Comparison of Barriers Related to Medical-Health Systems for Controlling Diabetes Type II From the Viewpoints of Patients, Families and Nurses

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Abstract

Background: Today, diabetes has become a major challenge for health systems around the globe. It is important to determine patients, families and nurses' viewpoints and consider their views for controlling diabetes.

Objectives: The aim of this study was to compare the obstacles related to medical-health systems from the viewpoints of patients, families and nurses in the diabetes association of Ahvaz city, Iran, during year 2012 in order to effectively control diabetes.

Patients and Methods: In this cross-sectional study, 75 patients with diabetes and 75 family members of these patients and 75 nurses were randomly selected. The applied tool for data gathering was a questionnaire provided by the researchers and consisted of two parts; the first part of the questions was related to demographic characteristics and the second part was related to obstacles for controlling diabetes. The SPSS (19th version) software and deductive and descriptive statistics were applied for analyzing the data.

Results: The results of this research showed that there was a significant difference among mean scores of obstacles related to medical-health systems from the viewpoint of patients, families and nurses (P = 0.001), so that patients gave a maximum mean score (52.81) and nurses gave a minimum mean score (46.61) for these obstacles.

Conclusions: Regarding the results, it could be suggested that the reason for not being able to control diabetes was the existence of differences among viewpoints while by getting to know the obstacles for controlling diabetes from the viewpoints of the three studied groups, more effective planning for controlling diabetes could be possible.

Keywords: Diabetes Type II, Barriers Related to Medical-Health Systems, Viewpoint, Patient, Family and Nurses

1. Background

The world health organization announced diabetes as a silent epidemic, which has turned to a challenge of health care systems in the 21th century according to the international diabetes federation and world health organization and it is more serious in the middle east (1). Although the prevalence of diabetes type I and II is increasing all over the world, it is expected for the prevalence of diabetes type II to increase faster regarding the increase of laziness and obesity (2, 3). Based on a report by the Iranian diabetes association, more than 5% of Iran's population has diabetes (4). Based on prediction of experts of the world health organization, the prevalence of diabetes type II in Iran will reach 52,150,000 individuals by 2025 (5, 6). Considering the appearance of side effects due to not controlling diabetes and necessary medical measurements in this field, this disease is considered as one of the most prevalent and costly chronic diseases all over the world (7). During the recent years, several techniques have been used to improve the management of diabetes and decrease the side effects and several researches have emphasized on the role of continual care in controlling diabetes (8) and unfortunately, despite all efforts, statistics still suggest failure in controlling blood glucose and preventing from side effects in different societies (9, 10). Alternatively, the basis of care in diabetes is to keep the amount of blood glucose at ideal levels but in spite of the importance of this issue and its high expenses, blood glucose of many patients has not ideally been controlled (11). Qualitative studies have introduced many barriers as the obstacles for controlling blood glucose (8-10) that can be categorized to interpersonal, extra personal and barriers related to health-medical systems. Barriers such as not completely supporting patients because of slowness of the treatment process, waiting at medical centers, lack of time and not spending enough time for talking to the patients (12-17), not having enough meetings with medical staff (18), lack of education and not repeating educations for patients about treatment and their disease, are among the obstacles related to medical-health systems

and effective administrative plans must be done in order to control them. Meanwhile, coordination between the patients, their families and members of the care team such as nurses, is necessary for the formation of an effective plan in order to control blood glucose (19). Alternatively, getting to know the viewpoints of these three effective groups (patients, families and nurses) is very important because many patients have stated that it is very important for them to be in contact with the personnel of health-care systems (20). Therefore, recognition and prioritization of these barriers from different viewpoints (patients, families and nurses) and comparing these viewpoints can lead to a more successful control of this disease because one of the reasons for failure in controlling diabetes is the conflict between these viewpoints. Maybe, more important barriers and mental obsession of patients and their family in controlling diabetes were different with medical staff's mental obsession and this issue caused conflict in their function for removing and controlling these obstacles and eventually results in not controlling blood glucose. Therefore, regarding the establishment of family-patient and care giving relationships as an effective factor in controlling blood glucose in previous qualitative research (21) and the importance of getting to know these viewpoints, the present research was conducted with the aim of comparing barriers related to medical-health systems for controlling diabetes type II from viewpoints of patients, families and nurses in Ahvaz city.

2. Objectives

The present study prioritized these barriers and compared their mean scores from the viewpoints of three groups in order to take effective steps towards greater coordination for controlling and removing these obstacles and as a result controlling diabetes type II.

