is a predominantly agricultural region, where apples, cherries, asparagus, and hops are the primary products. According to the 2000 U.S. Census, most of Yakima Valley's Hispanic residents are of Mexican origin. Another area of Washington with a high concentration of Hispanics is Skagit County, where, according to the 2000 U.S. Census, 11.2% of the county's population is Hispanic. Fully 83% of Hispanic Skagit Valley residents are of Mexican origin, with smaller percentages from Puerto Rico, Central America, and South America. In the city of Mt. Vernon, the Hispanic population numbers 6,589 and makes up 25.1% of the total city population.[17] Vegetable seeds, tulips, potatoes, berries, and ornamental bushes and trees are the primary agricultural products in Skagit County; many of the Hispanic residents work in agriculture.

Data Gathering. We limited our recruitment to individuals who had diabetes, had a family history of diabetes, or knew someone who had diabetes. Focus group participants were recruited from the Yakima and Skagit Valleys. Recruitment was carried out in two ways: (1) Spanish-language recruitment flyers were posted in local businesses and organizations (such as churches, local grocery stores, and Head Start programs), and (2) in-person recruitment was carried out in these organizations during which a project staff member described the project and collected the names and telephone numbers of prospective participants.

Prospective participants were later (1–2 weeks) contacted by telephone and invited to participate in a 2-hour discussion about diabetes. In the Yakima Valley, focus groups were held in the Fred Hutchinson Cancer Research Center's project office in Sunnyside. In the Skagit Valley, focus groups were held at the Skagit Valley Community College and at the Catholic church in Burlington. Focus groups were led by one of three bilingual staff members, who were trained in focus group techniques and briefed on the discussion topics by both of the principal investigators (GC and BT), who have wide experience in qualitative data methods. They were given instructions concerning listening skills, being flexible when necessary, accepting all ideas and opinions as valid, being nonjudgmental, understanding, and being sensitive to individuals who do not want to reveal information, all qualities that are thought to maximize trust.

Before the discussion, the facilitators explained to the participants that information gathered in the focus group would be used for research purposes and that the discussion would be recorded. Participants were assured that their names would not be associated with the tape. Written consent was obtained from all participants. The Institutional Review Board at the Fred Hutchinson Cancer Research Center approved the interview questions and the methods.

An open topic schedule was used to guide the focus groups, leaving the facilitators considerable freedom to explore issues that emerged in the discussion. The following topics were addressed: What is diabetes? Who can get diabetes? How do you think someone knows that he or she has diabetes? What puts someone at risk for getting diabetes? How can you prevent yourself from getting diabetes? What are some factors

that make it difficult for you to prevent yourself from getting diabetes? What are some factors that help you prevent getting diabetes? How is diabetes treated? What are the chances that someone with diabetes can lead a healthy life? What are some things that make it difficult for people to treat their diabetes? What are some things that help people treat their diabetes? Focus groups were conducted in Spanish.

A total of 42 individuals (14 men and 28 women) participated in six focus groups, each of which lasted about 90 minutes. Group sizes ranged from 3–12. All of those who attended agreed to sign a consent form and participate in the discussion.

Data Analysis. Analysis of the information was based on the audiotapes and the field notes taken by the note-taker and facilitator. (Facilitators were those who led the focus groups.) After the focus groups, transcriptions were made of the tapes and field notes. Transcriptions were written in Spanish to maintain the integrity of participants' opinions and were reviewed by the other staff present for the meeting of that group. Audiotapes were shared only with the project staff and were erased after transcription to help maintain confidentiality.

Analysis of the information was made following principles of qualitative research suggested by Morgan and Krueger.[18,19] In each interview, a matrix of the main topics was created. From the matrix, staff independently identified and coded key words and common themes that appeared throughout the interviews. All three staff members read and speak Spanish. The staff members then met to review all the themes and key words identified. In cases where there was disagreement about a theme or key word, the item was discussed until a consensus was reached. When consensus was not achieved, the opinion of the focus group facilitator prevailed.

To maintain the richness of the information obtained during the interviews, we translate and present direct quotes in the results section. Although all participants may not have repeated the specific words, the meaning was expressed and widely affirmed during at least one of the focus groups. Where divergent opinions were expressed, they are noted in the text. In cases where a Spanish word has no suitable English translation, we used the Spanish and described its meaning in the text.

Results

After independent analysis by theme, the three staff members agreed on the themes presented below.

