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The Role and Meaning of *Susto* in Mexican Americans' Explanatory Model of Type 2 Diabetes

This article examines the role and meaning of susto *(fright) in Mexican Americans' explanatory model (EM) of type 2 diabetes. This analysis is based on a study of the health beliefs about type 2 diabetes mellitus among Mexican Americans living in El Paso County, Texas, on the U.S.–Mexico border. Susto was described as an event that could change the bodily state, causing a susceptible person to be more vulnerable to the onset of type 2 diabetes after some unspecified time. The study results illustrate the integration of multiple etiologies into Mexican Americans' EMs of diabetes and illustrate how the environment affects the way in which these explanations are manifested. Acculturation of biomedical system beliefs into the traditional Mexican health belief system has resulted in a synthesis of both systems and a blending of the participants' explanation of type 2 diabetes.* [explanatory models, type 2 diabetes, Mexican Americans, health beliefs, *susto*]

This article examines the role and meaning of *susto* (fright) in Mexican Americans' explanatory model of type 2 diabetes. This analysis stems from an investigation of the health beliefs about type 2 diabetes mellitus among Mexican Americans living in four *colonias* in El Paso County, Texas, on the U.S.–Mexico border.[1] The purpose of the study was to develop a culturally specific explanatory model (EM) of diabetes in order to better understand how this population views diabetes and to improve educational programs and treatment provided to it.

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Background

Type 2 Diabetes

Type 2 diabetes mellitus is an endocrine disorder characterized by elevated glucose levels in the blood. The majority of individuals who develop type 2 diabetes are obese, and many have a strong family history of the disease. The pathophysiology of type 2 diabetes includes inadequate insulin production, elevated production of glucose by the liver, and insulin resistance at the peripheral tissues, all of which result in high serum glucose levels. Complications of type 2 diabetes include macrovascular disease (cardiovascular) and microvascular disease (retinopathy, nephropathy, and neuropathy) (Skyler and Hirsch 2001).

Hispanics are disproportionately affected by type 2 diabetes mellitus. Among Mexican Americans in the United States, approximately one out of every ten persons over age 19 has diabetes (Harris et al. 1998). A recent study of a random sample of 882 adults residing in El Paso County revealed that 16.5 percent of the Hispanics in the sample had been diagnosed with type 2 diabetes (El Paso Diabetes Association 2000).

EMs are ideas and beliefs about an illness that help persons make sense of the illness within a cultural context (Kleinman 1980). There are few studies in the literature examining Hispanics' EMs of diabetes. Considering the high prevalence and severity of diabetes among Hispanics, it is surprising how little we know about their knowledge, beliefs, and practices with regard to this illness. Weller et al. (1999) studied Latinos from four diverse communities in the United States, Mexico, and Guatemala and found that participants' cultural beliefs about diabetes were concordant overall with the biomedical model. The Mexican participants in this study, however, identified susto, anger, and strong emotions as causes of diabetes and were likely to use folk remedies to treat it.

An ethnographic study of diabetic Mexican Americans in south Texas revealed that the participants attempted to connect diabetes in a direct and specific way to their personal history, citing individual behaviors or events as causes of their illness (Hunt et al. 1998). A study by Eid and Kraemer (1998) suggested that Mexican American patients attributed the etiology of diabetes to susto or worries and were likely to blend the treatment plan of conventional medicine with their native remedies. Brown and Hanis (1999) studied Mexican Americans in a Texas–Mexico border community and found that one-third of the sample used home remedies to augment their prescribed diabetes therapy.

Other researchers have examined the impact of differences between patient and provider EMs, but this research has almost exclusively been conducted with well-educated, female Caucasians who have type 1 diabetes (Paterson et al. 1998). A study of variations between patient and practitioner EMs of diabetes revealed a significant difference between the two groups, even though both were primarily made up of well-educated Caucasian Protestants (Cohen et al. 1994). Using both quantitative and qualitative methodologies, Larme and Pugh (1998) studied primary care providers, both Hispanic and non-Hispanic whites, working with primarily Mexican American clients. This research showed that, when providers do not understand their patients' conceptions of diabetes, communication between provider and patient is impaired. Hernandez (1995) critiqued the traditional

"adherence paradigm" used by diabetes educators and suggested that relationships between clients and educators should be based on a deeper understanding of the clients' experience of living with diabetes.

Explanatory Models

The study of EMs focuses on individuals' explanations of the etiology of the illness and on their descriptions of symptoms, severity, and treatment, including use of folk remedies. Kleinman (1980) distinguishes between the constructs of illness and disease. Disease is conceptualized as the practitioner's construction of patient complaints, using the terminology and conceptual framework of the biomedical health system. The construct of illness includes the cultural, social, and personal elements of sickness in addition to the causes, symptoms, and perception of treatment options (Kleinman et al. 1978).

