Thinking About the Causes of Diabetes: Cultural Models, Gender and Individual Adjustment to Type 2 Diabetes in a Mexican Community

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Research Problem

Type 2 diabetes affects about 8% of the adult population in Mexico. In the Social Security hospitals in Guadalajara, where this research was carried out, Type 2 diabetes was the leading cause of death. Social workers and other health care professionals have to focus on a creation of new approaches to diabetes prevention and care that would extend beyond biomedical model of the disease and would address social and cultural aspects of illness behavior. The main purpose of this study is to examine cultural influences on diabetes related knowledge and behavior in an urban Mexican community, where Type 2 diabetes is a serious health problem.

The paper focuses on causal explanations of diabetes, which often form a core of medical knowledge. When formulating illness explanations an individual draws on cultural knowledge that is typically mediated through social interactions. The aim of this study is to describe culturally shared knowledge about diabetes causes that has an important role in shaping individual illness experiences.

It has been noted that formulation of illness explanations co-occurs with ongoing illness experiences (Chrisman & Kleinman, 1983). This raises another question—how does the level of culturally shared knowledge about diabetes causality relate to individual health consequences? In research about diabetic compliance, it is often assumed that more biomedically "correct" knowledge should translate into better diabetes care. This study will examine how cultural knowledge of diabetes causality--that may be very different from biomedical notions of the disease--relates to diabetes control.

Gender is one of the important social categories in examining health behavior and knowledge. However, there is a lack of research in Mexico that would examine gender differences in diabetes-related knowledge. The third aim of this study is to examine gender-related intracultural variation in lay knowledge about diabetes causation.

The study uses cognitive approach that defines culture as shared information and knowledge. It builds on the cultural consensus analysis (Romney et al., 1986) that integrates qualitative and quantitative methods and provides a theoretical and methodological solution to study cultural sharing and intracultural diversity. First, cultural consensus analysis determines the degree to which a set of informants share knowledge of some cultural domain. If knowledge is shared, it is reasonable to infer that people are all drawing on a single cultural model of that domain. Second, it provides a "culturally best" estimate of the correct answer to each question asked of the informants. Third, cultural consensus analysis estimates how much each individual's responses correspond to the group shared responses (the level of cultural knowledge).

In summary, the study builds on cultural consensus analysis and has a purpose to understand: (a) cultural knowledge of diabetes causation; (d) the relationship between cultural knowledge and diabetes control; (c) gender-related differences in cultural knowledge.

Methods

The study consisted of two stages. All participants were adult Type 2 diabetes patients attending social security clinics in Guadalajara, Mexico. Participants were recruited with a help of social workers and medical assistants. All interviews, instrumentation and qualitative analysis were conducted in Spanish by the author. Informed consent was obtained from each participant.

In the first stage, open-ended qualitative interviews were conducted with 28 participants. Participants were allowed to tell the story of their illness in their own words, but a checklist of semi-structured prompting questions was used (e.g. How did you learn that you had diabetes? What do you think caused your diabetes?). On the basis of the elicited themes, a series of scenarios describing the causes of diabetes were constructed (e.g. Don José became diabetic because of a fright that he experienced when somebody tried to rob their house. He got very frightened, and because of that he got diabetes). A scenario can be defined as a brief, one or two-sentence, description that illustrates identified themes related to diabetes causation (Caulkins et al., 2000). Scenarios were pre-tested with a small group of diabetes patents, and the final list included 21 scenarios (Table 1).

In the second stage of the study, 46 individuals were asked to rate each of the scenarios on a 3-point scale. Demographic and clinical information was gathered. A purposeful sampling frame was used. An attempt was made to assure that a sufficient number of men and women were recruited. According to Romney et al. (1986), in order to have a 95% confidence level, 95% validity, and assuming that participants would have 0.5 level of cultural knowledge, a sample had to include at least 17 participants. The sample included 24 women and 22 men and was sufficient to conduct cultural consensus analysis separately for the data generated by men and women.

A cultural consensus model was used to analyze the scenario interviews to evaluate the level of cultural sharing, estimate each individual's level of cultural

knowledge, and validate cultural themes about the causes of diabetes. Consensus analysis was performed using ANTHROPAC (Borgatti, 1996). Correlation, t-test and multiple regression analysis were conducted using SPSS to evaluate gender differences and examine the relationship between cultural knowledge and the status of diabetes control.