Definitions of Diabetes. The majority of focus group participants described diabetes as a very serious, life-threatening illness. One participant stated, "Diabetes is a disease that kills you little by little." Another participant emphasized the need for self-care for diabetic patients: "[Diabetes is] a very bad disease that can kill you if you do not take care of yourself." Some participants compared diabetes to HIV infection or cancer. Several participants described it as a disease where someone's blood sugar levels become too high. One participant described it as a contamination of the blood: "[Diabetes] is an illness of the blood where it is contaminated with glucose and you have too little or too much sugar."

Perception of the Symptoms of Diabetes. When we examined the reported symptoms of diabetes among our focus group participants, we found they were consistent with medically recognized symptoms of diabetes. These included excessive

thirst, intense hunger, tiredness, sleepiness, irritation, dizziness, frequent urination, headache, and dry mouth. One participant noted that her symptoms were " . . . having to go to the bathroom, being tired, having a lot of thirst." Another patient compared the experience to being drunk: "My diabetes began in Mexico. I felt drunk in the head, I felt dizzy." Another participant was diagnosed with diabetes when she was pregnant; her primary symptom was a headache: "Mine started when I was pregnant in '96 . . . I had a headache, during my pregnancy, I didn't feel anything, but they checked me, I had a headache, I was nauseous."

Beliefs About the Causes of Diabetes. In general, focus group participants identified genetic and environmental risk factors for diabetes, such as having a family history of diabetes, eating a diet high in fat or sugar, obesity, and engaging in minimal exercise (Figure 1). One participant stated: "If I eat a lot, I eat candy, my children know that this is my poison and with this I can die. With this, I will die because I should not eat sweet bread nor corn tortillas. I am a big corn eater." Although less commonly mentioned, one participant said that weight was an important risk factor for diabetes: "Your weight is very important. The most important thing, also, is to lose weight."

In addition to the genetic and environmental factors, many participants expressed the view that experiencing a strong emotion was the factor that precipitated their diabetes (Table 1). The most commonly cited emotional state was *susto,* which means fright or surprise. Most participants with diabetes could cite a specific startling event that preceded the onset of their illness. One said,

> . . . when I went to Mexico, my daughter fainted because she got a potato chip stuck [in her throat]. I was very frightened and I think that this is when my diabetes began, because I was very frightened. I thought that she was going to die.

In the example presented below, a participant contrasts the cause of diabetes identified by her doctor (heredity) with her own belief about the cause *(susto).*

> My doctors told me that it was hereditary. I think it was because of a surprise, or a *susto* because I began to feel poorly when I lost my son . . . since then I have felt poorly [referring to her health] and also since I was a young girl, I was very quiet.

Another participant discounted the role of genetic influences with this statement: "It comes from *sustos,* it is not hereditary, it comes from intense anger *[coraje]*." Several other participants also cited experiencing *coraje* as an emotion that led to their onset of diabetes:

> From there, I began to feel poorly. I felt very hungry and had a lot of *coraje.* I would eat two full plates. My husband was an alcoholic and I was always alone and this gave me much *coraje.* Alone, I took care of my children, feeling my mouth really dry, and very hungry, and *coraje.* I went to the doctor who gave me a checkup and told me that I had diabetes and he put me on a strict diet and now I am losing my vision because of diabetes.
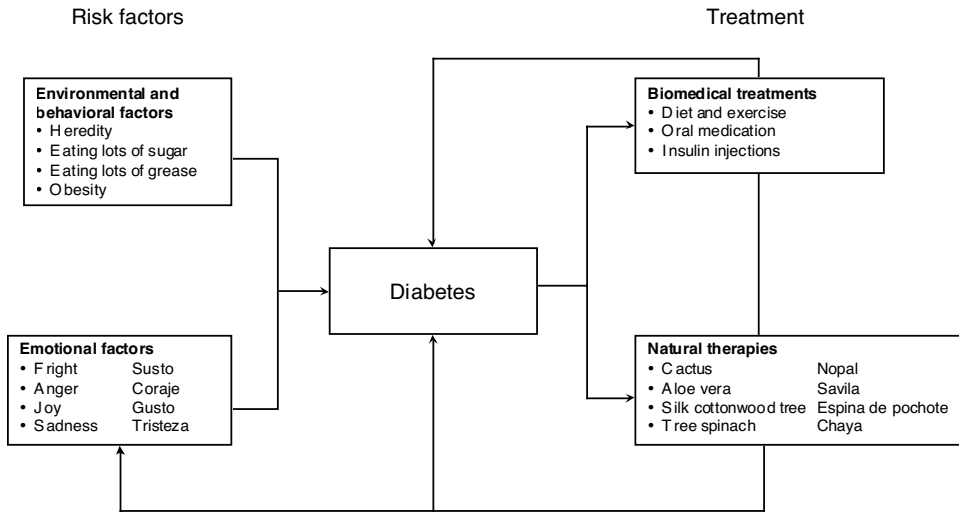
Risk factors   Treatment