Analysis of patients' EMs is central to the work of both social science researchers and health care providers. Kleinman's (1980, 1986, 1988) concept of EMs has stimulated a large body of research on individual and microcultural constructions of health and illness (McElroy and Jezewski 2000). For the researcher, Kleinman's EM of illness becomes a useful framework for collecting data. Analysis of these data, in turn, can provide theoretical models that explain the meaning of an illness from the perspective of a group of people with that illness. There are numerous studies in the anthropology and health sciences literature that have applied the EM paradigm to patient's perceptions of various conditions, including hypertension (Blumhagen 1982), autism (Gray 1995), obesity (Allan 1998), and tuberculosis (Poss 1998), to name a few.

Susto

Susto, which can be translated both as "fright" or "scare" and the "sickness that results from a fright," has been described frequently in the anthropology and social science literature. Susto is generally classified as a culture-bound syndrome (CBS) and is reported to be present in a variety of Latin American cultures (Simons and Hughes 1985). CBSs are thought to be illnesses created by personal, social, and cultural reactions to malfunctioning biologic or psychological processes and are understood only within defined contexts of meaning and social relationships (Kleinman 1980). CBSs are generally characterized as acute behavioral disorders confined to a particular culture or culture group (Landy 1983). Some widely established CBSs, like *nervios* (nerves), are viewed as culturally interpreted illnesses because of the variations in their meanings across different cultures (Low 1985).

There is controversy among anthropologists as to whether susto is a CBS. For example, Simons views susto as a noteworthy event but not a CBS. "In much the same way that exposure to material objects culturally believed to be polluting, taboo or otherwise dangerous may be considered responsible for a variety of illnesses, fright or startle are also available as attributional resources" (Simons and Hughes 1985:330). Simons's colleague Hughes, however, takes a contrary view that susto is a CBS (Simons and Hughes 1985).

Susto, as described in the literature, is due to a startling event that may cause part of the self, the soul (*alma* or *espíritu*), to separate from the body (Rubel and

O'Nell 1978). Upsetting social situations may also result in susto (Rubel 1960). The person suffering from susto is termed *asustado/a* and may experience symptoms of listlessness, lack of appetite, depression and withdrawal, diarrhea, nightmares, and headaches (Klein 1978; Rubel and O'Nell 1978).

Typically, the response to folk illness includes self-diagnosis and treatment, seeking treatment from extended family members, herbal remedies, and treatment by folk healers who are considered uniquely qualified to care for those afflicted with folk illnesses. Treatment of susto may include various types of ritualistic sweeping *(barriadas)* of the body using eggs, lemons, or herbs; family and close friends may be involved in treatment (Rubel 1960; Trotter 1985). There may be juxtapositions of indigenous healing rituals and symbolism from the Catholic Church. In some settings, for example, priests are involved in the treatment of susto, and during barriadas, the sweeping motions may be made in the sign of the cross. At the end of the treatment, the asustado/a often drinks water containing special herbs.

Baer and Penzell (1993) investigated a group of Mexican migrant farmworkers following an incident of pesticide poisoning. The researchers found that those individuals who believed they had developed susto as a result of the pesticide exposure had more symptoms and were physically sicker than persons who did not believe they had developed susto. Other researchers have found that asustados/as are physically sicker than others in their community and have higher rates of mortality (Rubel et al. 1984).

Folk and Western Medical Systems

A number of researchers have found that Mexican Americans move easily between folk and Western medical systems. In their study of Mexican farmworkers, Slesinger and Richards (1981) reported that participants relied heavily on modern clinical medicine and acknowledged many Western disease categories such as cancer and arthritis. Farmworkers stated that they had faith in Anglo physicians to treat some illnesses but relied on *curanderos* to treat others. There was good evidence in this study that farmworkers saw little incompatibility between the two systems.

Similarly, in a study of elderly Mexican Americans in Arizona, Applewhite (1995) found that the participants moved freely between traditional healing and modern medicine, depending on the characteristics and seriousness of the illness they experienced. In a study of explanatory models of tuberculosis, Poss (1998) asked Mexican migrant farmworkers who they would choose as a health care provider if diagnosed either with tuberculosis or susto. The respondents clearly preferred physicians to treat tuberculosis, but for treatment of susto, they reported that they would consult a curandero.

Biomedical researchers have begun to examine a possible link between psychological stress and type 2 diabetes. A recent cross-sectional study of Dutch individuals revealed that those experiencing a higher number of major stressful life events were more likely to develop type 2 diabetes than those with fewer such events (Mooy et al. 2000). Scheder (1988) also examined the link between stressful life events among Mexican American migrant farmworkers in Wisconsin, and she

found that those workers with a greater number of stressful life events were more likely to have diabetes.

