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"Diabetes is my companion": Lifestyle and self-management among good and poor control Mexican diabetic patients

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Abstract

This paper identifies naturally occurring lifestyle and self-care practices in managing type 2 diabetes mellitus that are associated with good glycemic control. In-depth, qualitative interviews were conducted in Guadalajara, Mexico, with 31 matched pairs of good and poor control diabetic patients ($n = 62$), who were matched on their duration of disease and use of medications. While many themes were listed by both groups, a comparison of the responses indicated that themes of daily exercise with a preference for walking, eating beef and milk rather than chicken and fish, economic issues, and emotional issues distinguished poor-control patients. Good-control patients were more likely to have a negative reaction to their initial diagnosis, take a more comprehensive approach to control, eat only two meals a day (plus snacks), use noncaloric beverages to satisfy desires for more food, and know what their blood sugar levels should be.

Keywords: Mexico; Diabetes mellitus; Qualitative research; Glycemic control; Hispanics/Latinos; Self-management

Introduction

This paper identifies lifestyle and self-care practices related to successful glycemic control. Hyperglycemia is associated with poorer outcomes in type 2 diabetes (Turner, Cull, Frighi, & Holman, 1999; UKPDS 33, 1998; UKPDS 34, 1998), and although self-management activities can improve glycemic control, improvements can be small and short lasting (Deakin, McShane, Cade, & Williams, 2005). Quantitative epidemiological studies of correlates of glycemic control have been limited by a focus on demographic variables, such as age, educational level, and gender. Qualitative anthropological studies have been limited by using a single group of patients and not distinguishing good- and poor-control patients in their study design. In this study, a case-control design is combined with qualitative interviewing. In addition, good- and poor-control patients are matched on their duration of disease and use of anti-diabetic medications. These latter two factors are known to affect

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glycemia and could potentially bias findings if either of the two factors were unequally distributed across the good- and poor-control groups. Thus, our study design highlights lifestyle practices that differentiate the groups.

Anthropological contributions to the study of disease have identified macro-level forces that create epidemics such as the current increase in type 2 diabetes (Chaufan, 2004) and have also demonstrated the importance of the micro-level emic perspective in developing successful interventions. While theoretical work has implicated creation of unhealthy social and physical environments in the overall increase in diabetes (Chaufan, 2004), a continuing problem is the associated increase in morbidity and mortality of affected individuals and the costs to them, their families, and society. Our goal in this study was to focus on individuals and identify strategies used by diabetic patients in good control, so that these might be emphasized in educational efforts for poor-control patients. In addition, we feel that an understanding of the strategies that actually work for control of diabetes may point to the direction that macro-level changes must take to deal with the current epidemic.

Background

Over the past decade in Mexico, there has been a large (22%) increase in cases of diabetes (Aguilar-Salinas et al., 2003), placing a tremendous burden on affected individuals and their families, as well as on the entire health care system. Strict metabolic control of glucose (HbA1c below 7%) is recommended for diabetic patients to prevent or delay complications (American Diabetes Association, 2003; IMSS, 2000), but is not easy to achieve. In the US, 64% of diabetic patients are above 7.0% (Koro, Bowlin, Bourgeois, & Fedder, 2004). In Mexico, levels of poor control may be much higher (Aguilar-Salinas et al., 2003), possibly accounting for the higher levels of morbidity and mortality due to diabetes. Control of type 2 diabetes requires changes in behaviors, attitudes, and values acquired during the life of the patient. Such aspects of lifestyle are difficult to modify, despite the fact that the person may recognize the need for such changes. As such, glycemic control needs to be considered as not just a medical issue, but in a broader socio-cultural framework, including naturally occurring strategies.

While diet, weight loss, and exercise can be effective in controlling glycemia, patients experience a number of problems addressing these issues. Anger over one's diet and the difficulty of eating a diet different from the rest of the family have been noted among Mexican American type 2 diabetic patients (Eid & Kraemer, 1998). Anderson, Goddard, Garcia, Guzman, and Vazquez (1998) reported that Latinas felt great cultural pressure to put the needs of their family before their own needs for control of their diabetes. Adams (2003) studied 13 Latinas and cultural conflicts with dietary recommendations, including conflicts with cultural food preferences and changes in forms of social interaction, which led to feelings of loss of identity.

