Patients' Perspectives on Factors that Influence Diabetes Self-Care

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Abstract

Background

Although diabetes mellitus is of high concern in Iran, and the level of control is unacceptable, few qualitative studies have been carried out to reflect the experiences of patients on the barriers and motivators to self-care. This study aimed to explore a culturally based experience of Iranian diabetic patients regarding the personal and environmental barriers to and facilitating factors for diabetes self-care.

Methods: Six focus groups were conducted among type 2 diabetic patients in the Charity Foundation for Special Diseases' diabetes clinic. Purposeful sampling was used. Newly diagnosed patients (less than six months) and all type 1 diabetic patients were excluded. Three focus groups were held on for each sex. A total of 43 patients participated in the study. Framework analysis was used to extract the themes from the data.

Results: Data analysis showed five main barriers: physical barriers (such as physical effects of diabetes); psychological barriers (such as health beliefs); educational barriers (such as lack of knowledge about diabetes); social barriers (such as group pressure); and care system barriers (such as service availability). Along with the barriers, there were some motivators that the participants mentioned as a stimuli to control their diabetes. They include beliefs about diabetes, perceived responsibility for family, religious beliefs, and the views of significant others.

Conclusion: Culturally based interventions are needed to improve diabetes care management in Iran. In addition to personal factors, diabetes health educators should pay attention to the environmental factors when they develop programs.

Keywords: Diabetes Mellitus, Self Care, Focus Groups, Iran

Introduction

According to the national Survey of Risk Factors of Non-Communicable Diseases (SURFNCD) (2008), total prevalence of diabetes in Iran was 7.7% (95% CI 7.5–7.9) in 2008. About one-half of these cases were previously undiagnosed (1). Given the increasing

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life expectancy of Iranians, not surprisingly, the incidence of complications for diabetes is high. This fact and increasing incidence of diabetes makes this disease one of the country's main health care concerns in coming decades (1). The prevalence rate of both types of diabetes have been estimated to be about 7–17% in several adult urban populations and the prevalence of type 2 diabetes mellitus has been reported at 3-5% in rural communities (2).

Diabetes self-care is the diabetes related tasks that patients do and self-management is the cognitive-behavioral self-regulation around those tasks (monitoring, goal setting, planning, and evaluation). Diabetes self-management education is a process in which knowledge and skills are provided for patients to perform self-care on a daily basis (3). Optimizing glycaemic control via self-management is the cornerstone of care in diabetic patients (3). Several studies show that maintaining blood glucose at near normal levels minimizes complications of diabetes (4-6). In spite of this, many diabetic patients have poor glycaemic control (7). In fact, the maintenance of good glycaemic control is, in practice, very difficult for patients and health care professionals.

Although diabetes mellitus is of high concern in Iran, and the level of control is unacceptable, few studies have been carried out to reflect the experiences and perceptions of patients on the barriers and motivators to care in Iran (8, 9). In a study conducted to understand the barriers to and facilitators of empowerment in Iranians with diabetes, fear of diabetes' complications, and hope for better future were reported as being crucial to empowerment (8). Limited data are available on the Iranian population regarding maintenance of glycaemic control; rising pattern of diabetes is an alarming sign of poor control.

This study was conducted as part of a multi-part project on designing an educational program for diabetic patients based on "Intervention Mapping" (10). The study aim was to gain a culturally based understanding of diabetes in Tehran by identifying personal and environmental factors influencing self-care for those with diabetes.

Materials and Methods

Data collection and sample

In this phenomenological study, after gaining approval from Tehran University of Medical Sciences (TUMS) Ethics Committee, we recruited the participants from Charity Foundation for Special Diseases' (CFSD) diabetes clinic. This is a large team-focused clinic with about 5500 registered diabetic patients. In a purposeful sampling approach, we worked with practice receptionists to issue invitations to participate in interviews until an appropriately diverse sample had been recruited. We wanted a variety of patients such as insulin users, oral hypoglycemic agents' users, life-style adapters, and those from all 22 regions of Tehran to ensure a range of demographic variables and experiences. People with confirmed type 2 diabetes were included. Newly diagnosed patients (less than six months) and all type 1 diabetic patients were excluded. In all, 43 of 44 patients we approached agreed to take part in the research. We continued to recruit participants until no new data emerged (Sampling to the point of saturation) (11). Because of cultural issues, we interviewed three focus groups of men and three of women to encourage free expression. Each focus group had six to nine persons. Participants included 22 women and 21 men (n = 43).