Summary of Results

Cultural consensus analysis revealed that the ratio between the first and second eigenvalues was 4.34:1, with more than 74% of the variance explained by the first factor, and the average level of cultural knowledge being .64 (± .19), which suggests that participants shared a single cultural model of diabetes causality.

The mean knowledge score for women was .72 (± .17), while for men it was .55 (± .18). This difference is statistically significant ($t = 3.27$, $df = 44$, $p < .01$). To assess gender differences in the content of cultural knowledge, a rank order correlation between the men's and women's answer key scores was calculated. Spearman's rho was .91 ($p < .01$) suggesting that men and women shared the same cultural model of diabetes causation. However, there was a much higher level of cultural sharing among women than among men.

The study participants maintained very poor control of their diabetes. Since the blood glucose levels in this population had a skewed distribution, diabetes control was coded as a categorical variable (good, moderate, and poor control), and multiple regression analysis was performed. Individuals who were in better diabetes control had a higher level of cultural knowledge. The association was more apparent in women than in men (Table 2).

Cultural consensus analysis validated cultural themes inferred from the first stage qualitative interviews and estimated their salience in the inferred cultural model of diabetes causes (Table 1). According to the local cultural knowledge, diabetes is a relatively new disease that can be related to very different causal mechanisms. The issues of emotional distress, societal changes related to urbanization and economic insecurity, as well as deteriorating quality of modern food products took the most salient place in the lay model. Biomedically "consistent" explanations of diabetes, such as heredity, obesity, high fat diets and low physical activity, were also present in the lay model, but they were rated as less salient themes.

In summary, the cultural model of diabetes causation shared by the Type 2 diabetes patients in the studied Mexican community emphasized environmental and psychosocial influences on human health and illness. The observed gender differences in cultural knowledge suggested that diabetic men in the studied community had less social interactions on the issues related to their diabetes, and they displayed less involvement, identification and expertise in that area. The relationship between cultural knowledge and diabetes control is intriguing and seems to challenge "common sense" notions that often treat lay knowledge as misconceptions and obstacles for proper diabetes control. Due to the cross-sectional nature of the study, the direction in this relationship is not clear. However, the observed relationship might suggest that more cultural knowledge relates to higher involvement and self-actualization which translates into better adjustment to

diabetes control. These results are intriguing in the context of research showing that lack of cultural consonance, or the inability to live up to the cultural ideals, is a stress-producing condition which affects health (Dressler & Bindon, 2000). In relation to diabetes knowledge, an individual whose views and understandings of his or her illness causation are more compatible with others in the social environment, may feel more adjusted, accepted and "normal" about the ailment. In contrast, an individual who has different perceptions may experience a sense of social isolation and poorer adjustment to diabetes.

Implications for Social Work Practice

The study results suggest several important implications for diabetes prevention and care that have direct relevance for social work professionals trying to mediate between the biomedical worlds of doctors and the social and cultural realities of their patients. First, since emotional distress plays such an important role in the lay model of diabetes causality, it is very important to make stress-management education an integral part of diabetes prevention and care. Considering that a higher level of cultural knowledge relates to better diabetes control, it is important to create prevention and treatment approaches that would build on community participation and include peer-education, community volunteers and informal social gatherings. Third, gender-related differences in cultural knowledge suggest that an effort has to be made to encourage male participation in health care. Finally, diabetes prevention requires broader social policies and actions that would address such issues as deteriorating job markets and economic insecurity.

References

Borgatti, S. P. (1996). ANTHROPAC 4. [Computer software] Natick, MA: Analytic Technologies.

Caulkins, D. D., Trosset, C., Painter, A., & Good, M. (2000). Using scenarios to construct models of identity in multiethnic setting. *Field Methods*, 12, 267-281.

Chrisman, N. J., & Kleinman, A. (1983). Popular health care, social networks, and cultural meanings: The orientation of medical anthropology. In D. Mechanic (Ed.), *Handbook of health, health care, and the health professions* (pp. 569-590). New York: The Free Press.

