

Original Article**The viewpoints of patients, families and medical team on internal barriers to blood glucose level management**

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Abstract

BACKGROUND: Internal barriers are an important group of barriers to blood glucose level control. Finding the viewpoints of patients, their families and medical team on these barriers is an important step towards correct planning and effective control of blood glucose. This study aimed to find and compare viewpoints of patients, their families and medical team about internal barriers to control glucose levels.

METHODS: This was a descriptive-comparative and cross-sectional study with three groups and one stage. A total of 938 subjects including 420 type 2 diabetic patients, 420 members of their families and 98 medical team staff participated in the study. Data were collected using a researcher-made questionnaire that was completed by subjects. Data were analyzed using descriptive and inferential statistics methods and SPSS software.

RESULTS: Results showed significant differences between viewpoints of the 3 groups of patients, families and medical team about internal barriers of blood glucose control ($p < 0.001$). The medical team gave the highest importance to these barriers while patients gave the lowest value to these barriers.

CONCLUSION: Regarding the significant difference between the viewpoints of three groups, it can be concluded that this difference may count for lack of success in controlling patients' glucose levels, because medical teams focus on barriers that are not so important to patients and their families and the barriers which are important in the viewpoints of patients and their families are less considered by the medical team.

KEY WORDS: Type 2 diabetes, internal barriers to blood glucose level control, viewpoint.

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In spite of ages of familiarity with diabetes, prevalence and incidence of this disease is still increasing in the world,¹ so that it is turned to an international health care crisis which still needs new studies for prevention and treatment.² This increase is 42% in developed countries and 170% in developing countries. The highest rate of increase is reported in Asian countries.³ Based on the latest statistics, there are more than 171 million diabetes in the world and it is estimated to increase to 366 millions in 2030.⁴ In Iran, there are 4 million diabe-

tes, 10% of them are type 1 and the rest are type 2 diabetes.⁵ This number is estimated to reach 6.5 million in 2030 and unfortunately the speed of increase is predicted to be higher in Iran.⁶ Based on the latest studies, the number of non-insulin dependent diabetes in the Isfahan has been 23,000⁷ and considering the estimated increase rate, this number is expected to be much higher now.

Every year very large amount is spent on treatment of diabetes and complications that emerges due to wrong treatment and control of

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the disease.⁵ Prevention of diabetes complications has vital importance both for patients and health care systems considering the expenses imposed.⁸ Type 2 diabetes is very common and is associated with micro-vascular and macro-vascular complications, which are the main factors of severe increase of mortality in these patients (3 to 6 times of non-diabetics),⁹ so that diabetes older than 25 years old are responsible for 10% of all deaths. This disease is the commonest cause of End-Stage Renal Disease, new cases of blindness, and amputation of non-traumatic lower limbs.¹⁰

Diabetes cannot be cured, but it can be controlled.¹¹ In recent years, various methods have been applied to improve diabetes administration and to reduce its complications and many studies have emphasized the role of continuous care in controlling diabetes,¹² but unfortunately in spite of all these efforts, statistics still say that different societies have not achieved diabetes control and prevention of its complications.¹³⁻¹⁵ Many barriers are responsible for this failure and it is necessary to identify these barriers in order to change and correct them.¹⁶ Internal barriers are an important group of these barriers. Many qualitative studies have identified internal barriers that lead to failure in controlling blood glucose including physical impacts of the treatment, emotional-psychological conditions of the patient, psychological factors (such as health related beliefs, side effects of the treatment and the pain of blood sampling for glucose monitoring) and patients' lack of knowledge and information about available services,^{17,18} and it is necessary to plan for inhibiting or controlling them. Meanwhile, coordination between patients, families, physicians and other members of the health care team including nurses is necessary for formation of an effective plan to control blood glucose;¹⁹ also, being aware of the viewpoints and beliefs of this groups can play a significant role in assessing how much the internal barriers impact the blood glucose control. However, by identifying the most important and effective barriers to blood glucose control, we can take the first step fast and effectively. On the other hand, compar-

ing the viewpoints of these people (patients, families and medical team) about the effect of these factors, can lead us to the cause of inappropriate control of blood glucose. If these people do not put the same importance on these barriers it would be impossible that they act in opposition in removing or controlling these barriers and end up with uncontrolled blood glucose.