Focus Groups

The first author moderated all focus groups. Interviews were recorded using a digital voice recorder and were transcribed verbatim. The sessions averaged 45 minutes in length. A trained note-taker monitored the voice recorder while recording on paper as much of the discussion as possible and making notes of observations of nonverbal communication (11). Tran-

scripts were compared with the tapes for accuracy. We distributed pamphlets and booklets related to diabetes care and made available diabetes physicians to answer questions after the focus groups as incentives to the participants.

We used a focus group interview guide of topics to cover to make sure that the research questions were addressed. Discussion questions were derived from the Social-Ecological model (12), the Health Belief Model (HBM) (13), and Simmons et al studies (14). We used the HBM; because it has been shown to have some predictive validity for diabetes self care (10). The Social-Ecological Model comprehensively describes the behavior in a wider context from social to personal factors. We used Simmons et al study, because it was a large multiethnic study with both qualitative and quantitative methods in which the researchers investigated barriers to diabetic care and listed diabetes self-care barriers comprehensively. This study could be helpful for our study as a framework.

The meeting guide elicited the participants' perspectives on knowledge, attitudes and beliefs about diabetes and diabetes care issues. Even though we made sure that all topics were covered, we allowed the conversation to flow as naturally as possible. A brief, nine-question demographic questionnaire was distributed at the beginning of each focus group.

We obtained verbal consent from the participants. It is recommended in qualitative research that researchers reevaluate interviewees' consent to participate in the study. So, we renegotiated informed consent at the end of each focus group by discussing and clarifying the participants understanding of the investigation and their continued willingness to have their information included in the study. The participants were ensured that all information collected will remain confidential. Anonymity was secured by code-numbering in the interviews.

Trustworthiness

In qualitative research, the issue of validity is referred to as trustworthiness (11). We asked participants to support their statements with examples, and the interviewer probed answers for further detail. In order to increase the dependability of qualitative findings, two independent coders conducted the analysis and interpretation of data (investigator triangulation) (11). This tactic helped us to offset the subjective bias of any one researcher. If two significantly different interpretations of the data emerged, we consulted a third investigator to interpret data and discuss the analysis until consensus was reached. Moreover, confirmability was achieved by keeping notes about the raw data, field notes, and categories (15).

Data analysis

As the study was grounded in the theoretical frameworks; i.e., Simmons' (16) framework of barriers to care, HBM and Social Ecological Model, the plan for the analysis began with the concepts of the above-mentioned frameworks and then was developed to identify themes unrated to the initial frameworks.

The analysis began during the first field activities, and as the study proceeded, we made revisions in research questions and refined the analysis. We initiated reading and coding while the data were being collected in the field. We wrote "memos" to help us clarify that how concepts fully integrated with one another and how analysis resulted in the research report (15).

The 'framework' method was used for the analysis. This method includes five steps of 'familiarization', 'identifying a thematic framework', 'indexing', 'charting' and 'mapping and interpretation' (17). For the 'familiarization' step, we listed key ideas and recurrent themes by listening to tapes, reading transcripts, and studying notes (18). We used a content summary form which was developed for each discussion session (17). The form included preliminary codes in the columns and the participants' characteristics in the rows. For the second step, 'identifying a thematic framework', we developed a preliminary thematic framework based on the focus group discussions and the theoreti-

cal frameworks (18-20). Then, for the 'Indexing' step, we applied the thematic framework to all the data in textual form by annotating the transcripts with numerical codes from the index (18). The two coders discussed codes and reconciled coding decisions. For the 'charting' step, one table was produced for each 'theme'. The rows were assigned to the focus group sessions and columns to the sub-themes. The analysis 'charts' allowed us to transfer data onto the tables to compare the views of participants across different themes and to compare the views of different participants about each theme. Depending on how often the themes appeared across the data and how rich or complex the ideas related to that theme, we incorporated the sub-themes into the coding scheme. Finally, for the 'mapping and interpretation', we found associations between themes with a view to providing explanations for the findings. The thematic framework was updated in the process of the analysis (18) by noticing that certain labels began to cluster and others separated out. Thus, the initial framework of 20 themes was reduced to five themes as the analysis developed.