**Environmental and
behavioral factors**
• Heredity
• Eating lots of sugar
• Eating lots of grease
• Obesity

Biomedical treatments
• Diet and exercise
• Oral medication
• Insulin injections

Diabetes

Emotional factors
• Fright   Susto
• Anger   Coraje
• Joy   Gusto
• Sadness   Tristeza

Natural therapies
• Cactus   Nopal
• Aloe vera   Savila
• Silk cottonwood tree Espina de pochote
• Tree spinach   Chaya

Figure 1. Diagram of health beliefs about the causes of and treatments for diabetes among focus group participants.

Table 1.

REPORTED CAUSES OF AND TREATMENTS FOR TYPE 2 DIABETES

Causes and Treatments[a]	Spanish Word
Causes	
Diet	
Fright	*susto*
Heredity	
Anger	*coraje*
Sadness or depression	*tristeza*
Exercise	
Joy	*gusto*
Treatments	
Diet	
Natural remedies (unspecified)	
Pills	
Insulin	
Prickly pear cactus	*nopal*
Exercise	
Aloe vera	*savila*
Starbien	
Silk cottonwood tree	*espina de pochote*
Cnidoscolus chayamansa	*chaya*

[a] Ranked by frequency of participants who reported them.

Intense sadness or depression was also thought to lead to diabetes. The participants quoted below describe situations that provoked sadness, making the body susceptible to harm:

> When my daughter got married, I was diabetic. I was sad because I didn't want her to marry the man she married because he was divorced. At the party, I ate the food and a piece of cake and I drank a half a can of beer and I felt badly. I went to the hospital . . . the beer had harmed me and I felt pain because my daughter had married.

> In 1998, my mother died and I was unable to go [to the funeral]. During these months, I developed diabetes.

Related to this is the belief that worry can make the body susceptible to diabetes as seen in the following excerpt: "I think that women are more affected by diabetes [than men] . . . and I think that it is because we women worry more." Some focus group participants identified strong positive emotions as precipitating their diabetes. *Gusto* (overwhelming joy) was identified as a cause of diabetes in two of the focus groups, although none of the participants recounted a specific joyous event that led to a diabetes diagnosis. Though rarely, some participants repudiated the notion that strong emotions can lead to diabetes: "I went through a difficult thing, but I didn't get diabetes."

Beliefs About Diabetes Treatment. Diet and exercise, oral medication, and insulin were commonly cited as treatments for diabetes. Many participants also identified natural therapies as effective treatments or cures. Participants generally agreed that natural therapies should be used as a complement to medicines that were prescribed by a doctor, as indicated by the following: " . . . *nopal* [cactus juice] . . . *savila* [aloe vera]. [You should] drink whatever natural medicine, but keep taking the medicine that your doctor tells you to." Juice from a cactus *(nopal)* and aloe vera *(savila)* were the most commonly mentioned natural treatments.

Other natural remedies that were cited included *espina de pochote* (silk cottonwood tree, silk cotton tree, shaving brush tree, Pseudobombax elliptcum) and *chaya* (tree spinach, Cnidoscolus chayamansa), which were thought to reduce blood sugar levels. Some participants stated that they used *arnica* (arnica) and *agua de violeta* (violet water) to treat poor circulation and swelling in their feet. Some participants identified commercial drinks as effective in treating or curing diabetes:

> You have to drink Starbien (dried granules of vitamins and mineral that are mixed with water to form a juice and sold commercially) to cure it. With this, diabetes goes away. I was sick for 17 years. It has been a year since I have been drinking Starbien and I am cured.

Most participants touted the effectiveness of these herbal remedies for diabetes; few discounted the effectiveness of such treatments. The statement below is a rare example of a negative experience reported by a participant:

> Between friends, they say that some herbs are good and sometimes it isn't true. They told me that the root of a cactus was good and when I made it and drank it, it was harmful and my kidneys were damaged and I was with the doctor for three days.

Many focus group participants expressed a desire for more diabetes-related information in Spanish. Some stated that medical personnel in the medical facilities that they attended spoke to them about dietary changes or how to inject insulin (even using an orange and needle to demonstrate how to inject insulin), but that the medical personnel typically spoke only English. Other participants stated that although classes are offered at local clinics, the classes are held in English.

> After that, I went to some classes but they were given in English and I didn't understand anything so better that I don't go. There needs to be classes in Spanish. We also need brochures about diabetes in Spanish.

