Latino Beliefs About Diabetes

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OBJECTIVE — To describe Latino beliefs about diabetes and assess heterogeneity in beliefs across different groups.

RESEARCH DESIGN AND METHODS — This study comprised a survey of 161 representative Latino adults from four diverse communities: Hartford, Connecticut; Edinburg, Texas; Guadalajara, Mexico; and rural Guatemala. A 130-item questionnaire covered causes, symptoms, and treatments for diabetes. Information on demographics and acquaintanceship with someone with diabetes was also collected. The cultural consensus model was used to analyze the variation in responses to determine whether the degree of consistency within and between samples was sufficient to warrant aggregation and description as a single set of beliefs.

RESULTS — Homogeneous beliefs were present within each of the four samples. Although variability in responses increased significantly from Connecticut to Guatemala ($P < 0.00005$), there was significant agreement between samples on the answers ($P < 0.0005$). Answers tended to be concordant with the biomedical description of diabetes. Greater acculturation, higher educational attainment, and higher diabetes prevalence were associated with greater cultural knowledge about diabetes. In Connecticut, greater knowledge correlated with longer mainland U.S. residency ($P < 0.05$). In Mexico, those with average educational attainment knew more ($P < 0.05$). Finally, average knowledge levels were higher in communities with greater diabetes prevalence.

CONCLUSIONS — The cultural consensus model facilitated assessment of cultural beliefs regarding diabetes and diabetes management. Overall, Latino cultural beliefs about diabetes were concordant with the biomedical model. Variation in responses tended to characterize less knowledge or experience with diabetes and not different beliefs.

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Given the high prevalence and severity of diabetes among Latinos, it is surprising how little is known about their knowledge, beliefs, and practices with regard to diabetes. Research on attitudes and behavior has focused primarily on nonminority type 1 diabetic patients. The few studies focusing on Latinos are inconclusive with regard to the degree to which diabetes knowledge and other factors are predictive of adherence and glycemic control (1–4). There is also a paucity of studies describing the Latino explanatory model (5) of diabetes, e.g., beliefs about etiology, presentation, and management.

In the U.S., Mexican-American and Puerto Rican adults are twice as likely as non-Hispanic whites to have diabetes (6). Diabetes also may be metabolically more severe, with an increased incidence of end-stage renal disease (7–10), even though type 2 diabetes is the predominant form of diabetes among Latinos. Further, mortality due to diabetes is twice as high among Mexican Americans and Puerto Ricans as it is for non-Hispanic whites (11). In Puerto Rico, the prevalence of diabetes is similar to that on the U.S. mainland (12), while in Mexico it is somewhat lower (13,14). However, both Puerto Rico and Mexico have diabetic mortality rates three and four times higher than the U.S. mainland for people ≥65 years of age (15).

In this study, we attempt to describe Latino beliefs about diabetes. Four geographically dispersed groups are used to represent the broad diversity within the Latino population. The focus is on community-held beliefs, in contrast to those only of diabetic patients. As a first step, it is important to understand the context within which illness occurs. This is especially true for the Latino population, a large percentage of which will eventually develop diabetes and in which norms about illness behavior and initial health care advice are based in the extended family and community. A main goal of the project is to discover how the disease is described by Latinos, that is, what is the explanatory model for the Latino community: who is susceptible; what are the causes, symptoms, and treatments; and what complications can occur. A secondary goal concerns the degree of homo- or heterogeneity in beliefs. Is there, in fact, sufficient homogeneity in beliefs to characterize "Latino" beliefs or a Latino "community"? Or is the heterogeneity so great, because of different sociopolitical and economic histories of different groups, that there are a variety of different beliefs?

RESEARCH DESIGN AND METHODS

Setting

Sites were selected to maximize diversity among Latinos—to include individuals with different degrees of acculturation, education, and urban-rural residency. Four sites were selected for study: Connecticut and Texas in the U.S., urban Mexico, and rural Guatemala. In Hartford, Connecticut (1990 population 139,739), roughly a third of the population is Latino and is predominantly Puerto Rican. Edinburg, Texas (1990 population 29,885), has a high concentration of Mexican Americans (80%) and is located on the U.S.-Mexico border.