Results

The mean age of the 22 women and 21 men was 50.7 years with a range of 33 years to 62 years. The mean education level of the participants was 9.9 years with a range of 0 years of education to PhD degree. Most participants had at least some high school education. Among the patients, 30.2% were treated with insulin. The results are classified and reported in two sections: 1) Barriers, and 2) Motivators.
Barriers to diabetes care   The data were clustered into 5 themes: (a) Physical barriers; (b) Psychological barriers; (c) Educational barriers; (d) Social barriers; and (e) Care system barrier. Examples for one theme cluster are presented in Table 1.

Theme 1: physical Barriers

The physical barriers consisted of physical effects of diabetes, long-term health conditions, physical effects of treatment, and no symptom cues. Feelings of listlessness, and faintness were the most cited physical effects of diabetes that influenced self-care. Although the participants seemed to know the relationship between physical activity and blood glucose control, lack of energy due to diabetes was cited as a barrier to exercise. Moreover, most of the patients stated that these symptoms and increased appetite compelled them to eat more. The participants believed that pains and illnesses did not allow them to go to get the treatment they needed. Believing that they could feel high blood sugar, while in fact they could not, may have kept them from routinizing treatment: "whenever my sugar goes up, I can feel it; i.e. when I feel well, I understand that my sugar is in balance" [P5IM][*].

Theme 2: Psychological Barriers

The psychological barriers consisted of health beliefs, cognitive barriers, negative perception of time, negative perceptions of Iranian medicines, and stigma. Some participants believed that cause or cure should be seen as "God's will", faith, or destiny; however, they mentioned that their beliefs did not allow them to put their responsibility for care off: 'God should be beneficent and merciful. He draws our destinies… everything is in his hands… but we do our part' [P3O][†].
Psychological barriers such as lack of motivation and negative attitudes played an important role in determining self care activities. Participants also frequently evaluated their attempts at self care as not related to healthy behavioral outcomes: "I say by myself, ok, I control my diabetes, what I will gain? Health? I don't want

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[*] Participant's number in Insulin users group (men)
[†] Participant number N in Oral hypoglycemic agent users group (women)

it. I more want to die" [P3I]‡. Almost all of the participants said that they were depressed.

Women in the study had a problem making diabetes care a significant priority; i.e., they felt that others' needs, especially children's and spouses', were priorities over their own. The insulin-users mentioned that they felt embarrassed injecting insulin in public.

Almost all of the participants thought that they were too busy to have time to have a healthy lifestyle. However, when patients seemed more aware of the benefits of self-care, they made fewer complaints of being busy. Lack of self-efficacy to change lifestyle was a prominent theme among the patients. Some had little or no confidence for caring their diabetes: "…yes, if I can control myself, there is a hope, but it is really hard work" [P6L]§.

Some of the male participants mentioned that they felt embarrassment when injecting insulin. They mentioned that they were compelled to explain their disease to others in order that people do not think that they are drug injectors.

Theme 3: Educational Barriers

The participants cited that they had little knowledge related to diabetes. They described the following factors as educational barriers: lack of knowledge about diabetes, health services life-style requirements and alternative therapies.

Patients who did not have a family member with diabetes had little knowledge of diabetes and were eager to know more about their disease: "I had diabetes for 20 years, but it is just 2-3 days that I know what blood sugar is and how the diabetes is developed" [P1L]. Many participants thought that diabetes was attributed to events or agents outside the body. Most of the participants attributed their disease to psychological stress related to a specific period or event in their lives or to the stress of daily life

including economic difficulties and social problems. They also lacked knowledge about how to achieve healthy life-style knowledge. They did not know what to eat, what to restrict or what type of exercises are useful for them. Iranian cuisine typically includes fatty and fried foods. The participants said that they lacked the knowledge of providing healthy foods.