Family support and gender issues may also be critical in dietary aspects of glycemic control. Among immigrant Latinos in rural North Carolina, family members were not supportive of efforts to loose weight (Arcury, Skelly, Gesler, & Dougherty, 2003). A sample of women in North Carolina reported that their husbands were not willing to eat the same diets that they required while men noted that their wives prepared the foods necessary for them as well as engaged in physical activity with their husbands (Savoca & Miller, 2001). In Mexico, Mercado and Vargas (1989) found that all men had their food prepared especially for them by a family member, while few women had such support. These data suggest that men may be more likely to be in good control with better compliance with dietary recommendations. Nutrition education improved glycemic control in female middle class type 2 diabetic patients, if a family member took on a supportive role in relation to food, medical advice, management and patient care tasks (Gerstle, Varenne, & Contento, 2001). A health education intervention for type 2 Mexican American diabetic patients in Texas (Brown, Garcia, Kouzekanani, & Hanis, 2002) also reported success in lowering glycemic levels by incorporating a spouse or first degree relative in the program.

Other factors which may be important in diabetes control are motivation, self-esteem, and approach to disease management. MacLean and Lo (1998) reported that positive self-esteem influenced *reported* success (they did not measure glycemia) in adhering to self-care behaviors, such as diet, blood sugar testing and exercise in individuals with type 2 diabetes. A pattern of a more "active approach" to one's illness may be associated with better control. Patients who felt their past actions were responsible

for their diabetes had better adherence to dietary recommendations (Schoenberg, Amey, & Coward, 1998). Campbell et al. (2003, p. 681) found that "being able to attain a balanced life with diabetes was … strongly associated with an approach … characterized as 'strategic noncompliance', involving the monitoring and observation of symptoms and an ability to manipulate dietary and medication regimens in order to live life as fully as possible, rather than limiting social and work activities in order to adhere rigidly to medical advice." Patients may make a conscious decision to take control, including taking breaks from active self-care from time to time. In contrast, Hunt, Valenzuela, and Pugh (1998) suggest that control orientations may develop as a result of experience with the disease.

Ellison and Rayman (1998) described three phases in learning to manage diabetes: management-as-rules, management-as–work, and management-as-living. Seventeen female diabetic patients were selected for study on the basis of their good HbA1c and self-confidence. These women "took ownership of the management of their condition" (Rayman & Ellison, 2000, p. 7). However, Ellison and Rayman's (1998) lack of a control group of poor control diabetic patients makes it difficult to be sure that this model is distinctive of good-control patients.

O'Connor, Crabtree, and Yanoshik (1997) studied those who improved their Hba1c by at least 20% and those who did not 6 months after participating in a diabetes care program. Those who improved after the intervention ("positive responders") took their disease diagnosis more seriously and understood the importance of diet (and how to "cheat" on it). The positive responders had "developed a normal life that included diabetes and the adjustments necessary to treat diabetes, rather than having to constantly struggle with the reality of having diabetes each new day" (O'Connor et al., 1997, p. 426). Positive responders also were more likely to report "conversion experiences," "realizing the threat diabetes represented to their health and made a conscious decision to take better care of their diabetes" (O'Connor et al., 1997, p. 426).

An advantage of qualitative studies is their flexibility and ability to identify unrecognized factors associated with glycemic control. However, most of the studies reviewed above did not compare good-and poor-control patients. An important exception has been the work of Hunt, Valenzuela et al. (1998) who used in-depth interviews to make a variety of comparisons. Interestingly, they compared responses to glycemic control but did not find a relationship between reported strategies and level of control. Savoca, Miller, and Quandt (2004) compared good- and poor-control patients and found those in good control were diagnosed at an older age, had better coping skills, and tended to persevere with their diets. Since the groups did not differ in terms of their current age, a difference between groups in their average age of diagnosis implies that those in poor control had had diabetes for a longer period of time. Since large-scale studies (UKPDS 33, 1998; UKPDS 34, 1998) have shown that longer duration is associated with a worsening of control, the apparent group differences are biased by those in poor control having had diabetes for longer duration.

A good study design is essential in the exploration of factors related to glycemic control. Individuals in good and poor control must be compared to see if the frequency of themes suggests differences between the groups. Second, to assess the effect of lifestyle variables the study design must control for physiologic factors as much as possible. If patient groups differ in duration of diabetes, it is impossible to tell whether differences between patients in good and poor control are due to disease duration or lifestyle factors. In this study we compare patients in good and poor control, matched in terms of their duration of disease and use of anti-diabetic medications, so that differences in themes mentioned by the two groups should reflect lifestyle or management activities. Finally, it is important that interviewers be blinded to the glycemic status of patients at the time of the interview. Such outcome variables should not initially be known by the interviewer, as this could influence the depth and direction of questions. In summary, our goal in this research was to identify naturally occurring attitudes and practices associated with better glycemic control.