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A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

The Lower Rio Grande Valley in Southern Texas contains one of the poorest Standard Metropolitan Statistical Areas in the U.S. In Mexico, Guadalajara (population ~3 million; in Jalisco) is a large modern industrial city, whose residents come from both rural and urban backgrounds. In Guatemala, four rural communities (population ~500 each) were selected from the region surrounding the city of Esquintla, in the Department of Esquintla, on the Pacific Coastal Plain. The region is agricultural, with sugar cane and cotton plantations. Residents are Spanish speakers and are of mixed European–Mayan Indian descent.

Materials

To develop interview materials that would be appropriate at all four sites, preliminary open-ended and free-listing type questions (16) were used to elicit descriptive information on susceptibility, causes, symptoms, and treatments for diabetes. Convenience samples of ~20 women were selected for interviewing at each site. Responses were tabulated separately for each question and each site. Then a second interview protocol was developed that consisted of close-ended yes or no questions. The protocol included items mentioned by at least 10% of respondents at each site. Items also were incorporated from the Cornell Medical Index (17,18) to cover a broad range of symptoms and from the anthropologic literature to capture traditional concepts of illness causation and healing. The final questionnaire consisted of 130 questions about diabetes: 40 items covered susceptibility to and causes of diabetes, 59 items focused on symptoms, and 31 items covered treatments and sources for treatment. Items were written so that approximately half of the statements were positive and half were negative. In addition to the questions about diabetes, participants were asked their age, sex, educational level, and household size and about their experience with diabetes (Have you heard of it? Has anyone you know had it? Has anyone in your family had it? Do you have it?). Because of the length of the questionnaire, only proxy variables were used to assess acculturation (birthplace, where educated, length of residency in U.S., and language of interview). All interview materials were translated into Spanish appropriate for each site.

Procedure

A representative sample of households was selected at each of the four sites (sample size information below). A multistage random sampling strategy was used for the three urban samples. In Hartford, five census tracts with the highest concentration of Puerto Ricans were selected for sampling. Blocks, streets, and then residences were selected at random. In Edinburg, census maps were used to randomly sample tracts and blocks from the entire city. Households were then selected from each block. (An additional location was provided to the interviewing team in case one location was not residential.) Because the logistics in Guadalajara were much more formidable, a neighborhood sampling strategy similar to that of Stern et al. (19) was chosen. In three neighborhoods, each representing a typical middle-, working-, and lower-class neighborhood, blocks and then households were selected randomly. In Guatemala, an equal number of households was selected in each of the four villages. Every second, third, or fourth household was selected for interviewing, depending on the size of the village. In each community, respondents were approached at home, asked to participate, and told that this was a study of "attitudes," that there were no right or wrong answers, and that responses were confidential and anonymous. If no one was at home or if participation was declined, then a neighbor was substituted. Only Latino adults who had "heard of diabetes" were interviewed. In the U.S. samples, respondents had to self-identify as being of Mexican heritage (in Texas) or Puerto Rican heritage (in Connecticut). The U.S. interviews were conducted in Spanish or English, as the respondent wished. Interviews were conducted by local female interviewers. The study was approved by the University of Texas Medical Branch Institutional Review Board, and informed consent was obtained orally from all respondents.

Analysis

The analysis attempted to answer three questions: *1*) was there a coherent belief system present at each site, *2*) to what extent did the samples have similar beliefs, and *3*) were demographic factors such as educational level, experience with diabetes, or acculturation associated with beliefs? The cultural consensus model (20,21) was used to evaluate whether there was sufficient homogeneity in responses to warrant aggregation and description as a single set of beliefs. In contrast to a typical knowledge test approach, where an individual's performance is evaluated in terms of the ability to report medically correct answers, the consensus model was used to estimate group beliefs (whether or not they were medically correct) through an aggregation of responses. A limitation of the knowledge test approach is that it is impossible to determine if incorrect answers are due to a lack of information or from different beliefs.

The cultural consensus model estimates each individual's level of cultural competency (the degree to which each individual shares the group or normative values) and the answer to each question. It is assumed that respondents answer independently of one another, that questions cover a single topic at the same level of difficulty, and that there is only one set of answers. Individual cultural competency scores are extracted from a matrix of inter-respondent similarity coefficients similar to a factor analysis of people. The model is appropriate only if there is relatively high agreement among respondents (22). A goodness-of-fit index is used to determine if the data fit the model, e.g., if the data are well described by a single factor solution. Competency scores range from zero to one and can be directly interpreted as the proportion of known answers or the proportion of shared, normative beliefs (23). Responses of each individual are weighted by their competency and aggregated to arrive at a Bayesian posteriori probability for each answer.