Most of the participants had incomplete information about alternative therapies. Using herbal remedies was very popular among the patients and was discussed by all groups, but many participants were not sure if they were effective or approved by physicians. The participants talked about using walnut tree leaves as a tea to treat diabetes. Most of them said that nettle (Gazaneh) and fenugreek (Shanbalileh) powder were good for lowering blood glucose. Most of the participants thought that home remedies had to be mentioned in the education plans.

Some of women stated that their disease commenced as gestational diabetes. They mentioned that despite having gestational diabetes, their relatives recommended them not to restrict their food during pregnancy and lactation in order that the fetus or infant could grow properly. These women believed that not taking care of gestational diabetes resulted in their development of type 2 disease.

Theme 4: Social Barriers

Social barriers comprised group pressure, lack of family support, lack of public awareness of diabetes, unsupportive macro-environment, and various difficulties in the social system, lack of appropriate programs in media, and lack of standard resources to educate people.

There was a difference between men and women's views about family support. Men acknowledged the family support related to diet, whereas women generally thought that they had no support at home and that pressure from family interfered with diabetes care: "They have so many expectations, … they want me to cook separate foods for them, and because it is hard to cook two kinds of food, I am obliged to eat

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‡ Participant number N in Insulin users group (women)
§ Participant number N in Life style adapters group (women)

with them" [P5I]. They also said that they experienced pressure from the family not to adhere to advice, especially related to diet: the family tells me if you do not sit beside the table, we will not begin our food. I say do not compel me to sit, if so I will eat more than the right amount. But they insist on it" [P1L].

The participants felt that some healthy people are ignorant of diabetes because patients do not look sick or have noticeable symptoms: "when in a party, I feel my blood sugar is dropped and I consume a little candy or…, I hear that relatives say: did you see? She says she has diabetes but she eats what she wants. All she says is just a lie" [P4L].

The participants also thought that the diabetes had an adverse effect on their social relationships: "when I am anxious, they say, ok. Her blood glucose was raised again" [P7I]. Participants disliked speaking about their problems due to diabetes with others. They requested meetings with other diabetic patients in which they could exchange their experiences and receive support to enhance their coping with disease issues.

Group members described lack of support in the community including cost and access to services. For example, access to physical activity facilities was an important issue, especially for women was an important issue. Some participants reported having to register in a club and pay for expensive exercise facilities. However, everyone agreed that walking was not expensive or culture bound, and that new free exercise facilities at public parks could be an asset.

A recurring theme in the study was that of social problems. The patients, especially men, thought that various difficulties such as high inflation rate, low income, as well as high living costs resulted in stresses that did not allow diabetes to be as a priority. Another mentioned issue was lack of resources to educate people about diabetes. Participants believed that media programs are not appropriate and coordinated: "we cannot trust on T.V. one day they say

something and another day something else" [P5IM].

Most of the participants believed that the public should bear more responsibility for diabetic patients. In fact, they seemed to bestow more public responsibility as compared to self-responsibility for health.

Theme 5: Care System Barriers

The participants mentioned some insufficiencies in the health care system. Patients complained that there are no local services that the patients identify as their 'own'. They described making long trips to receive services. Some participants, who lived in the suburbs of Tehran, complained about issues such as location of the clinics and the inconvenience they had to bear in transportation system.

The majority of respondents had financial problems and was unable to afford the cost of care. Insurance coverage was not adequate to meet their needs. Some necessities for self care such as blood glucose test strips, glucometers, and scarce types of insulin that are more effective and convenient are not covered by insurance systems: " Test strips are very expensive and the insurance system doesn't cover it. On the other hand, doctors recommend us to check our blood glucose 3-4 times a day. But we cannot afford it. So we are obliged to check it every other week" [P6IM]. Most patients described problems accessing treatments and technologies that are routine in many other countries. The cost issue was not cited by the patients early in the sessions. By providing free discussion and probing the barriers, and after that one patient cautiously mentioned the cost issue, suddenly all stated that the cost was their main barrier in self-care. It seemed they were ashamed of speaking about their financial problems.