Hot and Cold Theories of Disease Etiology

The anthropology literature related to hot and cold theories of illness is of interest because some authors report that these explanations of illness etiology are prevalent in the folk medicine traditions of Central and South America (Foster 1994; Logan 1975). Accounts in the literature vary with respect to the prevalence of hot/cold theories of illness among people of Hispanic ancestry. For example, Foster (1976) suggests that a hot and cold theory of disease is prevalent among Mexican Americans. In contrast, Kay (1977) found that young Mexican American women in the barrios in a southwestern city seemed not to be aware of this system of classification.

Method

Participants

The investigators used Kleinman's EM of illness as a framework to elicit in-depth explanations from Mexican Americans of their type 2 diabetes. After obtaining the approval of the Institutional Review Board at the University of Texas at El Paso, the Principal Investigator (PI), Poss, who is bilingual (English/Spanish), conducted in-depth interviews in Spanish with 22 Mexican Americans diagnosed with type 2 diabetes mellitus residing in four colonias in El Paso using an open-ended question format. Interviews were conducted between November 1999 and August 2000.

Participants chosen for inclusion in the survey met the following criteria:

1. Diagnosed with type 2 diabetes mellitus at least one year earlier
2. Mexican American (born either in Mexico or to Mexican-born parents)
3. Residing in one of four colonias in El Paso County
4. Aged 21 or older

Each of the colonias in this study is served by a Kellogg Health Education Center (KHEC) jointly administrated by the University of Texas at El Paso and Texas Tech University Health Sciences Center. Each of the KHECs employs a *promotora* (a trusted member of the community who represents the same cultural and linguistic background as the persons with whom she works) as a paraprofessional to provide outreach services in the community. Recruitment of participants for the initial interviews was done with the assistance of these promotoras because they knew the members of the community and could easily identify individuals diagnosed with diabetes.

The promotoras approached potential participants and asked them if they were willing to participate in an interview. Participants were assured that their ability to receive any and all future health services at the KHECs would in no way be compromised whether or not they participated in the study. Once participants were identified and agreed to participate, the PI made arrangements to interview them in the setting of their preference, either in their homes or at the KHECs. After the

interview was completed, each participant was paid $25 as compensation for his or her time. Participants were not told prior to the interview that they would be paid, because the promotoras believed that those who volunteered to take part in the study without expectation of compensation would make better subjects.

Interview Schedule and Informed Consent

The statement of informed consent and the interview questions were written in English at a fifth-grade reading level and were translated into Spanish by a qualified translator who is familiar with the Spanish used in the El Paso area. The Spanish version was back-translated into English by a second qualified translator and the results compared with the original English version. Modifications were made to the instruments with the assistance of the translators to ensure clarity in both versions. These procedures for establishing equivalency of dual-language instruments are advocated by Brislin et al. (1973) and Marín and Marín (1991).

The statement of informed consent was read to participants, because many had completed only minimal formal education. Participants were provided with a complete description of the study and its purpose. All participants were given a copy of the consent form.

The interview schedule consisted of 28 open-ended questions that were formulated to elicit the participants' beliefs and feelings about diabetes. The first item was framed broadly: "Please tell me about your experiences living with diabetes." Subsequent questions were increasingly specific, requesting information about such topics as diabetes etiology, symptoms, treatment, severity, complications, and social significance. After the initial broad, open-ended item, the subjects were asked the following general questions designed to elicit their opinions related to the cause of diabetes:

What do you think causes diabetes in most people?
What do you think caused diabetes in your case?

Interviews

Interviews lasted from one-and-a-half to two hours each, and all interviews were conducted in Spanish and were audiotaped. The tapes were first transcribed verbatim in Spanish by a bilingual research assistant (RA). The PI reviewed all tapes transcribed by the RA to ensure accuracy and consistency. The RA then translated the transcripts from Spanish into English, and these were reviewed by the PI for accuracy.

Focus Groups

Following analysis of the interview data (discussed below) and the construction of a preliminary model, the PI conducted focus groups (FGs) in the Kellogg Health Education Centers in three of the four colonias where the original interviews had taken place. The purpose of the FGs was to present the preliminary analysis of the data to the participants and elicit their comments and feedback. In addition, the researcher used these sessions to clarify concepts and beliefs that were not well developed after the initial data analysis. Participants in the FGs included those

who had taken part in the original interviews as well as three other colonia residents who had been diagnosed with type 2 diabetes. The size of the FGs ranged from four to six participants.