3. Patients and Methods

The present study was a cross-sectional study that included three groups (patients, families, nurses) and 225 samples, performed in Ahvaz city, during year 2012. This research was conducted after obtaining permission from the official chairmen and informed consent from the participants. The studied population consisted of 75 patients with diabetes type II who had a record at the Iranian diabetes association, 75 family members of the patients (one family member for each patient) and also 75 nurses among the nurses employed in this association and interior wards of Imam, Razi and Golestan hospitals of Ahvaz city. The sample size was calculated using information from Pilot

studies conducted on 15 patients, 15 family members and 15 nurses, mean and standard deviation of the three groups and the sample size was calculated as 225 individuals (each group consisted of 75 individuals). Using data from a pilot study conducted on 15 patients, 15 family members and 15 nurses, the mean and standard deviation of the three groups (patients, families and nurses) were calculated, so that the nurses mean $\pm$ SD = 160.73 $\pm$ 16.8, and family group mean $\pm$ SD = 148.53 $\pm$ 28.71. In the group of patients the mean and standard deviation equaled mean $\pm$ SD = 152.86 $\pm$ 23.28. Next, the sample size for an average of three groups using the analysis of variance (ANOVA) with α = 0.05 and β = 0.2 was calculated using the Minitab software; a sample size of 225 was calculated (for each group of 75 patients). The sample was selected (75 records) through the simple random method using random numbers from records at the diabetes association (100 records). Patients were contacted using the address and phone number in their records and researchers introduced themselves and the aim of conducting this research. The data was gathered through filling the questionnaire in the presence of the researcher at the diabetes association. The patients and their family member answered the questions independently and simultaneously and, also, available information in patients' records was used to determine patient's demographic characteristics such as result of tests. Moreover, after obtaining the list of nurses (92 nurses) employed in this association and interior wards of Imam, Razi and Golestan hospitals of Ahvaz city, 75 nurses were selected (75 records) through the simple random method using random numbers and data was gathered by referring to the diabetes association and interior wards of hospitals during different shifts and providing nurses with a questionnaire. In the patient group, the criterion for entering the study included having an active record (referring to the association at least twice a year), having diabetes type II based on existing records, passing of at least one year since the recognition of diabetes type II, having at least 18 years of age, ability to write and read, not suffering from mental disease and cognitive disorder registered in their record, willingness to participate in the research and having at least one family member as a caregiver and not living alone. For the family group, the criteria for entering the study included the ability to write and read, willingness to participate in the research and being an immediate family member of the patient (father, mother, wife, sister, brother and grandchild) who lives with the patient and has the most cooperation in taking care of the patient based on patients' confirmation, and not having diabetes. Regarding the nurses group, the inclusion criteria were being a nurse or nurse's aide employed in this association and interior wards, not having diabetes and willingness to participate

in the research. The applied tool for gathering the data was a questionnaire provided by the researcher that consisted of two parts: the first part consisted of 17 questions related to patient's demographic characteristics, six questions related to family members' demographic characteristics, six questions related to nurses' demographic characteristics and the second part consisted of 15 questions related to barriers related medical-health systems of controlling diabetes that evaluated the viewpoints of under-research units in terms of importance and effect of each barrier on failure to control diabetes based on a Likert scale with a score range of one to five (very high, high, moderate, low, very low). The method of content validity was applied in order to determine the validity of the questionnaire. The, researchers drew up the initial questionnaire after studying books and published scientific articles and then passed it to the Ahvaz Jundishapur University of Medical Sciences, faculty members of nursing and midwifery faculty for revision. Moreover, the method of test-retest was used for reliability of tools; at first, the questionnaire was applied for 45 samples (15 patients, 15 family members, 15 nurses) and people answered the questions again after two weeks and Pearson's correlation of 87% showed the reliability of tools and also, Cronbach correlation was of 0.9%. After collecting the data, the SPSS (19th version) software was used for analyzing the data and descriptive statistical methods (mean and standard deviation for each group), one-way analysis statistics and variance analysis and Tukey's separation test were applied for comparing the mean score of obstacles among the three groups.

4. Results

In the present research, 225 people were included, 75 patients with diabetes type II and mean age of 50.2 ± 10.74, 75 family members with mean age of 37.42 ± 12.81 and 75 nurses with mean age of 31.13 ± 6.13. Glycosylated hemoglobin of 16 patients (21.3%) was less than 7%, who had controlled blood glucose based on the criteria of the America diabetes association and glycosylated hemoglobin of 59 of the patients (78.7%) equaled 7% or more than 7%, which means uncontrolled status (Table 1). The major information source of family members about diabetes was mass media (30.7%) and 78.7% had not formally been educated about diabetes so far and the major method of receiving education by people educated in the field of diabetes was through the diabetes association (62.5%) (Table 2). In the nurses group, 88% of nurses had not passed specialized training courses about diabetes (Table 3).