Mistrust of health care providers' advice was often expressed: "we don't know to whom we can trust. Every doctor says something" [P5O]. Some of the participants complained about lack of delivery of culturally congruent services: "I

go to the work long day. How can I provide snacks for the definite times? At 10, at 4, I work on my taxi and I have no time to pay to these issues" [P3IM], or: "it is expensive to have fish or fruits regularly; sometimes I cannot do the recommendations" [P2L]. Participants said that they have challenges in substituting healthy foods instead of the traditional diet of rice, bread, and beans that they thought was full of carbohydrates.

One important issue related to diabetes patients is that some may have good access to care but the care is not perceived to have quality. Participants consistently mentioned lack of education by physicians about diabetes and lack of time spent with clients by physicians. They felt doctors tended to limit care to the prescription of medicine: "I go to endocrinologist. He is too busy. He writes me a tab and don't say how I have to use it. Someday a doctor asked me how I use my pills. I said after breakfast and after dinner. He said that it is wrong…I said I didn't know…The doctor just wrote me the tabs and asked me to lower my sugar" [P7L]. Some complained from non-standard approaches in giving services: "We are confused here. They refer us to various clinics, but I do not know if they, themselves know what are they doing" [P2IM].

Motivators

Along with the barriers, there were some motivators that the participants mentioned as a stimuli to control their diabetes. The motivators found in this study, were generally psychological. Example for one theme cluster is presented in Table 2.

Beliefs about diabetes Beliefs about diabetes included perceived diabetes susceptibility and perceived diabetes severity. The participants who controlled their blood sugar thought that diabetes and the complications are serious enough that they have to care for themselves: "I think I must control my blood sugar, because I don't want to be blind, or I do not want to lose my kidney" [P8L]. Some of them mentioned that they observed in their friends or relatives blindness or heart problems resulting from diabetes.

Perceived responsibility for family The participants stated that they had emotional and financial supportive roles for family members. Some described motivational factors such as being healthy to care for the children. Most participants worried about their children. In addition, they believed that their family members rely on them and if they performed effective self care, their family members would benefit: "My family' eyes are on my hands. I have to meet my health needs to care for them properly "[P6OM] (Participant number N in Oral hypoglycemic agent users group (men).

Religious beliefs

Some respondents thought that they had responsibility for their body and if they did not care themselves, it was like a suicide attempt and it was sin: "We must care ourselves. It is our religious duty" [P1L].

Significant others view and advice

Some believed that if they did not care for themselves, it was not acceptable socially: "We must control our disease, if not, what people will say "[P7L]. Health care providers' encouragement for self care was a kind of motivating factor. Most of the participants that had healthy self care behavior cited that the recommendation by their physician or health care providers had encouraged them to do. Some participants said that they had self care based on recommendations by their relatives and friends.

Table 1: Selected examples of significant statements and a theme cluster: Schematic view of thematization for barriers of self-care

Sample statements	Codes	Sub-themes	Theme
"At 4 in the morning, which wise man wakes up with hunger? I usually wake up at 4 for eating food".	Feeling of hunger		
"I say I will not eat, but I cannot control myself. I like eating cookies, cakes …"	Overeating	Physical effects of diabetes	
"Sometimes I have no energy to get up of bed".	Feelings of listlessness, and faintness		
"I have knee pain, neck pain… I like to stay at home most of the time".	Continuous pain and discomfort	Long-term health conditions	
"I bring vacuum cleaner but I have no sense to clean home, I feel ill all the time"	Feeling ill most of the time		
"Eating these much medication makes me sick. Some times I cannot bear them".	Nausea due to treatment	Physical effects of treatment	Physical barriers
"They are like a piece of chalk. When I eat them, I think it got caught in my heart and it burns me"	Heart burn due to Treatment		
"I didn't know that my sugar is high. I was hungry most of the time, but I didn't know it is diabetes symptom. I went for a routine check up, doctor said that I have diabetes"	Inability to recognize Symptoms	No symptom cue	
"The nature of human beings is surprising. Just like a car that when it is damaged, it makes noises, our body tells us what to eat and what not to eat… it shows the ones. It is like a sense…""	Lack of serious symptoms		

Table 1: Selected example of significant statements and a theme cluster: Schematic view of thematization for motivators of self-care