Currently, there are no valid documents investigating the viewpoints of this group of people in Iran and the necessity of such study is quite felt considering the different climatic, cultural, social and economic conditions of our country, because the barriers found by studies in other countries may have no or little role in blood glucose control of Iranian patients. Therefore, to improve the continuity of health care for type 2 diabetic patients and considering the findings of qualitative studies that identified patient-family-care provider relationship as the effective factor in controlling blood glucose²⁰ and also the effective role of time in changing people's view in the progressing process of disease and the importance of the assessment of all these viewpoints together, this study was conducted to determine and compare the viewpoints of patients, families and medical team toward the internal barriers to blood glucose control in the diabetes centers of Isfahan city in 2007. The study investigated the effects of these barriers from the viewpoints of these three groups who have an important role in achieving self-administration of diabetes, hoping that by finding the effective barriers from the viewpoints of these people in Iranian society, a step toward more coordination for control or removal of these barriers would be taken and it would help controlling the patients' blood glucose.

Methods

This study is descriptive-comparative and cross-sectional with three groups and one stage. Sampling was stratified random, which is a probability sampling method. It means that sampling was based on the required sample size and the number of study population in each of five diabetes centers of the Isfahan city

including Seddiqe Tahereh Research-Treatment Center, Social Insurance Diabetes Center, Diabetes Center Number 1 (Navab Safavi), Diabetes Center Number 2 (Amir Hamzeh) and Diabetes Unit of Al-Zahra Hospital. In the family group, one immediate relative who was in close contact with the patient and according to the patient would give them the most care were selected. Due to limitations of physicians and nurses working in the studied diabetes centers, sampling of medical team was census and all physicians and nurses working in these centers as well as all physicians working in the health centers participated in the study, if they had criteria and were willing to. A total of 938 people participated in the study as follow: 420 type 2 diabetic patients, 420 members of their families and 98 of medical team members.

Entry criteria for the patient group included having an active file (referring to the center at least twice per year) in one of the diabetes centers of the Isfahan city at the time of study, having type 2 diabetes, diagnosed for type 2 diabetes at least one year before the study, not living alone and not suffering from mental retardation or mental illness registered in the file. For the family group, it included being immediate relative, having the most participation in taking care of the patient and being non-diabetic. For the medical team, it included at least 6 months working background in the diabetes centers or health centers, willing to participate in the study and being non-diabetic. After the random sampling, those subjects who were not accessible due to change of the address or phone number recorded in their files, and those who were not willing to participate in the study after the objectives and method of the study were explained to them were excluded from the study.

Data were collected using a researcher made questionnaire consisted of 22 items with a scale of 0 to 10 to assess the viewpoints of subjects on the importance of internal barriers in controlling blood glucose. Zero point for a barrier was no effect and 10 points was very effective in not achieving blood glucose control. The range of scores was between 0 and 220. Considering that the participants were from all different social

classes with different educational levels, the terms "not at all" and "very much" were written at the two sides of the 10 scales in the questionnaire to guide the subjects. Also, by using content validity method and Cronbach's alpha of 0.88, validity and reliability of the questionnaire were approved. The questionnaires were completed by subjects in the presence of the researcher, or were completed by interviewing the subjects (in case of illiterate or blind patients). In order to make the patients and their family members separately answer the questions, it was arranged that two research assistants at the same time help them complete the questionnaire in different rooms.

The main variables of this research included the viewpoints of patients, families and medical team toward the internal barriers of blood glucose management. Data were both qualitative and quantitative and were analyzed using descriptive and inferential statistical methods by SPSS software version 11.