The findings of the present research showed that mean score of obstacles related to health-medical systems was

Table 1. Demographic Characteristics of Participants in the Patients Group

Demographic Characteristics	No. (%)
Gender	
Male	31 (41.3)
Female	44 (58.7)
Age, y	
18 - 40	14 (18.7)
40 - 60	51 (68)
< 60	10 (13.3)
Marriage status	
Single	13 (17.3)
Married	53 (70.7)
Divorcee	7 (9.3)
Widow	2 (2.7)
Ethnicity	
Arab	31 (41.3)
Fars	35 (46.7)
Kord	5 (6.7)
Lor	4 (5.3)

52.81 ± 11.87, 51.89 ± 9.57 and 46.61 ± 9.54 from the viewpoint of patients, families and nurse group, respectively. Therefore, the highest mean score of barriers related to health-medical systems was dedicated to the family group and nurses considered minimum effect for these obstacles. Comparison of mean score of barriers related to health-medical systems from three viewpoints of patient, family and nurse group using ANOVA statistical tests and Tukey's separation test showed that if P was less than 0.001, there would be a significant difference among the viewpoints of the three groups. One way analysis of variance showed significant differences among the mean scores of the three groups about barriers related to health-medical systems; therefore, there were differences, at least, between two means in the three groups of patients, families and nurses and Tukey's separation test applied to find such differences and compare groups. Results of this test showed that there was a statistical significant difference among mean score of barriers related to health-medical systems from the viewpoint of patients and nurses ($P < 0.001$) and also a statistical significant difference was observed among mean score of these obstacles from the viewpoint of families and nurses ($P = 0.002$) yet there was no significant difference among mean scores of these barriers from the viewpoint of patients and families ($P = 0.58$). Based on the mean of given scores, barriers related to health-medical

Table 2. Demographic Characteristics of Participants in the Family Group

Demographic Characteristics	No. (%)
Gender	
Male	27 (36)
Female	48 (64)
Age	
< 40	43 (57.3)
40 - 60	30 (40)
< 60	2 (2.7)
Information source	
Mass media	23 (30.7)
Educational books and booklets of health-care centers	15 (20)
Doctor	16 (21.3)
Nurse	6 (8)
Members of family and friends	6 (8)
Other diabetic patients	9 (12)
Have you been educated in the field of diabetes?	
Yes	16 (21.3)
No	59 (78.7)
Method of receiving formal education	
Diabetes association	10 (62.5)
Hospital	5 (31.25)
Health center	1 (6.25)

Table 3. Demographic Characteristics of Participants in the Nurses Group

Demographic Characteristics	No. (%)
Age, y	
20 - 30	45 (60)
31 - 40	21 (28)
41 - 50	9 (12)
< 50	53 (70.7)
Job experience	
5 - 10	16 (21.3)
< 10	6 (8)
Gender	
Male	10 (13.3)
Female	65 (86.7)
Have you passed specialized education course about diabetes?	
Yes	9 (12)
No	66 (88)

systems were of most importance in not-controlling diabetes from the viewpoint of patients, including lack of specialized centers presenting services (associations and clinics) to diabetic patients with mean score of 4.08 ± 1.12, lack of insurance support with mean score of 4 ± 1.27, not repeating educational classes with mean score of 3.8 ± 1.37. However, from the viewpoint of nurses, the most important barriers included lack of insurance support with mean score of 3.9 ± 1.04, lack of specialized centers presenting services to diabetic patients with mean score of 3.8 ± 0.82 and not following patient' treatment at home by nurses with a mean score of 4.01 ± 4.09. Also factors including not establishing in appropriate relationships between doctors and patients and their family with mean score of 4.01 ± 9.01, not establishing appropriate relationships between nurses and patients and their family with mean score of 3.97 ± 1.09 and lack of specialized centers presenting services to diabetic people with mean score of 3.89 ± 107 were considered as the most important barriers from the viewpoint of families (Table 4).

Moreover, results of the ANOVA statistical tests and

Tukey's separation test showed that there were significant differences between the mean score of not spending enough time by medical staff to answer patients and family's questions from the viewpoint of patients and nurses ($P < 0.0001$) and between mean score of these barriers from the viewpoint of families and nurses ($P < 0.0001$). Moreover, there were significant differences between mean score of barriers of not establishing appropriate relationships between nurses and patients and families from the viewpoint of patients and nurses ($P = 0.0001$), between mean score of this barriers from the viewpoint of family and nurse ($P = 0.0001$) and also between mean score from the viewpoint of patient and family ($P = 0.04$). In addition, there were statistically significant differences between mean score of not enough educational content presented to patients and families about diabetes by medical supporting centers from the viewpoint of patients and nurses ($P = 0.0001$) and also statistically significant differences observed between mean scores from the viewpoint of families and nurses ($P = 0.0001$). Moreover, statistically significant differences were observed between mean score of not repeating the educational classes for patients from the viewpoint of patients and nurses ($P = 0.005$) and between the mean score of this barriers from the viewpoint of families and nurses ($P = 0.012$); and, there was a statistically significant difference between the mean score of not paying attention to family and patient beliefs and culture by medical staff from the viewpoint of patients and nurses ($P < 0.0001$).