Because most subjects used the term *susto* to describe one possible cause of their diabetes, the FG sessions were used to clarify the participants' understanding of the role and meaning of susto in the etiology of type 2 diabetes. The following questions were used to start the discussion:

1. What does *susto* mean to you? Please give me some examples.
2. How does susto work in the body to cause diabetes?
3. How long does susto generally last? What are the long-term effects?
4. How long after an episode of susto does diabetes generally develop?

Data Analysis

Kleinman's (1980) concept of EM was used as a framework to develop a model of type 2 diabetes based on the descriptions of the participants. Data analysis was performed using Glaser and Strauss's (1967) grounded theory method to develop categories using open coding, as described by Glaser (1978) and Strauss and Corbin (1998). All interview data were coded separately by both investigators, and the coded data were then discussed by the investigators until consensus was reached on the categories and their properties that reflected the EMs of the participants.

Categories included the causes, severity, prevention, symptoms, treatment (both Western biomedical and herbal), and social significance of diabetes. The preliminary model developed from the interviews was revised and amplified on the basis of the data from the FGs.

Results

Demographic Information

Participants in the interviews included 18 females and four males (two additional males and one female participated in the FGs). All participants had been diagnosed with type 2 diabetes. The ages of the respondents ranged from 29 to 77, with an average age of 53. The average number of years the participants had lived with diabetes was 14, with a range of one to 45 years. All but four of the study participants had attended some type of diabetes education classes, although several had attended only two or three sessions.

All participants listed Spanish as their primary language. Two participants considered themselves to be fully bilingual, one considered her English to be good, and the remaining 20 subjects spoke primarily Spanish. The place of birth for 18 participants was Mexico, while the other four were born in the El Paso area to Mexican-born parents. The average educational attainment of the sample was six years of schooling, with a range of zero to 14 years. One participant had studied for a year at the local community college. The average income of the participants was $865 per month, with a range of $390 to $4,000 per month. Seven participants were unwilling or unable to supply data on income. Table 1 provides a summary of the participants' demographic information.

Table 1
Demographic data.

Subject Number	Age	Monthly Income	Years of Schooling	Years since DM Diagnosis	Birth Place	Attended DM Classes	Primary Language	Self-rated English Ability
1	56	N/A	10	3	El Paso, TX	Yes	Spanish	Good
2	45	N/A	5	24	Mexico	Yes	Spanish	Very Little
3	32	$4,000	12	4	Mexico	Yes	Spanish	Very Little
4	58	N/A	6	11	Mexico	Yes	Spanish	None
5	68	$390	6	18	El Paso, TX	No	Spanish	Very Little
6	45	$920	6	2	Mexico	Yes	Spanish	None
7	64	$750	6	34	Mexico	Yes	Spanish	None
8	67	$450	8	7	Mexico	Yes	Spanish	Very Little
9	55	$540	5	5	Mexico	Yes	Spanish	None
10	77	$380	1	34	Mexico	Yes	Spanish	None
11	71	$425	3	45	Mexico	Yes	Spanish	None
12	50	N/A	3	5	Mexico	Yes	Spanish	None
13	42	$650	0	12	Mexico	Yes	Spanish	None
14	55	N/A	9	23	Mexico	Yes	Spanish	None
15	58	N/A	5	12	Mexico	No	Spanish	None
16	46	$800	4	9	Mexico	Yes	Spanish	None
17	40	$700	14	18	Fabens, TX	No	Spanish	Fluent
18	42	$650	11	1	Fabens, TX	No	Spanish	Fluent
19	29	$669	9	2	Mexico	Yes	Spanish	None
20	71	$650	0	1	Mexico	Yes	Spanish	None
21	38	$1,000	9	15	Mexico	Yes	Spanish	None
22	59	N/A	4	18	Mexico	Yes	Spanish	None

Explanatory Model

Before discussing how susto fits into the explanatory model of type 2 diabetes for this group of Mexican Americans, we present the participants' overall EM of type 2 diabetes constructed from the data. The participants' EM incorporates aspects of both the conventional biomedical system and the traditional Mexican health belief system. Because all but four of the participants had attended diabetes education classes, most knew about the biomedical causes and treatment of type 2 diabetes.

Generally, there was a basic understanding of the pathophysiology of diabetes. Most participants articulated a relationship between the pancreas, insulin, and sugar in the body and knew that insulin production in the body may be decreased in diabetes. Some participants exhibited the classic symptoms of type 2 diabetes (increased urination, excessive thirst, blurred vision, weight loss) at diagnosis, but many participants had no symptoms despite very high levels of blood sugar.