For this study, similarity in responses was measured with the covariance method, and a conservative confidence level of 0.999 was used to classify answers (24). Individual competency scores were correlated with age, sex, educational level, and experience with diabetes to determine if any of these factors was associated with degree of cultural competency about diabetes. Pearson correlation coefficients were calculated with interval-scaled independent variables, and *t* tests were calculated with dichotomous independent variables (25). Agreement between samples was assessed by comparing the classification of items with kappa (κ) (26).

Sample size

The cultural consensus model also provides a means for estimating the necessary sample size (21). Sample size is a function of the group's average competency level, the desired level of confidence (the Bayesian posteriori probability), and the desired level of accuracy. As with most sample size estimates, when variability is low, a small sam-

Table 1—*Sample description*

	Guatemala	Mexico	Texas	Connecticut
n	40	40	41	40
Female (%)	98	100	100	70
Age (years)	39.2	46.4	37.9	44.7
Number of children	2.9	4.2	2.2	4.3
Number of people in household	5.4	5.4	4.2	2.8
Do you know someone with diabetes? (% yes)	60	90	98	100
Does someone in the family have diabetes? (% yes)	23	75	78	93
Do you have diabetes? (% yes)	5	13	12	35

ple will suffice. A conservative estimate based on low group competency (0.50), a stringent confidence level (0.999), and high accuracy (0.95 of items classified correctly) shows that a minimum sample size of 29 per group is needed to model beliefs (16,20,21). To ensure that we had an adequate sample size to model beliefs, and to compare cultural competency scores with demographic variables, the protocol designated a target or quota sample size of 40 households at each site.

RESULTS — A total of 161 people were interviewed. The response rate was 66% in Edinburg, 93% in Hartford, 88% in Guadalajara, and 95% in Guatemala. Respondents were predominantly female and in the same age range across the four samples (Table 1). There was wide variability in educational level between sites, but the values were consistent with normative levels for each area. In the Texas sample, 93% of the respondents were born and educated in the U.S. In the Connecticut sample, all respondents were born in Puerto Rico, and 93% were educated there. Prevalence of experience with diabetes (based on knowing someone, having someone in the family, or personally having diabetes) was lowest in Guatemala, intermediate in the Mexico and Texas samples, and highest in Connecticut.

Results indicated high concordance among respondents with a single belief system at each site. All four samples met the goodness-of-fit criteria for using the consensus model, that there should be a single factor solution when factoring the person-by-person covariance matrix (it is recommended that eigenvalue ratios should be >3:1; ours ranged from 6.9:1 to 14.4:1). The average competency or proportion of shared beliefs (± 1 SD) at each site ranged from a high of 0.67 ± 0.10 in Connecticut and 0.66 ± 0.09 in Texas, to 0.55 ± 0.19 in Mexico and 0.48 ± 0.12 in Guatemala. When respondents from all four sites (n = 161) were analyzed together, the cultural consensus model fit well (9.3:1 ratio) and showed the shared level of cultural beliefs to be 0.56 ± 0.15, indicating concordance across sites as well. Analysis of variance (ANOVA) results indicated that the competency levels in the two U.S. samples were significantly higher than the international samples, and that the competency level in the Mexican sample was significantly higher than in the Guatemalan sample (overall $P < 0.00005$; Scheffé test $P < 0.05$).

Beliefs about diabetes did not differ by knowing someone with diabetes, having a family member with diabetes, or personally having diabetes. The one exception was that Guatemalans knew more about diabetes if they knew someone with diabetes (0.43 vs. 0.51 average cultural competency scores, $P < 0.05$). Beliefs about diabetes also did not differ significantly by age, sex, number of children, or size of household. However, in the two samples with the lowest overall educational levels, respondents with higher educational levels tended to know more of the cultural beliefs. In Mexico, those with educational levels above the mean (5.35 years) had significantly higher cultural knowledge scores than those with lower educational levels (0.61 and 0.49 respectively, $P < 0.05$). In Guatemala, there was a similar trend: those with an above-average educational level (≥2 years) knew more of the cultural beliefs (0.51 and 0.44, $P = 0.059$).

The acculturation variables of birthplace and language of the interview had insufficient variability for analysis. In the Texas sample, almost all respondents were born and educated in the U.S. and interviewed in English. In the Connecticut sample, almost all respondents were born and educated in Puerto Rico and interviewed in Spanish. In the Connecticut sample, length of residency on the mainland correlated positively with cultural competency ($r = 0.32$, $P < 0.05$).