Results

Participants in the patient group of this study included 420 patients with type 2 diabetes (38.3% male and 61.7% female) and their mean age was 52.254 (9.559) years old and their mean of glycosylated hemoglobin was 7.80 (1.548). The family group included 420 family members of the patients, 88.8% of whom were living in the same place with the patients. Also, 98 members of medical team working in the health centers and diabetes centers of the Isfahan city participated in the study. Their mean working duration was 9.706 (6.343) years.

The results showed that the mean of scores for viewpoints on internal barriers were 64.99 (32.85) in the patient group, 82.62 (35.36) in the family group and 105.18 (26.64) in the medical team group. The highest scores of viewpoints towards the role of internal barriers in blood glucose management belonged to medical team and patients gave the lowest importance to these barriers. Comparison between means of scores of the viewpoints of patients, families and medical team toward internal barriers to blood glucose management using ANOVA and

Post-Hoc analysis showed a significant difference between the three groups ($p < 0.001$).

As table 1 shows, according to the scores, internal barriers which had the highest importance in failure of blood glucose management included "patient's lack of information about diabetes" and "patient's not taking diabetes and its possible complications serious and thus start treatment or follow up of treatment with delay". However, families and medical team had a different attitude for ranking these barriers. Families gave the highest importance to "patient's lack of information about diabetes" and "patient's not taking diabetes and its possible complications serious and thus start treatment or follow up of treatment with delay" and "frustration caused by lack of full recovery, despite fol-

low-up treatment of the disease". The medical team group gave the highest scores among the internal barriers to blood glucose management to the following: "patient's not taking diabetes and its possible complications serious and thus start treatment or follow up of treatment with delay", "patient's lack of information about diabetes" and "tediousness of frequent blood sampling for tests" with mean score of.

Discussion

Differences between the viewpoints of the three groups involved in health care of diabetes and blood glucose management about internal barriers is very obvious in this study. Considering the results, it can be concluded that medical staff consider patient as the main effective one

Table 1. The mean scores of the viewpoints of patients, families and medical team toward the internal barriers to blood glucose management

	Internal barriers to blood glucose management	Patient		Family		Medical team	
		Mean	SD	Mean	SD	Mean	SD
1	Patient's lack of knowledge about diabetes	5.595	3.064	6.176	3.264	7.795	2.310
2	Patient's not taking diabetes and its possible complications serious and thus start treatment or follow up of treatment with delay	4.485	3.937	6.052	3.507	8.122	2.174
3	Frustration caused by lack of full recovery, despite follow-up treatment of the disease	4.081	3.472	5.166	3.386	5.020	2.495
4	Physical disability (being old, blindness, etc) for taking care of themselves	3.142	3.041	5.121	3.777	5.704	2.810
5	Believe that diabetes's complications are not preventable	2.426	1.039	4.042	3.542	3.704	2.507
6	Believe that diabetes is not controllable	2.219	1.963	3.438	3.424	3.765	2.498
7	Believe that diet can't manage blood glucose	2.233	2.139	3.657	3.641	3.479	2.664
8	Fear of decrease of blood glucose after diet	3.038	2.049	4.126	3.363	2.744	2.155
9	Believe that they don't have enough energy for doing their routine works because of not using sugar products	4.397	3.343	4.802	3.277	3.816	2.399
10	Believe that they don't have enough energy for exercising	4.392	3.823	4.347	3.616	3.377	2.505
11	Believe that exercise can make blood glucose out of control	1.488	1.364	2.464	2.034	2.724	2.345
12	Believe that disease would become worsen after using insulin	3.761	2.750	3.350	2.408	5.091	3.265
13	Difficulty for measuring right amount of insulin to inject	1.361	0.879	2.881	1.873	5.949	2.680
14	Believe that blood glucose reducer tablets are useless	2.461	2.010	2.864	2.163	3.336	2.419
15	Fear of reduction of blood glucose after sing medicines	1.842	1.655	2.564	1.932	3.877	2.364
16	Believe that measuring blood glucose regularly is not important	1.764	0.929	2.138	1.249	5.295	3.146
17	Not believing in the importance of blood pressure and other vital tests	1.645	0.752	2.440	1.354	4.908	2.929
18	Tediousness of frequent blood sampling for tests	2.781	2.224	3.619	3.539	6.500	2.488
19	Pain of insulin injection	1.364	0.679	2.626	1.755	5.500	2.940
20	Isolation and frustration of the patient	4.583	3.705	4.692	3.465	4.877	2.640
21	Lack of information about existing health care services and their availability	3.647	3.402	3.752	3.068	5.673	2.689
22	Not trusting the educations given by medical team	2.035	1.087	2.461	1.932	4.183	2.737