The study participants believed that diet regulation was important in the treatment of type 2 diabetes. Participants discussed the difficulties encountered in

following prescribed diabetic diets and their fondness for the traditional Mexican diet, which tends to be high in fat and carbohydrates. The interviews revealed substantial confusion regarding diet. For example, some participants felt that fat was acceptable as long as they substituted vegetable oil for lard. Others had misconceptions about the desirable amount of protein in the diet. One patient on dialysis for renal failure secondary to diabetes believed that eating large quantities of protein was indicated. Another participant adjusted her diet by "nibbling" all day long. Overall regulation of diet was seen as an important element in the treatment of diabetes, but knowledge of and adherence to dietary regimes varied greatly among participants.

Each participant was taking a prescribed medication for diabetes, either an oral medication or injected insulin. All but one participant discussed the use of traditional folk remedies as an aspect of self-treatment for diabetes (Jezewski and Poss 2000). Most had used a traditional Mexican remedy in addition to the medications prescribed by their conventional health care provider. The use of herbal remedies in conjunction with conventional medications prescribed by a physician was common. One participant reported that she used both herbal and conventional medications because she had confidence in the effectiveness of both.

Participants were questioned about hot and cold theories of illness of the sort reported in the literature. None of the participants had ever heard of such conceptions, and they had no understanding of the attempt to balance hot and cold humors in the treatment of illness. Even after repeated questioning and probing by the interviewer, the subjects in both the interviews and the focus group sessions expressed no knowledge of this traditional belief.

A number of participants reported that they did not tell their physician about the use of herbal teas. Several were fearful that the doctor would "scold" them if they revealed this information. One participant reported that "the majority of doctors do not believe in herbs," while another observed that "American doctors do not want us to take Mexican medicines." Although several participants were now using only Western medicines, they wished that physicians in the United States knew more about herbal treatments.

Two participants observed that the more "Mexican" a person is, the more likely he or she is to use home remedies, and the more "Americanized" the person is, the more likely he or she will use Western medicines. When these participants were asked about herbalists in the El Paso area, they stated that there were none, but one reported that "Mexico is full of them." Another participant recalled that her grandmother, mother, and other relatives in Mexico knew a great deal about herbs but that she herself had little knowledge.

Susto

The integration of the biomedical and folk systems is best illustrated in the participants' discussions of the cause of type 2 diabetes. All but one subject felt that susto or a powerful emotion (either happy or sad) caused diabetes. Nearly all of the participants could pinpoint a specific episode of fright (which they termed *susto*) or a profound emotional experience as the contributing factor in the development of their own diabetes. After they were diagnosed with type 2 diabetes, participants also attributed fluctuations in their blood sugar to worry, fright, or stress.

During the interviews, susto was described as a fright or a scare that occurs unexpectedly. Susto was not conceptualized as the everyday occurrence of being momentarily startled by a particular situation; rather, it was felt to be a severe fright caused by a sudden, unexpected, and very unsettling event. One participant referred to the susto event as a trauma. Susto was not viewed as an illness per se but, rather, was seen a specific event that caused the body to become more susceptible to disease, in this case, type 2 diabetes.

When subjects were asked during the interviews to discuss the cause of diabetes either in general terms or in their specific situation, nearly all used the term *susto* initially to describe the cause, and many related the specific incident they believed caused the onset of their diabetes. These incidents included automobile accidents, witnessing a death by gunfire or drowning, being threatened with a gun, and the sudden death of a close family member. With further questioning and probing, subjects mentioned other causes generally considered to be part of the biomedical explanation of diabetes, such as poor diet, obesity, heredity, and lack of exercise.

During the FGs, subjects were asked to rank the causes of diabetes from most to least important, and in each FG, they were able to come to an agreement on this ranking that was satisfactory to each participant. In all FGs, participants listed heredity as one of the two most important causes of diabetes. Other causes, in descending order of importance, included lack of proper self-care, being overweight, poor diet, lack of exercise, stress and worry, and susto. Thus, while susto seemed to be the factor precipitating the onset of diabetes for most of these subjects, they ranked other, more biomedically based factors as the more important causes of the illness.

Symptoms. According to the participants in the study, susto is not preventable because it is an unexpected event that cannot be avoided. Although not viewed as an illness per se, when susto occurred, it was often accompanied by a variety of symptoms, including dizziness, goose bumps, bursts of adrenaline, trembling, nervousness, and feeling faint. For the most part, these symptoms rarely lasted more than a few hours or days. When asked how susto worked in the body, one man stated, "Well, sometimes when I have a strong emotion, a fright, and I feel goose bumps, like adrenaline, like something strange happening in my body."