The consensus model was used to estimate the answer to each question and the level of confidence in each. At the 0.999 confidence level and beyond, items were classified as "yes" or "no" or unclassified. The Connecticut and Texas samples had 5% (7 of 130) and 4% (5 of 130) of items unclassified; the Mexican sample had 11% (15 of 130); and the Guatemalan sample had 19% (25 of 129). (Because many rural Guatemalans did not know what insulin was, one question was dropped from the final analysis.) Of the 129 questions, 83% were classified in the same way by at least three of the samples, and 55% were classified identically by all four samples. Agreement within specific subcategories of questions varied somewhat, being slightly lower for symptoms and higher for treatments. κ coefficients calculated between samples ranged from 0.43 to 0.69 and were highly significant ($P < 0.0005$). The two U.S. samples had the highest agreement, with 83% identical answers (κ = 0.69).

The core description of diabetes shared by all four sites is illustrated in Tables 2 and 3. Respondents believed that anyone can get diabetes (Table 2). Men, women, and old people were thought to be susceptible, although it is not believed to be caused by aging. The Mexican, Texan, and Connecticut samples also believed that children are susceptible. Diabetes is thought to be hereditary; some people are just born with it. Eating sugar or sweets, a lack of insulin, and uncontrolled sugar in the blood are believed to be causes of diabetes. Although illness among Latinos is sometimes attributed to humoral or hot/cold causes (changes in the weather, getting wet or bathing too much, or by eating a diet lacking balance in "hot" and "cold" elements), diabetes is not one of those illnesses. It is also not thought to be contagious or caused by smoke, pollution, allergies, or from drinking too much alcohol. It is also not thought to be caused by witchcraft. The Mexican sample differed from the other samples in consistently identifying emotional causes of diabetes: fright (*susto*), anger, and strong emotions. The Guatemala sample also considered "strong emotions" to cause diabetes. The Texas and Connecticut samples reported that diabetes can be caused by eating a poor diet.

Table 2—*Beliefs regarding susceptibility and causes of diabetes*

Who is susceptible
Men, women
Old people
Children*
Relatives of a diabetic individual*
Causes
Hereditary; born with it*
Not from aging
Uncontrolled sugar in blood
Eating sugar or sweets: drinking sodas
Lack of insulin*
Not from hot/cold imbalances
Not from witchcraft
Not as a consequence of taking medicines
Not contagious: not from a virus*; not from a parasite
Not from allergies, pollution, smoking
Not from overexertion
Not from spoiled or undercooked food
Not from anemia*
Not from drinking too much alcohol*

*Only three sites agree: Mexico, Texas, and Connecticut.

Of the 59 questions on symptoms, respondents reported that diabetes can cause excessive thirst, sugar in the blood, headaches, dizziness, irritability, circulatory problems, kidney problems (also frequent and burning urination), eye problems (loss of vision), and a craving for sweet things to eat (Table 3). It is also thought to cause lethargy and susceptibility to other illnesses. Three of the four samples also identified fainting, worry, and mood swings as symptoms. The two U.S. samples reported numbness or tingling as a symptom, and the Connecticut sample additionally reported severe pains in joints, hands, or feet. No gastrointestinal, respiratory, or skin symptoms were reported.

Although Latin Americans often tend to use pharmacists as a source of health care, diabetes is believed to be best treated by a doctor (Table 3). The diabetic patient, however, is believed to have much of the responsibility in caring for him- or herself. This is probably because it is believed that diabetes can be controlled by eating a balanced diet (no sweets, fat, or alcohol) and losing weight. All samples believed that pills help in processing blood sugar and that blood sugar should be checked regularly. The sequelae are widely recognized: diabetes can cause kidney problems, heart problems, blindness, coma, and early death. Most folk treatments (spearmint/yerbabuena tea, massage, rubbing the infirm person with an egg) and sources for care (pharmacist, herbalist/naturist) were not considered effective. Exceptions were the use of cactus juice (aloe and *nopal* in Mexico and aloe in Guatemala).