Methods

Setting

This study was conducted in Guadalajara, capital of the state of Jalisco, in Mexico. The population of more than four million people is predominantly non-Indian (*mestizo*). Respondents were patients at a Unidad de Medicina Familiar (Family Medicine Clinic) of the IMSS (Instituto Mexicano de Seguro Social). The IMSS is the government-provided health care system for workers; employees at

businesses employing more than 10 people are eligible. The clinic sampled serves over 110,000 people who are considered in Mexico to be a predominately working class population.

Questionnaire

The interview (approximately one hour) consisted of a semi-structured format focusing on issues mentioned in the diabetes literature as related to lifestyle and self-care practices. Questions covered strategies of glycemic control, problems in doing so, concepts of diabetes causality, initial diagnosis and reactions, support networks, and interpretation of personal glycemic levels.

Sampling

Because good glycemic control is uncommon (a pilot study of HbA1c on 50 diabetic patients indicated that it was about 10%), 800 diabetic patients with at least 1 year since diagnosis were screened in order to obtain a target sample size of approximately 20–40 patients in good control (Garcia de Alba et al., 2006). To measure HbAlc, a radio immune assay with good reliability and validity was performed, using a Bayer brand DC-2000 apparatus (Carter et al., 1996).

Two lists of patients were constructed (one of 571 patients with levels of HbAlc above 7% and the other of 229 patients below 7%). From these lists, patients in good control were selected. The poor-control sample was drawn from those with HbAlc levels equal to or above 8% and matched to 31 patients in good control (HbA1c $<7.0\%$) (total study $N = 62$) according to specific criteria: length of time since medical diagnosis of diabetes (within 3 years), use of medications for diabetes control, age (within 5 years), and when possible, gender. Patients were contacted by phone or at their homes and asked if they would participate in this aspect of the study. Interviews were conducted in Spanish by two of the authors (JGAG and ASR), both experienced in qualitative research. As tape recording was not culturally acceptable, the interviewers wrote the responses of the interviewees, trying to capture as many direct quotes as possible.

Data analysis

After all data were collected, the first step involved in the analysis was coding the text, i.e., the identification of recurrent themes (Strauss & Corbin, 1998). Responses were coded by hand using a preliminary codebook developed by the researchers. The codebook contained broad domains based on the research questions and interview guide. However, further codes developed as the research ensued (Schensul, Schensul, & Le Compte, 1999).

The codebooks were revised as data emerged from analysis and categorization. A professional translator (with qualitative expertise) was asked to code five interviews independently to foster inter-rater reliability of the coded data, in particular regarding dialect unique to Mexican populations. Disparities in coding were discussed and resolved through consensus. Although inter-rater reliability was not computed formally, coding themes were largely consistent.

The primary analysis consisted of a descriptive summarization of the response themes. To describe group differences, the percentage of patients in each group who made a particular response is reported. As this is a qualitative study, we have interpreted differences of 20% or greater to indicate meaningful differences between groups; differences found of less magnitude may be suggestive of differences. Also, where appropriate, statistical analyses were used to compare interval scaled variables (e.g., duration of disease, age) with a *t*-test and categorical variables (e.g. gender) with a chi-square test (Norusis, 1986).

Results

Socio-demographic variables

Each group had 31 patients; this is the number of patients who could be matched according to study criteria. The groups did not differ significantly in terms of age, gender, time since diagnosis, and use of anti-diabetic medications (Table 1). Mean level of HbA1c for good-control patients was $6.25\% \pm 0.54$ (range 4.9–6.9) and for poor-control patients it was $10.01\% \pm 1.62$ (range 8.2–13.0). Groups also do not differ in region of origin (rural vs. urban), current residence, or neighborhood socio-economic status (a measure of neighborhood social class called AGEB (coded here as 1[lowest] through 4 [highest]) is used in Mexico (INEGI, 1992). Although GCPs tended to have slightly more education than PCPs (grouped as: 1 = no education, 2 = <6th grade, 3 = 6th grade, 4 = >6th grade), this difference was not significantly different. Salary level (measured in

Table 1
Sample characteristics

	Good control ($n = 31$)	Poor control ($n = 31$)	p
Matching variables			
Use of medication	94%	94%	
No medications	6%	6%	
Oral meds only	90%	84%	
Insulin ± oral meds	3%	10%	
Time since diagnosis	8.29 ± 7.46	9.52 ± 7.95	0.53
Age	59.87 ± 9.69	58.84 ± 10.67	0.69
Gender (% women)	64.5%	67.7%	0.79
Other characteristics			
Level of education	2.87 ± 1.06	2.39 ± .92	0.06
Salary level	1.68 ± .83	1.71 ± .78	0.88
Neighborhood/social class	2.17 ± .59	2.53 ± .68	0.08
Region of origin (% urban)	64.5%	61.3%	0.79

multiples of the minimum salary) also did not differ significantly between the two groups.