One female participant stated, "You feel like you are going to faint. After awhile that feeling goes away, and you start to gain control again, but the first feeling is that you are going to faint." Another woman described it this way: "I think that susto is an emotion a person experiences when her metabolism changes suddenly because she had a sudden scare. She reacts in a certain way so that more adrenaline is pumped into her body and her blood starts to move faster."

Although participants in the study mentioned susto as the proximate cause of their diabetes, they did not discuss specific symptoms of susto spontaneously but, rather, had to be asked about these manifestations. Not everyone in the study experienced symptoms of susto and, of those who did, not all had the same symptoms. The specific symptoms of the diabetes were more important in their EMs than the symptoms of susto itself. It is likely that subjects did not mention symptoms of susto because this event was perceived to be a factor that precipitated a biomedical disease and not an illness per se.

The Susto Event. When asked to tell the investigator more about susto as a cause, most participants in the study could relate in detail the specific fright they perceived as eventually causing their diabetes. One man related his episode of susto as follows:

> In 1966, in August, we were going to Mexico, and I had been up all night at the funeral of a family friend, visiting with the family, and I had to leave early the next day, and when we left, I asked my oldest daughter to drive. . . . When we approached Samalayuca, about 30 miles from Juarez, there was a truck parked on the road that blocked the visibility, and my daughter did not see that there was an oncoming pickup truck, and she went around the truck. I saw all this happening, because I was not asleep yet, and I was sure we were going to crash with the pickup truck, and I was terribly frightened. But, thank God, nothing happened, the pickup and our car passed each other very, very closely, but we did not hit each other. I told my daughter to stop, and then the man driving the pickup came walking toward our car, very, very angry, and I saw that he had a pistol and he was shouting, "If you want to kill yourself, that's fine, go do it, go to that mountain and throw yourself off a cliff, but do not endanger anyone else." I thought that he was going to kill us, but the lady who was with him finally convinced him to get back in the truck, and so I got in our car and continued driving myself. From that day on, I started to drink lots of water, I was always very thirsty, and I used to tell my daughter and my wife, "Please give me more water, more water," and we bought gallons and gallons for the road, and I urinated all the time. When we got back home, the doctor saw me, and he told me, "Your sugar is quite high," and he said, "Buy these medicines and start taking them, have your blood tested, too, and I want to see you in a month, with the lab test results." I went to see him one month later, and he told me, "Your sugar count went down, but not very much, buy the medicines again and continue taking them, and also follow this diet."

When one woman was asked to clarify the event that precipitated her diabetes, she related a fright she had during an auto accident, in which the car she was riding in was hit from the rear by a bus, causing her car to hit the car in front of it. The driver of the second vehicle got out of his car and waved a gun, accusing her husband of causing the accident. She was seven months pregnant at the time, and, at the doctor visit the week after the accident, she was told she had diabetes. She stated, "I give you this example to help you realize that in only one week after a very frightening event, seeing this man who was angry at us and carrying a gun, well I had developed diabetes. It was a terrible thing for me and more so because I was pregnant." Another woman related a horrible incident: "I got diabetes because a child drowned in front of me and from that time is when I started with diabetes. I believe that is why I got diabetes because of that fright."

When asked what happens in the body of the person who has experienced a fright, one woman replied, "Well, perhaps a person starts to feel very depressed and kind of weak and sick, and then, little by little, diabetes starts to develop in the body. That is what I think. And then the person starts to feel uneasy and nervous, and he eats more and more of the wrong type of foods. The only symptom I had was that I felt kind of sick and had no strength."

Study participants were very clear about the incidents that precipitated the development of diabetes in their respective cases. Several subjects who were interviewed and later participated in the focus groups related the same story of the cause of their diabetes, almost word for word, during both sessions, even though the focus

groups occurred nearly a year after the initial interviews. Clearly, the episodes were traumatic and significant events.

Several participants believed that they possibly already had diabetes when the trauma occurred and that the frightening episode caused it to be made manifest. One subject related,

> I think, in my case, that when I feel a fright or a terrible scare, when I feel it, I feel the scare in the pit of my stomach, like an electrical shock. I actually feel it, and that is why I think that the feeling is quite strong. Then, the strong emotion that the body feels, this makes the functioning of the body to go completely out of order, and, it is easier for the diabetes to take hold. Or perhaps we already have diabetes, or almost have it, and only because we had a scare, the diabetes takes hold and progresses more rapidly.

Time between the Susto Event and the Disease. The time between the susto experience and the onset of diabetes varied tremendously among participants in the study, ranging from days to years. There was no standard or expected length of time between the episode of susto and the development of diabetes. According to Kleinman (1980), lay EMs are characterized by vagueness and impreciseness, and the scientific notion of direct causality is often lacking. EMs are flexible enough to account for a wide range of experiences and often are not refuted by contradictory evidence.