CONCLUSIONS — Results indicated that there is agreement among Latinos regarding diabetes. A single set of shared beliefs was present in each community, and beliefs were similar across communities. The level of shared beliefs varied from a high of 66–67% in the Connecticut and Texas samples, to 55% in the Mexican sample, to a low of 48% in the Guatemalan sample. More than half (56%) of the beliefs were shared across samples. The overall level of cultural competency at each site was associated with experience: as the prevalence of diabetes increased across samples, so did the consistency and concordance of beliefs about diabetes. Furthermore, cultural beliefs about diabetes tended to converge on biomedically correct answers.

Consensus analysis has been used to study beliefs about malaria (27), causes of cancer (28,29), psychiatric diagnoses (30), patient-provider perceptions of respiratory symptoms (26), and interpretation of X-rays (22). This approach contrasts with the more commonly used knowledge test approach, where tests are developed from and responses are scored against biomedical answers. Diabetes knowledge tests assess patients' comprehension of the biomedical model concerning nutrition, symptoms, glucose testing, and medications (31–33). Knowledge test scores reflect the proportion of items that respondents get correct. However, a wrong answer may be due to an error or idiosyncratic beliefs on the part of an individual, or it may reflect widely held cultural beliefs. A consensus analysis and a comparison of the culturally correct answers with biomedical answers can facilitate identification of items about which there are cultural beliefs, and the strength of those beliefs. "Errors" that are due to a lack of information and those that are due to different beliefs about diabetes may need to be addressed differently in an educational intervention.

Most knowledge tests are designed for diabetic patients and assume more specific knowledge about diabetes and diabetes management than did our questionnaire. (In fact, the one item that referred specifically to insulin had to be dropped for the Guatemalan sample because many respondents did not know what insulin was.) Nevertheless, we detected a fairly high level of general knowledge about diabetes. Subjects in Connecticut, Texas, and Mexico knew that relatives of diabetic patients were more likely to get the disease and that it was caused by a lack of insulin. Thirst, frequent urination, lethargy, dizziness, and vision problems were recognized as potential symptoms. "Not eating well or eating a poor diet" was seen as a causal factor in the two U.S. samples, but the link between "being overweight" and diabetes was recognized only in the Texas and Mexico samples. "Numbness or tingling" was recognized as a symptom in both Connecticut and Texas, but only the Connecticut sample reported

Table 3—*Latino beliefs about symptoms and treatments*

Symptoms
Excessive thirst
Lack of animation; tired, no energy
Affects kidneys
Frequent urination
Burns with urination
Sugar in blood
Crave sweet things
Dizziness
Headaches
Crankiness, irritability
Problem with blood circulation
Blood pressure goes up
Eye problems, loss of vision
More susceptible to other illnesses
Wounds heal slowly*
Don't have to stay in bed*
Treatments
Doctor is best
Will not go away by itself
Not pharmacist
Must care for self
No cure, only control
Check blood sugar regularly
Pills help to process sugar
Eat balanced diet
Lose weight, if overweight
No liquid diet cure
No sweets, no alcohol, no fat
No yerbabuena or lemon tea
Lack of treatment can
Cause kidney problems
Cause heart problems or heart attack
Cause coma
Cause early death
Get worse with no treatment

*Only three sites agree: Mexico, Texas, and Connecticut.

"severe pains in your hands and feet" as a possible symptom. The beneficial effects of exercise were reported by the two U.S. samples. Treatment by a doctor and regular checking of blood sugar were seen as part of management of the disease for all samples. Recognition of the signs and symptoms of diabetes is important in identifying individuals with the disease, and recognition that a doctor is an important source of treatment should help to minimize delay in seeking proper medical care. Equally important, respondents were aware of the complications of diabetes (e.g., kidney, heart, and vision problems).

Widely held beliefs that are not necessarily in concordance with the biomedical model concern some of the symptoms of diabetes and the role that emotions may have. In addition, the Mexican and Guatemalan samples report that cactus juice may be an effective treatment. *Aloe vera*, in fact, has been found to have hypoglycemic properties (34–36). All samples believe that diabetes can be caused by eating sugar, sweets, or drinking soda pop but not by drinking too much alcohol.

While this study focused on beliefs at the community level, we feel the results have important implications for the management of diabetes in patients who have this disease. Family is of great importance to Latinos, and family support is a key variable to assure compliance with dietary and other aspects of the management of diabetes. The high levels of correct knowledge within and between Latino groups suggest that practitioners need not be overly concerned with potential ethnic variations in the perception of the disease. Rather, the focus should be on obtaining the support of the patient's family and using the knowledge of the various aspects of this disease as a source of support for patient compliance with practitioner treatment regimens. Practitioners will want to educate not only the patient but also the family with regard to beliefs about diabetes that are not in concordance with the biomedical model of this disease. Patient education should stress the lifestyle behaviors that may prevent diabetes in these high-risk populations: foremost is the importance of physical exercise and then avoiding obesity (for women) and limiting alcohol intake (for men) (37).