Themes

Themes in responses are summarized by topic: explanations of diabetes, diagnosis, life with diabetes, self-care motivation, overall disease management, exercise, diet, household issues and support, and medical issues (Table 2). We found a number of themes shared by both types of patients; there were 10 major thematic differences (greater than 20% difference) and 13 other thematic differences.

Explanations of diabetes

Explanations of diabetes causality were similar in both groups: emotions (susto/scare or shock and coraje/anger or rage), pregnancy/childbirth, eating habits, heredity, exercise and God. Older age was not offered as an explanation by any respondents. However, folk causes (in particular, susto) tended to be reported more often by PCPs (39%) than GCPs (29%) (Table 2):

> In 1978 I worked in the Baja California train, and in a wreck that we had at the Colorado River, that is when I got it, from the susto …

A combination of susto and a beverage can cause onset of diabetes:

> After an accident … I saw my son faint and that scared me, and a lady gave me a glass of water, and that was my mistake, because the water [in combination with] the susto gives you diabetes …

Coraje (a sudden emotion, not long-term anger or grudge) was also implicated in diabetes onset and mentioned by both groups of patients:

> One day I kicked [my husband's] mistress off the car, and after that my sugar went up.

Heredity was cited more commonly by GCPs (26% vs. 16% PCPs). Two respondents also incorporated susto into their explanation:

> My diabetes I already had because of my mom and sister [who] died of DM complications. Then a susto brought it out …

Reaction to diagnosis

Three response themes emerged related to being told they had diabetes: negative, positive and neutral reactions. Both groups gave neutral and positive statements:

> … I did not feel anything … only that I had to accept it, and really I thought I had something worse, like leukemia or cancer … I started to cry, I came home and thanked God …

> You have to take on diabetes, take life as if you were not ill …

> I do not feel diabetes is a problem, only I have limited myself in some things, like a drink here or there.

However, GCPs were more likely to have had negative responses to their diagnosis (39% vs., 19% of PCPs—major theme #1), mentioning sadness/depression, anxiety, denial, guilt, and worthlessness. These feelings may signal acceptance of their diagnosis:

> I felt that I was not good for anything, worthless. It made me sad, because I saw my mother could hardly eat anything, and she died wanting to eat …

Table 2
Key self-management differences between good and poor control diabetic patients

	Good control (%)	Poor control (%)	Overall % mentioning theme
Explanations of diabetes			
Folk causes	29	39	34
Heredity as a cause	26	16	21
Diagnosis			
Negative reaction to diagnosis	**39**	**19**	**29**
Life is the same with diabetes	13	0	6
Life is better with diabetes	13	3	8
Self-care motivation			
Children/family as motivation for self-care	32	42	37
Self as motivation for self-care	35	29	32
Overall disease management			
Comprehensive approach to control	**26**	**6**	**16**
Will important in control	10	3	6
Exercise			
Walking as preferred exercise	**35**	**55**	**45**
Exercise daily	**19**	**42**	**31**
Exercise twice a week	16	3	10
Diet			
Chicken/fish as protein sources	45	29	37
Beef/milk as protein sources	**35**	**61**	**48**
Eat three meals a day	16	26	21
Eat two meals plus snacks	**55**	**26**	**40**
Use of coffee/tea	**39**	**13**	**26**
Eat tortillas for control	32	16	24
Food preparation problems	13	6	10
Admit eating forbidden foods	23	16	19
Use of alcoholic beverages	6	13	10
Angry about diet	3	13	8
Have not accepted diet	0	13	6
Household Issues and support			
Emotional problems	**19**	**61**	**40**
Economic problems	**35**	**55**	**45**
Work makes control difficult	3	13	8
Adequate support available from family	45	29	37
Medical issues			
Better to use natural medications	3	10	6
Taking prescriptions essential	13	3	8
Know desirable level of blood sugar	**55**	**26**	**40**

Major themes ($\geqslant$20% differences in bold.

Life with diabetes

In contrast to their response to the diagnosis, only GCPs responded (13% vs. 0%) that life was the same with diabetes:

> Diabetes has not improved nor worsened my life.