Sample statements	Codes	Sub-themes	Theme
"I always say that first health; if you are healthy you have everything. You may be rich but if you don't feel healthy, it doesn't worth so much"	Importance of health	Perceived diabetes susceptibility	
"Nowadays, we see that everyone has diabetes. When I go to the pharmacy, I see that majority of medications which are sold are diabetes drugs"	Perceived diabetes' incidence risk		
"I think I must control my blood sugar, because I don't want to be blind, or I don't want to lose my kidney"	Perceived diabetes complications' risk	Perceived diabetes severity	Beliefs on diabetes
"…yes, I know that it is critical. My sister-in-law died from diabetes"	Perceived risk of death		

Discussion

In this qualitative study, we explored the experiences of Iranian diabetic patients regarding the barriers to and facilitating factors for diabetes self-care. Through focus groups discussions, we found five main physical, psychological, educational, social, and care system barriers. Motivators included beliefs on diabetes, perceived responsibility for family, religious beliefs, and the views of significant others. In our study, the many barriers were similar to

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barriers of other studies around the world (21, 22). These common barriers represent universal aspects of living with diabetes. However, approaches to overcome even these common barriers must be grounded in the culture of the patient. In addition to these common barriers, we found some aspects of culture-specific diabetes self-care: 1) prioritizing the family before self; 2) experiences of stigmatization; 3) strong social relationships and group pressure; 4) spiritual beliefs that relate to health beliefs; 5) wide application of alternative and herbal medicine; and 6) negative perceptions of Iranian medicine.

In our study, women reported that they put the needs of family members at a higher priority than self-care activities. However, this is not an issue to be exclusive to Iranian culture (23, 24), the participants' statements about perceived responsibility for family members may be important as a motivating factor for ones self-care. Iranian patients may be able to see caring for the family as a reason to care themselves and protect their own health. Such approaches can be identified by diabetes educators to address the low priority that patients have for themselves.

Men in the study frequently reported fear of stigmatization related to insulin injection. Stigma is a culturally social label that changes individuals' perception about themselves and the way they are viewed by others (25). Stigma is reported in other diabetes studies. For example, Tessaro et al (7) showed that diabetic patients blame themselves because of the disease and the self-blame has negative effects on social relationships. MacLean (26) reported that diabetic patients were concerned about what the reactions of others' would be once the diagnosis of diabetes was discovered. Health educators will need to find ways to make injecting insulin less objectionable, for instance highlighting the benefits of the treatment, working on strategies for increasing privacy for injection, and promoting community awareness of the disease and its treatments.

Some participants in this study, especially women, responded to lack of family support and even family pressure counter to self-care. Waiting for older adults to participate indicates respect; however, the participants felt it as family pressure. Moreover, offering food and edibles (Taarof) and insisting on it is a cultural custom in Iran, which may be felt as pressure by patients. As family support and family attachment are important in Iranian culture, it seems to be essential to train important family members to help manage diabetes. Maillet et al noted that family members can be supportive of a patient following a special diet but they are not interested in following such a diet themselves (27). Other studies mostly emphasize on supportive relationships with health care providers and rarely mention strategies to improve family support (28-30). In our study, the patients wanted the caregivers to provide information on educating significant family members, especially on modifying traditional methods of food preparation.

Spiritual beliefs seemed to influence health decisions among our participants. They believed in "God's will", faith, or destiny related to both care and cure. Other research studies also report that cultural beliefs have influential role in illness perceptions and its management (16, 31). For example, Ashing et al identified Asians believe that just God could control the illness (32). In order to deliver desirable health education, it is essential to recognize health beliefs among patients of different cultures to consider them in developing programs.

Most of the participants used herbal remedies in order to control their diabetes and thought that home remedies had to be mentioned in the education plans. Knowledge insufficiencies and inappropriate sources result in using incorrect and outdated information by diabetic patients, which in turn result in seeking and using alternative therapies rather then physician-recommended treatment to help them manage their disease (7). These kinds of therapies can either interfere with their medications or result in dis-

connecting them. As there are a variety of herbal medicines using by lay people for controlling blood glucose in Iran, policy makers should pay more attention to this issue. Newly established school of Traditional Medicine at Tehran University of Medical Sciences can be a central setting to study these herbal medicines and their impact on blood glucose. If patients do not receive proper information regarding their disease, they will seek alternative sources and ways in order to manage their disease (31).