The results of this study may be limited by the presentation of items and the sample size. Questionnaire items were presented in a nonrandomized format so that similar items were presented together (i.e., symptoms were presented by system rather than in a completely randomized format). Although this may improve recall and make the interview flow in a reasonable way, it can also encourage response-set bias, so that individuals saying "yes" to "frequent urination" may be more likely to say "yes" to "burning with urination," for example.

Conservative a priori sample size calculations indicated that a minimum of 29 respondents would be necessary to determine if a homogeneous set of beliefs were present in each sample. Our sample sizes exceeded this, and the data for each sample met the goodness-of-fit criteria for homogeneity, indicating that the sample sizes were sufficient for modeling beliefs. A different design (case/control) or a larger sample would be necessary to represent the beliefs of subgroups. While our data suggest that there are minimal differences between the beliefs of diabetic and nondiabetic respondents (the cultural knowledge scores were not significantly different between these groups in any sample), we did not have enough diabetes cases in three of the four samples to conduct the test with sufficient power, nor did we have enough cases to model their beliefs separately.

Nevertheless, the fact that the data fit the consensus model indicated that a single belief system was present in each sample, and thus the most likely variation within a sample is that some subgroups may know more than others, not that their beliefs are different. This pattern is also suggested by the variables that correlate with cultural competency. Better educated, more acculturated, and having greater exposure to or experience with diabetes all seem to predict higher competency and not different beliefs. Better-educated Mexican and Guatemalan respondents knew more of the cultural beliefs about diabetes. Although the Texan sample did not have enough variation in the acculturation variables to assess their effect on beliefs, the Connecticut sample indicated that respondents who had longer residency in the mainland U.S. tended to know more of the cultural beliefs. Furthermore, the average competency level was higher in communities with higher diabetes prevalence.

The integration of qualitative and quantitative methods in this study contributes to a reliable and valid description of beliefs. Potential response bias limits the interpretation of results in studies relying solely on open-ended questions (respondents vary in detailed versus perfunctory responses, and individuals recall fewer items with open-ended questions than they can recognize with structured, closed-ended questions). Also, the frequency distributions of responses to open-ended questions do not lend themselves to systematic comparisons between samples, because individuals may mention more than one response. Nevertheless, open-ended interviews conducted with individuals or in small groups are extremely valuable for generating items of relevance to the population. For example, studies like those by Quatromoni et al. (38), Anderson et al. (39), and especially Hunt and colleagues (40,41) are suggestive of issues that may be important to Latino diabetic patients. A follow-up step is necessary, however, to explore the concepts suggested in the interviews and to determine their importance to the population at large.

A very pragmatic question concerns the relation between beliefs and behavior: do beliefs about diabetes affect behavior? Research on the correlates of adherence in diabetic patients has been approached in a number of ways. The most common approach has been to correlate an individual's knowledge test score with a clinical measure of compliance (HbA_{1c}). Typically this is done with young, nonminority, type 1 diabetic patients in conjunction with an educational intervention. Another type of study has measured patients' attitudes and perceptions relevant to health-seeking behaviors, such as their perceived severity of the disease, personal susceptibility, complications, and benefits of and barriers to treatment management (42–47). Few knowledge test and health belief studies have focused on Latino populations, and when they have, the results have been equivocal (1,2). Educational interventions incorporating cultural beliefs and preferences may prove to be effective in helping Latino type 2 diabetic patients to attain glycemic control (48).

Kleinman et al. (5) indicated that concordance—or lack of concordance—between a patient's and provider's explanatory model of illness may be an important determinant of adherence to medical regimens. They suggest that better understanding of patients' beliefs may increase patient satisfaction and in turn may positively affect adherence. The findings of Cohen et al. (49), although based on only 14 diabetic patient-clinical staff pairs, show a tendency for patients in discordant pairs to have higher glycosylated hemoglo-

bin levels. The approach used by Kleinman and others to compare explanatory models does so descriptively, on an individual-by-individual basis. The consensus model is appropriate when there exists a shared model across individuals and may be used to clearly articulate features of patients' and providers' explanatory models (26).

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