And GCPs were more likely to feel that their lives were better with diabetes (13% vs. 3% of PCPs), citing changes such as losing weight, learning how to eat and more tranquility in their lives. One GCP noted her acceptance of the disease:

> I accept my disease and take care of myself. It is my companion and that helps me to overcome diabetes because I have this disease and have to walk with it.

Motivation for self-care

Motivations identified for maintenance of diabetes self-care activities were: children, spouse, self,

family, grandchildren, God, and love of life. Taking care of themselves for their children/family was mentioned more often by PCPs (42%), although GCPs (32%) also mentioned it frequently:

> …I tell myself, I have to do better, my children need me…

> What keeps my mood up to control myself is when I am with my family…

However, somewhat more GCPs (35%) than PCPs (29%) mentioned self-motivation:

> When they told me, I said to myself, I come first and a sacrifice [in diet] is better than feeling ill…

> I do not want to break the commitment I have with myself, I want to be healthy, to feel well…

Overall disease management practices

A second major theme (#2) was that of approach to control. Most GCPs responses regarding activities to help control blood sugar addressed diet, or described general, comprehensive practices that included medications, exercise and mental aspects of diabetes regimens and medical support (26%):

> I control myself taking my medicine, doing exercises, eating little and no sodas.

In contrast, only two PCPs (6%) indicated the importance of diet, exercise or of incorporating comprehensive activities to promote glucose control; PCPs described eating behaviors, emotions or medication, but not as part of any discernible regimen:

> I started with a diet, but do not take care, I eat everything; the doctora gave me glibenclamida, and I took 1/2 a pill when I ate too much…

Only one PCP mentioned exercise as essential to good control. Lastly, a strong personal control or will was cited more by GCPs (10% vs. 3% of PCPs):

> I put my will forth.

Exercise

The exercise mentioned most often was walking; however PCPs reported walking more (55%) than GCPs (35%—major theme #3). Interestingly, it was the PCPs who said that they exercised daily (42% PCPs vs. only 19% GCPs—major theme #4) while GCPs referred to exercising two times a week (16% vs. 3% PCPs). GCPs, however, mentioned more different types of exercise (such as housework, moving arms and stretching, gym, fixing things around the house) which suggests that they may be actually involved in these activities.

Both groups mentioned reasons why they were not able to exercise, including physical ailments, laziness, other things to do, etc. However, GCPs noted personal problems while PCPs focused on physical ailments and complications of their diabetes and co-morbidities. But in the tone of their statements, there is a tendency for PCPs to place the blame on factors or forces external to themselves:

> I used to walk a lot but it hurt badly so I stopped. The family doctor has not sent me to rehabilitation.

Diet

Foods mentioned by both groups as part of attempts to control diabetes included lighter types of foods and diet-allowed foods. PCPs reported fruit, without specifying any in particular, while GCPs mentioned a wide variety of specific fruits and vegetables. Nopales (the leaves of the prickly pear cactus) were used by long-term GCPs. Chicken and fish as protein sources were reported more often by GCPs (45% vs. 29%), while PCPs were more likely to mention milk and beef as protein sources (61% vs. 35%—major theme #5); this choice is equivalent in protein contribution to the diet, but higher in overall calories. Caldo, a meat and vegetable soup, often with a great deal of fat, was mentioned more often by PCPs. Interestingly, PCPs were more likely to eat three meals a day (26% vs. 16% GCPs); while GCPs tended to report only two meals a day, but many snacks (usually fruits) because they "were very hungry" (55% vs. 26% PCPs—major theme #6). Use of aguas frescas (fruit and water shakes) was greatest among long-term GCPs. GCPs also were more likely to use low-calorie beverages, such as coffee and tea to deal with hunger (39% vs. 13%—major theme #7). GCP also were more likely to use tortillas to deal with their hunger (32% vs. 16%), while women PCPs were more likely to mention bread. One GCP described his diet:

> I got used to two meals, breakfast and lunch, but now I eat lots less than before, I eat coffee, bread, a little fruit, a little vegetables, chicken, rice and noodle soup…

Both groups mentioned similar problems why they were not able to follow their diets. However, GCPs were more likely (13% vs. 6%) to mention problems related to food preparation or money to purchase appropriate foods:

> I do not make special foods for me, I eat what everyone else [husband and two children] eats.