> In [one community] also, there is a doctor that explains the diet and gives us information, but it is in English and we do not understand.

Discussion

We used data from focus groups of Mexican American adults in two rural areas of Washington State to examine attitudes and beliefs about what causes type 2 diabetes and ways to prevent and treat the disease. Data from these focus groups demonstrate that the participants draw on two belief systems in describing the causes of type 2 diabetes. Most of the focus group participants identified a diet high in fat, sugar, or calories; lack of regular exercise; and heredity as risk factors for diabetes (biomedical system). However, many also stated that experiencing strong emotions, such as fright *(susto),* intense anger *(coraje),* sadness *(tristeza),* or joy *(gusto),* precipitates diabetes (folk belief system). Because there is considerable scientific interest in identifying effective health interventions to reduce ethnic disparities in diabetes prevalence, these findings may have important implications for the medical and self-management of diabetes in Hispanic populations.

Our observation about participants' beliefs about the causes of diabetes is consistent with the findings of a limited number of previous investigations. Jezewski[13] interviewed 22 Mexican Americans with diabetes living in four southern Texas *colonias* and found that all but one subject felt that *susto* (fright) or a powerful emotion (either happiness or sadness) caused diabetes. Consistent with our findings, Jezewski also found that nearly all of the interviewed participants could pinpoint a specific episode of fright *(susto)* or a profound emotional experience that they believed contributed to the development of their disease.[13] When participants were asked to rank the importance of the causes of diabetes, subjects listed heredity and lack of proper self-care as the two most important causes; other causes were being overweight, having a poor diet, lacking regular exercise, feeling stress and worry, and experiencing *susto.* The findings from the present study corroborate these observations and support the notion that the biomedical system and the folk belief system both influence Hispanic beliefs about diabetes.

Beliefs concerning the mechanisms by which emotions influence an individual's risk for diabetes were not frequently expressed. Previous research suggests that some Hispanic individuals believe that experiencing *susto* and other strong emotions causes the soul to leave the body, making it susceptible to disease.[20,21] Moreover, it is

generally believed that once a frightening event takes place and an individual experiences *susto,* he or she will develop symptoms, such as agitation, nervousness, shaking/trembling, fear of unfamiliar places and faces, unhappiness, chronic indigestion, diarrhea or constipation, disrupted sleep, and cold sweats.[20–22] Treatment for *susto* can include praying, receiving treatment at home, seeing an herbalist, and going to church; it is thought that individuals who remain untreated could develop diabetes, die, or experience their blood turning to water.[20]

Similar to the beliefs about the causes of diabetes, Hispanics' beliefs about ways to treat type 2 diabetes spring from both the biomedical belief system and folk belief system. However, unlike beliefs about the causes of diabetes, where the two belief systems were separate but parallel, beliefs about effective treatments for diabetes reflected an integration of the biomedical and folk belief systems. The integration of the biomedical and folk belief systems is best illustrated in the participants' discussion of the treatments for type 2 diabetes. Repeatedly, participants emphasized the importance of adhering to doctors' recommendations for diabetes while touting the effectiveness of a given herbal tea or other natural treatment. Our results are similar to those of Jezewski,[13] who reported that Mexican American populations move easily between two health systems (allopathic [Western] and natural therapies). In another study demonstrating the integration of two health belief systems, Najm et al.,[15] in a California-based study of 525 elderly Hispanic, Asian, and non-Hispanic white respondents, found that, among those who used natural therapies, most (58%) consulted their physician for the same problem for which they sought natural treatments.

That Hispanics use natural remedies to treat illnesses is consistent with the general health-seeking practices of Hispanics, as demonstrated in data from the Hispanic Health and Nutrition Examination Survey.[23] This national study enrolled 3,623 Mexican Americans in the southwestern United States between the ages of 18 and 74 years and found that 4.2% reported consulting a *curandero,* herbalist, or other folk medicine practitioner in the previous year. Aside from consulting a practitioner, use of herbal remedies at home is common among Hispanics. Najm et al.[15] showed that 58.1% of Hispanics used natural therapies. Predictors of use were being a recent immigrant, having many physicians' visits, and lacking insurance coverage. Moreover, Najm et al.'s data revealed ethnic differences in the health complaints for which natural therapies were used; Hispanics were less likely than Asians and non-Hispanic whites to use natural therapies as treatments for pain and more likely to use them for gastrointestinal complaints and diabetes. Use of natural remedies for the treatment of diabetes, specifically, appears to be particularly frequent among Hispanic diabetics; Brown[24] reported that one-third of a sample of Mexican Americans living in a Texas–Mexico border community used home remedies to augment their diabetes therapy.