One man attributed his diabetes to two episodes of susto that occurred about 20 years before his diagnosis. Another man reported that his diabetes started about two years after he witnessed his child nearly being struck by an oncoming car. One woman stated, "A lot of times susto and diabetes do not happen at the same moment, but the diabetes develops later on, like, for example, a week after the scare. I do not mean by this that it will take a whole week, sometimes it is sooner, or sometimes longer than a week, but the outcome is that I got diabetes. It was caused by that strong emotion."

Treatment for Susto. When specifically asked if there were any treatments for susto, several people stated they were familiar with specific treatments, while others had only heard about treatments. Participants in one of the focus groups discussed a barriada in which the healer moves an egg over the asustado/a and then puts it in a glass and breaks it. By examining the egg, the healer can tell what is wrong with the asustado/a. This sweeping is accompanied by prayers. Other objects were also mentioned that could be used during the sweeping, including cloth that had been blessed by a religious person, a special type of stone, and a holy candle. One woman described the use of prayer, holy water sprinkled over the body, and a cross made of palm leaf swept over the person's body to cure susto. A male subject said that a few drops of a special herb in a glass of boiled water can cure susto.

Although the people in the study could discuss the concept of sweeping to treat susto and also relate some of the steps in the process, the ritual was not well understood. None of the participants in the study were treated for susto when the event occurred. Some of the women said that they perform sweepings for their children when the latter cannot sleep or when they are nervous, and one of the men said that his wife occasionally performs sweepings for others.

Still others in the study did not believe in sweeping and, instead, used prayer. One woman who believed that susto was a contributing factor in the development of diabetes did not believe in folk treatments for susto but, rather, relied on prayer: "A prayer that you offer to God, in which you talk to God with all your heart whatever you want to tell Him, that is what will help. But using a stone or an egg, that will not help, because God does not need us to offer him anything."

Perhaps because susto was perceived as an event and not an illness, the methods for treating susto did not seem to be an important part of the participants' explanatory model of type 2 diabetes.

Individual Susceptibility. The effect of susto on the body and the ability of susto to cause diabetes depend on the individual's experience and constitution. According to McElroy and Townsend (1996), CBSs, like physical illnesses, follow epidemiological principles of distribution, and not all persons are at risk of being affected by them. According to the participants in the study, not everyone was equally at risk for acquiring diabetes after a susto event.

One subject stated that the development of diabetes depended on a person's temperament. Other participants related that people who are young and strong are not necessarily affected by susto, that is, they do not develop diabetes because of a frightening event. One man equated strength with body size. He described how, years previously, he was "fat and strong" and therefore even experiencing the most frightening episode would not have resulted in his developing diabetes. Years later, when he was in a weakened state, he developed diabetes after an episode of susto. Another respondent reported that some are more susceptible to diabetes than others, "I do not know why this is, but we are all different . . . the metabolic system of each person is different."

Other participants felt that some persons were more susceptible to or had a tendency toward developing diabetes. One man stated, "As I was telling you, a person may be healthy, and not have diabetes, and then he experiences a terrible scare. This person may continue along without developing diabetes. But the person who has a tendency to diabetes, if he gets a terrible scare, now he develops full-blown diabetes."

Another women stated that two persons may experience the same kind of fright and that this experience might cause diabetes in one but not the other. She stated that it depended on the body of each person and on how that body is at the moment something happens. She noted, "Sometimes the body may endure many terrible things and at other times, it won't. For example, two people eat the same food and one gets sick and the other doesn't. Why is this? Because the one that got sick had a predisposition at that time to get sick, and the other had more resistance to disease at that precise time."

Discussion

The analysis of EMs of illness allows the observer to understand how individuals view an illness, including its etiology, symptoms, treatment, and social significance. EMs can provide an explanation of how cultural and biomedical aspects of illness are integrated into an individual's conception of illness. In this article, we have reported the results of a study of EMs about diabetes among Mexican Americans

living on the U.S.–Mexico border in El Paso County, Texas. In particular, we have looked at these subjects' conception of the role of susto in the etiology of diabetes. Nearly all participants in this study believed that a terrible fright or scare (which they termed *susto*) resulted in the onset of their diabetes.

Susto was viewed by the participants as a cause of diabetes and not as a condition or illness with specific, long-lasting symptoms. Susto was described as an event that could change the bodily state, causing a susceptible person to be more vulnerable to the onset of type 2 diabetes after some unspecified time. Participants in the study could not explain why or how susto caused diabetes. In their view, the episode of susto was a factor in the development of diabetes, but susto was not seen as an illness or CBS per se that required specific treatment. When asked specifically about treatment for susto, the participants' descriptions were vague and resembled secondhand accounts. Although most of the participants believed that susto was a factor contributing to the onset of diabetes, none had sought treatment after their susto event.