Both groups also noted the attraction of foods perceived by them to be "forbidden foods." But GCPs were more likely to admit consumption of "forbidden foods" (23% vs. 16% PCPs)—soft drinks, sugar, bananas, grapes, chilies, coffee, salty foods, beef, pork, fruits, cakes, tortillas, taquitos, chocolates, oil, flour, candy, and bread. The list of "forbidden foods" also included a number of traditional Mexican dishes (*birria, menudo, posole*), often served at family gathering or parties, where it is difficult to decline consumption:

> What causes me most difficulty in following my diet is parties or family reunions where people invite me to eat my favorite things and I cannot contain myself all the time…there are things that even if I know they harm me, I cannot quit eating them. Sometimes I control myself, sometimes I do not.

However, GCPs have developed approaches to limiting their consumption of these foods, while largely maintaining their diets:

> Now and then I eat posole…because I like birria a lot, or menudo. I buy only a little, so that I eat it and have none left over in the pot.

Social gatherings make it difficult to resist alcohol:

> …where I am out of step is with the drinking, but I cannot control myself, I was told by my doctor…that I could drink liquor without the soda and no beer…

PCPs were more likely to note use of alcoholic beverages as the cause of their problem in controlling their diabetes (13% vs. 6%). They were also more likely to express anger about the diet and say that they had not really accepted the need for a special diet:

> I never do the diet, I try…my nopales, lettuce, but eat tortillas and gorditas (corn tortilla dough deep fried with toppings such as meat and chili and/or beans).

Emotional control

PCPs were more likely to express being worried, anxious, depressed, and/or having problems with nerves (nervios) or family (61%) than GCPs (19%—major theme #8):

> My nerves are the principal impediment for my sugar control…I feel my emotions like anger and annoyances.

Interestingly, although nervios (emotional problems of a variety of types and degrees of seriousness) is more associated with women, it was mentioned more by male PCPs. Feeling depressed and having problems with children were more of an issue for women. These emotional control issues may affect dietary adherence; one PCP eats to relieve stress:

> I have problems in the house, I feel anger and depression and want so much to eat. By eating I calm down for a while.

Two other patients discuss the role of family problems:

> …and daily I feel sorrow, I cannot control myself because of my sorrow, because of an irresponsible son, who drinks and spends money, and does not want to work, and on the other hand, my parents are also ailing, my mother is a very ill diabetic…

Economic issues

PCPs noted more economic problems in following their diet (55% vs. 35%—major theme #9) and of surviving their illness:

> …because there are several of us, there is a meal for everyone, not just me…

> …sometimes I would like to eat something else, but the financial condition will not allow me …

Women and more recently diagnosed patients tended to report that the diabetic diet was too expensive. In contrast, most of those reporting difficulties purchasing medicine are long-term diabetic patients.

A general context of financial stress and personal turmoil also emerges:

> …I think that aside from eating less.. .and taking my medicine…I also need exercise and tranquility.

> But this last thing I cannot achieve because [my problems] are very heavy and do not have an easy solution…

Finally, it is more common among PCPs that their occupations present challenges for control of their diabetes (13% vs. 3% GCPs):

> I do not last much in my jobs because I have to come to the clinic and I miss work a lot and bosses do not like that…my job does not allow me to follow a diet…

Support

GCPs were more likely to report adequate support from their families (45% vs. 29%); this was especially seen for men:

> I am a widower and have two sons. But if I am doing poorly he takes me to the doctor's office…my children are poor too…

Some women also noted broad family support:

> My husband takes care of me, my daughter lives nearby and she doesn't leave me alone, she takes me every afternoon to talk and play with the kids…

Women in both groups noted insufficient support from their families; the vast majority those who reported a lack of general family support were women. Of female GCPs, three out of four responded specifically that their husbands were not supportive of their control efforts:

> My husband does not want to pay attention and refuses to eat less salt and more vegetables and says the diet is disgusting.

> My husband is also a diabetic…and he does not want [the] diet…

And one female PCP implies loneliness:

> I make my food and take care of myself alone…

Men are more likely to look to their family for support while women look to their physicians; in fact, men felt a lack of support from their physicians. Respondents also described experiences with medical staff not conducive to effective glucose control. GCPs noted:

> …the doctor thinks I eat too much, and I wish she would believe me when I tell her, she sent me to the hospital to catch me in a lie, but it is not true, the doctora is causing me a trauma, she scares me because she tells me to die if I do not want to lose weight, now I do not trust her, and I only go for my medicine…

> …the physician does not believe there are things you cannot control, they believe in managing the disease pharmaceutically, but they do not live it, because we feel it, we live it.

> It is necessary that they have patience with the diabetic because when one is nervous one hears but does not listen.