The finding that Hispanics are relatively frequent users of natural therapies and that, among Hispanics, recent immigrants use natural therapies more than others may be particularly noteworthy given that health care practices adopted in one country may carry over to another country. Studies in several Latin American countries suggest that self-diagnosis and prescription without supervision are

common practices.[25] In addition, pharmaceutical drugs are readily available without a prescription in Latin America.[25] It is plausible that Hispanics who have recently immigrated to the United States may continue the self-medication practices in which they engaged at home.

The effectiveness of natural therapies to treat diseases has received little attention in the scientific literature, especially for patients with diabetes. A systematic review of the literature on herbal therapies and vitamin and mineral supplements for the treatment of diabetes was recently conducted.[26] In the 58 studies that were included, 76% of the subjects, overall, demonstrated improved glucose control. Notably, among the remedies that the authors identify as meriting further study were *savila* (aloe vera) and *nopal* (prickly pear cactus). Shapiro[27] and others have noted that *nopal* is the most commonly used herbal hypoglycemic among persons of Mexican descent; however, few studies have examined its glycemic effects. A recent study by Frati et al.[28] tested glucose levels in patients with and without type 2 diabetes and found that serum glucose levels significantly diminished among patients with type 2 diabetes following treatment with 500 g of *nopal* stems; no significant differences in glucose levels were found among those without diabetes. Studies on the glycemic effect of *chaya* (also called tree spinach, because the shoots and leaves of the chaya shrub are cooked and eaten like spinach) on rabbits have demonstrated a reduction in blood glucose levels, from a high of 118 mg/dL to normal levels (87mg/dL) 6 hours after administration of extracts from *chaya* leaves.[29] *Chaya* is part of the staple diet for indigenous people of the Yucatan peninsula of Mexico and Alta Verapaz region in Guatemala.[29] The plant provides protein, vitamin A, vitamin C, calcium, iron, phosphorous, niacin, riboflavin, and thiamine; it is possible that it is used by populations that cannot afford food rich in these nutrients.[29]

It is unclear from our findings whether the Hispanics in our sample use natural therapies to treat diabetes symptoms or to treat the emotional states that they believe to have led to the onset of diabetes. Although some evidence exists for the glucose-lowering properties of herbal remedies, these remedies are also thought to counter a given emotional state effectively. Thus, the folk belief model links herbal remedies to treatment of diabetes symptoms and to treatment for what may be viewed as the cause of diabetes itself.

The findings of the present study have implications for the delivery of health information and care to Mexican American patients with diabetes. It may be important for medical personnel to inquire about the use of natural therapies among Mexican American patients with diabetes, particularly in light of data from Najm et al.[15] showing that the majority of complementary and alternative medicine users (62.4%) do not inform their physicians of their use. Similarly, Jezewski[13] observed that several interview participants did not tell their physicians about their use of herbal teas, stating that most doctors do not believe in herbs or that American doctors discourage the use of Mexican medicines.

The limitations of this study are important to consider. First, the small number of focus group participants limits our ability to generalize to larger populations of Hispanics or to Hispanics living in urban areas. Our participants were Hispanics who attended a 90-minute focus group; it is unclear whether those who did not attend had different beliefs from attendees that are not represented in the explanatory

model. Finally, although we use Hispanic to describe our study population, it is well established that subgroups of Hispanics differ from one another in socioeconomic characteristics, health practices, and health beliefs and attitudes.[30,31] Our focus group participants were all of Mexican origin; thus, it is important to limit the interpretation of our findings to this group.

The focus groups revealed that the Hispanics in our study simultaneously draw upon two belief systems in explaining the causes of and treatments for type 2 diabetes. The biomedical belief system finds the causes of diabetes in genetic predispositions and behavioral factors, such as a high-calorie diet and lack of exercise. Hispanics generally endorse this belief system, but also maintain that experiencing strong emotions (whether positive or negative) may lead to the onset of diabetes (folk belief system). Similarly, when treating diabetes, Hispanics again draw upon two belief systems, one that encourages adherence to doctors' recommendations for diet and exercise modifications, oral medication, and insulin injections, and another that encourages the use of natural therapies prepared at home, such as cactus juice *(nopal)* and aloe vera *(savila),* among others. Based on the present findings, it would appear that intervention programs targeted at improving screening or self-management of type 2 diabetes among Mexican-Americans should acknowledge and reinforce positive aspects of each belief system to encourage compliance with health recommendations.

Acknowledgments

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