Dressler, W. W., & Bindon, J. R. (2000). The health consequences of cultural consonance: Cultural dimensions of lifestyle, social support, and arterial blood pressure in an African American community. *American Anthropologist*, 102, 244-260.

Romney, A. K., Weller, C. S., & Batchelder, H. W. (1986). Culture as consensus:A theory of culture and informant accuracy. *American Anthropologist*, 88, 313-338.

Table 1. Answer key scores and rank order of scenarios on diabetes causation used in the second stage interviews.

Rank	Scenario	Answer key score*
1	(9) Don José became diabetic because of a fright that he experienced when somebody tried to rob their house. He got very frightened, and because of that he got diabetes.	2.93
2	(11) Señora Elena became diabetic because she had so many angry spells in her life. Her husband used to upset her a lot. She suffered so much with him that she became diabetic.	2.88
3	(17) Before there was not as much diabetes because food was more healthy. And now everything is contaminated, processed, with preservatives.	2.79
4	(10) Señora Veronica became diabetic when her daughter passed away, and from the grief she got diabetes.	2.77
5	(14) Now there are so many people with diabetes because we live in a large city with lots of pressures, lots of hurry; before there were not so many people, or so much traffic, and life was more peaceful.	2.73
6.5	(15) There are many pressures in our times. Due to monetary problems, and lack of jobs, people get anxious and worried, and because of that there are more people with diabetes.	2.69
6.5	(12) These days there are many people with diabetes. People in the olden days did not have so much diabetes.	2.69
8	(13) There are so many people with diabetes these days because they consume lots of fat, lots of pork.	2.68
9	(6) There are different types of diabetes, some hereditary, others from angry spells, and others from frights or other things.	2.65
10	(8) Señora Elena is diabetic, and she is a very fat lady. Most likely her diabetes comes from fatness.	2.61

11	(4) Señora Elena says that her diabetes is hereditary, because her father was diabetic, and he died from that.	2.51
12	(21) Before there were not that many people with diabetes because people used to walk more. Now many jobs are sedentary, and people exercise less.	2.50
13	(3) Señora Ceci thinks that she developed diabetes because she used to eat lots of sweets, lots of chocolate, and things like that.	2.36
14	(2) Señor Jose thinks that his diabetes is caused by what he used to eat. He was used to eating a lot. And most likely this was one of the causes.	2.23
15	(5) Señor Alvarez has doubts that his diabetes is hereditary, because his parents developed diabetes when they were old. Because of that he thinks that his diabetes does not come from his parents.	2.11
16	(1) Señor Toño used to drink a lot and most likely this was the cause of his diabetes.	2.06
17	(16) Nowadays there are many people with diabetes because of the pollution and smog in large cities.	1.90
18	(7) Señor Tacho became diabetic because of one very strong medicine that he had taken for another illness.	1.66
19	(18) Señor Javier developed diabetes 2 years ago, and his wife has had diabetes for 10 years now. None of his parents was diabetic, and so he thinks that he most likely got his diabetes from his wife.	1.17
20.5	(19) Señora Juana became diabetic because she used to eat a lot of vegetables and fruit.	1.07
20.5	(20) Señor José became diabetic because he had a very peaceful life, without any worries, without anything.	1.07

* Scenarios were rated on a 3-point scale: 3 = very true, 2 = possibly true; 1 = not true at all.

Table 2. Regression of cultural knowledge scores in diabetes causation on sex and diabetes control group* variables.

Variable	β	p	Model p	Multiple R^2
Model 1			< .01	.27
Sex (women vs. men)	.43	< .01		
Diabetes control 1 (moderate vs. good)	-.36	.04		
Diabetes control 2 (bad vs. good)	-.32	.07		
Model 2			< .01	.40**
Sex (women vs. men)	.58	< .01		
Diabetes control 1 (moderate vs. good)	-.35	.04		
Diabetes control 2 (bad vs. good)	-.31	.07		
Interaction 1 (sex and diabetes control 1)	.35	.05		
Interaction 2 (sex and diabetes control 2)	-.05	.76		

* Diabetes control groups: good = fasting blood glucose less than 140 mg/dl, moderate = between 140 and 200 mg/dl, bad = more than 200 mg/dl.

** Increment of R^2 from Model 1 to Model 2 is statistically significant, $p < .03$