Like the subjects in the studies by Slesinger and Richards (1981), Applewhite (1995), and Poss (1998), participants in this study moved easily between the folk and Western medical systems both in explaining the etiology of diabetes and in caring for their illness. While they believed that susto was an important cause of diabetes and while it was the first thing most mentioned when asked generally about the etiology of their illness, they also listed biomedically based causes such as obesity, poor diet, heredity, and lack of exercise.

When asked during the interviews what caused their diabetes, most participants discussed susto as the primary cause. However, in the FGs, when asked to rank order a variety of causes of diabetes, those same participants ranked heredity as the most important cause. This discrepancy likely reflects contextual factors related to the study. During the interview portion of data collection, in response to an open-ended question, participants were able to describe the cause of their diabetes in a narrative format, and thus they discussed the emic view of causality. When presented with a more structured (Westernized) method of discussion (rank ordering), they reverted to a more biomedical explanation of diabetes, thus incorporating the etic view they learned both in diabetes education classes and from their health care providers.

This study illustrates the integration of multiple etiologies into an individual's EM and how the environment affects the way in which these explanations are manifested. Acculturation of biomedical system beliefs into the traditional Mexican health belief system has resulted in a synthesis of the two systems and a blending of the participants' explanations of type 2 diabetes. From the perspective of the Mexican Americans in this study, diabetes requires biomedical treatment and, perhaps to a lesser extent, herbal therapies.

When persons move across cultural borders, their traditional illness models and explanations may undergo modifications. When terms such as *susto* are used by individuals living on the border, they may have lost much of the meaning that they had in the country of origin. So while susto is described in the social science literature as a CBS among traditional cultures of Central and South America, among this group of Mexican Americans living on the U.S.–Mexico border it has come to mean only a frightening event that later produces diabetes in some susceptible individuals. And while the treatment of susto among traditional groups may

include remedies to restore balance between hot and cold humors, participants in this study knew nothing about hot and cold theories of disease nor did they seek humoral treatment for susto.

This study has implications for health care providers working along the border with Mexico. While the results cannot necessarily be generalized to other Mexican Americans living on the border, the EMs of the subjects in this study may have implications for understanding other similar groups in the region. Because of the high prevalence of diabetes among Mexican Americans in the border region, it is imperative that health care providers have a clear understanding of how individuals view their disease. Caregivers need to develop an approach to treating persons with diabetes that does not push aside the cultural, social, and moral meaning of this illness and that respects the particular illness experience of each patient. Understanding the role of susto in the etiology of type 2 diabetes is a first step in comprehending the complexities of Mexican Americans' EMs of diabetes.

The perception of the participants in this study that a stressful or traumatic event was the reason they developed diabetes is consistent with the work of Mooy (2000) in a Dutch population and Scheder (1988) in a Mexican American migrant worker population. It is important for health care providers to be alert to the possibility that patients experiencing multiple crises may indeed be at increased risk for the development of diabetes and other illnesses. In addition, if patients perceive that stressful events may ultimately result in illness, then providers may wish to make referrals for support services and counseling for individuals in crisis.

This study also has implications for anthropologists, especially those working, consulting, or conducting studies in health care delivery arenas. This study aptly demonstrates the integration of biomedicine and folk beliefs into an individual's EM and illustrates how a CBS evolves and is integrated with the biomedical view. Explanations of the CBS known as susto change to adapt to information provided by the biomedical view, just as biomedical information is adapted and integrated into a folk EM in a way that makes sense in the context of the individual's belief system.

Anthropologists and health care providers alike cannot assume that any one group or individual subscribes to folk or biomedical information in their traditional forms. Most individuals, especially those who move between cultural milieus, create EMs that integrate aspects of both cultures, resulting in a new perspective.

In trying to understand the etiology of illness, it is also essential to examine the macrolevel social, political, and economic factors affecting at-risk populations. Farmer et al. (1997) suggested that, in order to understand why tuberculosis is so prevalent among impoverished populations, it is imperative to consider the larger social context in which individuals live and work. Factors such as extreme poverty, overcrowded living and working conditions, inadequate nutrition, racism, and an unresponsive health care system all contribute to the tuberculosis epidemic among underserved populations in the United States. Likewise, as Scheder (1988) proposes in regard to diabetes, the oppressive living conditions of migrant workers and other groups may contribute to the development of diabetes through physiological responses to cumulative stressful life experiences.

Notes

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1. Colonias are unincorporated settlements located in the border region that generally lack water, sewage, and other basic services and infrastructure. Over 200 colonias have been identified in El Paso County.

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