Several PCPs have trouble understanding the diet as presented to them:

> The nutritionist gave me a diet on paper (hand-written), I did not understand all of it, so I only more or less follow the diet…

> The diet would be better if it weren't so complicated, more simple without the grams and portions or rations.

Some PCPs who report lack of support place the blame on themselves, "letting down" their doctor:

> …I annoy [my doctor] because I am a comelona (big eater) and do not take care of myself…

Others feel they do not have a voice in the medical consultation:

> I wish my doctor could tell me how to have sex even though my drive is low with the insulin…
> The doctor never tells me [the scores], he is a despot…and makes me mad…

Other medical issues

Although hygiene was rarely mentioned, some patients referred to aspects of personal hygiene: care of skin, wounds and the feet. One GCP and one PCP mentioned using the glucometer to measure and control their blood sugar levels. Use of naturalist and home remedies was cited by both groups, although PCPs were more likely to feel it was better to take natural things (10% vs. 3%). In contrast, GCPs were more likely to say that taking prescribed medications was essential for diabetic control (13% vs. 3%). GCPs mentioned more problems with medications, in particular concrete

problems, such as that the medications hurt their stomachs, are not effective, or that they are afraid of the medications. Men and women from both groups report the effect of diabetes on their sexual lives:

> Diabetes has affected me sexually, and my husband keeps insisting and wakes up stubborn, and I get mad.
>
> My problem is that I do not have erections and sometimes I would like to eat, and it is not fair so much punishment.

Appropriate level of blood sugar

GCPs were more likely than PCPs to know the recommended value of blood sugar (at or below 120 mg/dL—55% vs. 26%—major theme #10). The majority of GCPs who answered this question gave responses close to the correct number of 120 (answers ranged from between 80 and 125 to 125 mg/dL), while the majority of PCPs who answered this question were either well above the correct score (answers ranged from 140 mg/dL to between 160 and 200 mg/dL) or had no idea of the goal.

Discussion and conclusions

There is a clear pattern of differences in reported themes between GCPs and PCPs. GCPs tended to react to their diagnosis in a negative manner, showing feelings of loss and perhaps beginning to accept the diagnosis. PCPs appear to have more of a problem assimilating their diagnosis and are more likely to use popular/folk explanations for the cause of their diabetes.

While both GCPs and PCPs are motivated to take care of themselves due to concern and self-esteem for themselves and the value they have for themselves, PCPs more often report being motivated by others. GCPs appear to have a clearer understanding of the need to comprehensively manage hunger, weight and stress, the need for exercise and a careful approach to diet. They may also have a strong concept of the importance of will in control.

With regard to exercise, working class Mexicans have little physical space in which to exercise—both homes and yards are small. For this reason, walking is an inexpensive and appropriate approach to exercise for adults. PCPs were more likely to mention walking as their preferred exercise and said they exercised daily. GCPs were more specific about the actual exercise they did, but claimed to exercise only twice a week.

Differences in dietary patterns included more fruits mentioned by GCPs, indicating that they may be familiar with more different types of fruit and can adjust consumption to seasonal availability. GCPs consume the nopal-cactus leaf (*Opuntia*) which may have hypoglycemic properties and could be useful in glycemic control (Argaez-Lopez et al., 2003). Sources of protein also differ, with implications in terms of increased consumption of animal fat and cholesterol for PCPs. The difference in number of meals consumed is also important. PCPs mentioned three meals, while GCPs, in contrast, mentioned consuming two meals a day, with supplementary snacks of fruit.

Dealing with hunger is an important problem for diabetic patients; GCPs use low-calorie beverages (coffee and tea) to satisfy hunger, as well as tortillas. Tortillas, and in particular corn tortillas are inexpensive, satisfy feelings of hunger, are a good source of energy and serve to extend other foods (as other foods are usually eaten by using tortillas to scoop them up). Further, they are among foods traditionally consumed in Mexico, particularly among the working class. GCPs may tend to be more concerned with problems in preparing a separate diet, as well as admitting to eating forbidden foods. However, PCPs may use more alcohol, be angrier about the need for a special diet, and have refused to accept such dietary restrictions.

GCPs appear to have developed an improved version of Mexican popular culture. They maintain food traditions, such as eating tortillas, though in lesser quantities, have eliminated foods with a high degree of saturated fat from their diets, and have integrated effective exercise regimens into their lifestyles. They have found ways to control feelings of hunger with filling foods that are low in caloric content. GCPs mix traditional and modern approaches to life and lifestyle. In contrast, PCPs are aware of what they need to do but do not seem to have really internalized this. As one noted, "One thing is to know and one thing is to feel."