in diabetes management and as a result give more importance to the internal barriers, while patients don't have the self-esteem to believe in the importance of their role in blood glucose management. They have no clear view of barriers and do not seek for their internal barriers, thus do not consider the internal barriers important and as a result make no effort to remove them.

In this regard, Wolpert et al (2001) also believed that helping people to change their lifestyle is not easy and this changes can happen just when it is approached from the patients' view.²¹ Lawton et al (2005) also concluded in his study that patients respond well just to those interventions and advices that agrees with their interests and experiences.²² Moreover, Nair et al study (2005) showed that patients and physicians had different views towards the disease and patients compared to physicians emphasized the effects of psychological experience of the disease rather than physiologic effects,²³ while a successful administration of diabetes demands a consistence team functioning.²⁴

The commonest barriers reported by the three groups were also different. Nagelkerk et al (2006) also in his study said that the commonest barriers reported by patients about following diet were insufficient understanding of the care program and disappointment with blood glucose control and believing in the disease progress in spite of treatment follow up.²⁵ In Haque et al study (2005) also, patients' insufficient information was identified as one of the main barriers in starting insulin treatment.²⁶ Likewise, all participants in Gillibrand and Flynn study (2000) said that they were not satisfied with their information about the disease and they were unsatisfied about the quality and quantity of provided information.²⁷ While we all know that because of chronic nature of the disease and the role of patients in controlling it, education is infrastructure for achieving other goals of treatment. If patients have enough education, they will have better management.²⁸ In opposition to this study and other studies mentioned above, in Jallinoja et al study (2007), lack of sufficient information was identified by

medical staff as a barrier, but its importance was reported low.²⁹ In a study by Dalewitz et al (2000) conducted in the US, patients' knowledge was not related to blood glucose management in the viewpoints of patients and medical staff.³⁰ While in the current study, lack of knowledge in the viewpoints of patients and their families had the highest role in lack of blood glucose management. This can be a reason for the impact of culture and social status in barriers experienced by patients. Participants of Brown et al study (2002) also said that patients do not take diabetes serious and do not accept it as a chronic disease due to lack of symptoms and it is an important barrier to blood glucose management.³¹ Most patients participating in Holmstrom et al study (2005) also believed that they did not feel sick in their body and did not consider themselves as patients. These people deny their disease and did not take it serious.³² Peyrot et al (2005) also said that emotional and psychological problems, and worries related to diabetes and its unrecoverable nature affects self-care and follow up and is the key barrier to achieving blood glucose control in the viewpoints of patients and health care providers.³³

Considering above and the findings of the present study, it can be concluded that another cause for not achieving blood glucose management in patients with type 2 diabetes is the difference between the importance that different groups give to internal barriers to blood glucose management. Because it is possible that in one hand, barriers to blood glucose control experienced by patients are not considered and planned for by the medical staff, and on the other hand, due to different views on the issue, plans designed by medical staff to control blood glucose and diabetes are not approved and accepted by patients and their families. As a result, each of these groups follows their own method to control blood glucose separately, while these methods are not consistent with each other and result in an unsuccessful blood glucose management. Also, the results of this study show that some barriers such as patients' lack of knowledge and not taking diabetes and its complications seriously which results in de-

lay in starting treatment or follow up of treatment are of high importance in the viewpoints of all three groups and there should be management plans mainly focused on these barriers.

The Authors declare that have no conflict of interest in this study and they have surveyed under the ethical issues.

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