Regarding common barriers, physical barriers were mentioned repeatedly by the participants as a preventive factor in self-care. As Coonrod et al. stated, diabetes management is influenced by physical barriers and physical factors can hinder self-care (33). Because of limited resources, especially in developing countries, meeting these barriers appears to be beneficial in promoting self-care behaviors in diabetic patients. It can facilitate self-care behaviors among individuals with diabetes. Overcoming these barriers need either less cooperation with external systems or less challenges in changing attitudes and beliefs.

Another most mentioned barrier among the patients with diabetes was depression. There is a mutual relationship between depression and the self-care in diabetes. In a study by Gonzalez et al in 2007 to examine the association between depression with self-care behaviors in diabetes, the researchers showed that even low levels of depression are associated with non-adherence to important aspects of diabetes self-care. This study also showed that less than 60 per cent of patients who screened positive for major depression in the study had depression listed in their medical record (34). Therefore, it seems that depression screening is needed in diabetic patients. Psychological wellbeing should be discussed with patients in order to identify those individuals who may need a referral to psychiatrist for evaluation and treatment; and diabetes education programs should include the management of mental health. Diabetes care professionals should learn how to recognize the more common mental illnesses (i.e., major depression, bipolar disorder, anxiety disorders) and refer the patients whenever appropriate.

Lack of knowledge as a barrier is reported by our study and many other studies (21, 35). The participants suggested group meetings with other diabetic patients in which they could exchange their experiences could be helpful. Research studies showed that using social network interventions, such as lay or natural helpers could help to diffuse health information and provide formal and informal support for behavioral and social change (29, 36, 37). All educational plans should begin with a thorough assessment of patients' levels of understanding. In addition, strategies for delivering information should be evaluated within the cultural context, as important differences exist regarding the best way to present material (38, 39).

A recurring theme in this research was that of social barriers to improving health. The patients thought that various difficulties in the society system and resulting stresses do not allow them to care themselves appropriately. It shows that health educators have an essential role in omitting these barriers by collaborating with other professionals to manage the problems.

Regarding the system of care, the participants mentioned some difficulties. Most of the patients had problem with new treatments and technologies that were not covered by insurance system, while these kinds of treatment are routine in many other countries. In general, patients with diabetes are being recommended to increase their use of health care services, while as Simmons et al. (21) reported, a significant number of patients cannot afford to pay for regular blood glucose self-monitoring, because of high out-of-pocket costs. Some studies reported also that the most common adherence challenges included paying for medications (40). Spending money for diabetic patients is an investment, because the complication prevention actually saves money. Zgibor et al. reported that individuals reporting external barriers, particularly related to personal finance, were less

likely to perform blood glucose monitoring (41). The partial coverage of insurance system in Iran seriously limits the patients' ability to manage diabetes. These care system barriers have to be met case by case. For example, regarding acceptability, providing appropriate communication with patients is critical in promoting diabetic patients health. In general, appropriate decisions by health administrators can remove or minimize existing barriers. For example, in the UK, community-based clinics rather than hospital-based clinics have established to enhance access and it has been associated with greater patient attendance and satisfaction (6).

Finally, motivational factors should be noticed. However, these factors are mostly culturally oriented; there are few studies that explore them. Identifying these factors and working on them will help the planners to design programs that are more effective.

This study addressed an important issue in health research. The theoretical framework of the study considers the behavior in the social context. Therefore, people should be regarded in the context of their environment, which helps to understand the influencing factors in a wider view and to design programs that are more comprehensive. Moreover, the study used the advantages of the focus groups; i.e. the sessions were flexible, stimulating, elaborative, assistive in information recall, and capable of producing rich data (11).

The study, however, had some limitations. The study was carried out with patients who had sought care in a diabetes clinic and it might not be representative of the general population of the diabetic patients. In addition, we did not measure diabetic control in our informants and all information we received was self-report of the patients. A final limitation was that some participants might have responded with statements they thought were consistent with social standards. This social desirability bias might cause patients did not give us their own views, especially when in a group setting.

Ethical Considerations

Ethical issue principles including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors.

Acknowledgments

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