Emotional issues are another aspect of diabetes management. GCPs report fewer emotional problems, which may be related to the fewer economic problems they report. Work constraints are more important for PCPs, and they are more likely to report inadequate family support. The pattern of women seeking support from their (usually male)

physicians may be related to Mexican patterns of male authority or machismo. Similarly, the pattern of women meeting the needs of male members of their households may be why males noted sufficient support available from their families.

Finally, GCPs may have more faith in their prescribed medications, which may affect compliance; PCPs expressed more interest in using natural medications. And it is the GCPs who know the desirable level of blood sugar for which to aim. In contrast, the PCPs were unaware of or wrong about the meaning of biomedical glycemic control.

Some aspects of our results confirm patterns cited in the literature, such as anger over one's diet and the problems of eating a diet different from that of the rest of the family (Eid & Kraemer, 1998). Women in our study also reported the lack of dietary and other support from family members as noted by other studies (Adams, 2003; Anderson et al., 1998; Mercado & Vargas, 1989; Savoca & Miller, 2001). Economic issues may also be a barrier to achieving good control. Hunt, Arar, and Larme (1998, p. 672) noted that financial resources of low income Mexican American diabetic patients "were already strained to the limit even before they tried to make special dietary arrangements." A concern with economic problems was mentioned more often by PCPs, despite there being no significant differences in income level between the two groups. However, a large, representative US sample showed no association between economic status and glycemic control (Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999).

Similar to Daniulaityte (2004), who studied largely patients in poor control, these PCPs also tend toward folk explanations of diabetes. Nor do they seem to have accepted their diagnosis, a pattern also noted by Egede and Bonadonna (2002) in some African American diabetic patients. With regard to the issue of focus on self and personal responsibility, our results show some similarities to those of Ellison and Rayman who found that GCPs report "I'm the one that has to make it work. I can't ask anybody else to do it for me, so any success I've had is mine, and my faults are mine too" (Ellison & Rayman, 1998, p. 327). However, our study suggests that this pattern is characteristic of GCPs and not of PCPs. But the pattern in our respondents may be less apparent due to the fact that these values and attitudes more alien to Mexican culture than to the Americans Ellison and Rayman studied. Those patients had a focus on self and control, the need to be personally responsible for their health needs, and learning to experiment for themselves, as did those studied by O'Connor et al. (1997). Yet it appears that Mexican GCPs may have been able to develop and incorporate these traditionally non-Mexican approaches.

Our study also contributes methodologically to work in this area; unlike most studies, we used a qualitative but case-control design of good and poor control diabetic patients. Furthermore, we also estimated the relative occurrence and importance of the themes respondents discussed, and noted differences between GCPs and PCPs. From this more systematic description, we find some themes mentioned by all patients, such as problems in exercising and following their diets. But these themes may not be the clue to better control. Our design made it possible to identify 10 major themes of specific differences not previously discussed in the literature; themes of daily exercise with walking preferred, eating beef and milk rather than chicken and fish, economic issues, and emotional issues distinguished PCPs. GCPs were more likely to have a negative reaction to their initial diagnosis, take a more comprehensive approach to control, eat only two meals a day (plus snacks), use noncaloric beverages to satisfy desires for more food, and know what their blood sugar levels should be.

These patterns, as well as a number of other themes suggested by these data, should be explored further. We need to qualitatively investigate the process by which the self-focused identity of the good control diabetic develops in a cultural milieu which stresses the family over the individual. Also, while larger, systematic studies to date have not found an association between income and glycemic control (Garcia de Alba et al., 2006; Harris et al., 1999), our data do suggest that economic problems are a much greater concern for PCPs. In addition, due to the small size of the sample used in this study, the specific behavioral and lifestyle differences we found between GCPs and PCPs should be used as hypotheses and tested in a larger sample of both Mexican GCPs and PCPs. The GCPs in this study have evolved a number of successful strategies for dealing with their disease. If these are found in larger samples, they could be learned by health care personnel and become the basis of revised approaches to diabetes education and management. Such approaches would focus on what Mexican GCPs actually do, as opposed to more generalized

biomedically based recommendations for diabetes management.

In summary, this study has identified behavioral and lifestyle themes that may account for control differences between Mexican good and poor control diabetic patients. Diabetes is a health problem of sufficient magnitude that it behooves us to learn how control is achieved from those who actually live with this disease. We must learn from those for whom diabetes is the companion with whom they walk through their lives.

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