Table 4. Comparing Mean Score of Barriers Related to Diabetes Controlling Medical-Health Systems From the Viewpoints of Patients, Families and Nurses[a]

Numbers	Obstacles Related to Medical-Health Systems	Patient	Family	Nurse	P Value
1	Lack of specialized centers presenting services (associations and clinics) to diabetic patients	4.8 ± 1.12	3.89 ± 1.09	3.80 ± 0.82	0.23
2	Not enough information for patients about existence of diabetes-controlling centers and their functions	3.77 ± 1.18	3.72 ± 1.10	3.50 ± 0.96	0.28
3	Not spending enough time by medical staff to answer patient and family' questions	3.78 ± 1.14	3.84 ± 1.09	2.98 ± 0.99	< 0.0001
4	Not-establishing appropriate relationships between nurses and patients and their family	3.61 ± 1.22	3.97 ± 1.07	2.69 ± 0.92	< 0.0001
5	Not-establishing appropriate relationships between doctors and patients and their family	3.66 ± 1.24	4.01 ± 1.09	2.68 ± 1.05	< 0.0001
6	No enough educational content presented to patients and their family about diabetes by medical centers	3.80 ± 1.31	3.85 ± 0.99	3.04 ± 0.92	< 0.0001
7	Not repeating educational classes	3.89 ± 1.37	3.82 ± 1.24	3.29 ± 1.26	0.009
8	Inconsistent education about diabetes by different medical staff	2.77 ± 1.34	2.93 ± 1.22	2.62 ± 099	0.29
9	Not enough confirmation by medical staff for performing tests, controlling blood glucose and periodic examination	3.06 ± 1.20	2.86 ±1.41	2.90 ± 1	0.56
10	Not presenting enough education to patients and families about importance and how to measure blood glucose by blood glucose test strips at home	3.16 ± 1.30	3.12 ± 1.30	2.97 ± 1.10	0.62
11	Not enough education about amount and correct technique of dragging and injecting insulin	2.98 ± 1.13	2.97 ± 1.26	2.88 ± 1.11	0.83
12	Not paying attention to patients and family's beliefs and culture by medical staff	3.41 ± 1.20	3.06 ± 1.14	2.74 ± 0.99	0.002
13	Difference between medical staff and patient's attitudes and beliefs in the field of how to control diabetes	3.34 ± 1.23	3.05 ± 1.08	2.94 ± 0.95	0.07
14	Lack of insurance support	4 ± 1.27	3.65 ± 1.36	3.90 ± 1.04	0.20
15	Not following patient's treatment at home by a nurse	3.45 ± 1.51	3.10 ± 1.39	3.61 ± 1.17	0.7

[a]Values are expressed as mean ± SD.

5. Discussion

Regarding the results of this research, decreasing blood glucose pills taken as a method of controlling disease for 58.6% of patients; moreover, in the study of Heydari et al. (22), the kind of treatment in most patients (62%) was taking pills. Based on research findings and according to patient's statement, 76% of samples used recommended treatment to control their disease and mean glycosylated hemoglobin of patients was 7.46 ± 1.14 and the most patients (78.7%) had glycosylated hemoglobin of 7% and more than 7%, which means they were in the uncontrolled status of diabetes. In the study of Esmailnasab et al. (23), mean glycosylated hemoglobin was 7.2 ± 1.6, and 73.2% of patients were in the uncontrolled status of diabetes. Moreover, in the study of Mansour (24) conducted in Iraq, glycosylated hemoglobin of most patients (76.3%) equaled 7% or more than 7% and mean glycosylated hemoglobin was 8.4 ± 2, which confirmed our study and these results showed non appropriate status of controlling blood glucose in patients with diabetes (24). Moreover, the major information source of diabetes for patients included mass media (22.7%) and educational books and booklets of health-care centers (22.7%) and also the major source for getting infor-

mation was radio and TV (23.2%) based on the results of Rashidi and Ghasemi (25). In addition, the major information source was newspaper (66.7%) based on Hsu and Yoon (26) and these results may indicate that diabetic patients have used this medium more than other media because they had access to it. In the family group, the information source of diabetes was mass media and as family members stated, 78.7% had not received any formal education about diabetes and 62.5% received formal education about diabetes through the diabetes association. As stated in the study of Bahrami Nejad et al. (27), family can be considered as a social place to educate for changing behavior of society members and educating clients along with their family and making families cooperate in an educational plan can increase people's ability to make and preserve changes of lifestyle. In the nurses group, based on the statement of participants, 88% of nurses had not passed formal education about diabetes and 12% had passed formal and specialized education courses about diabetes; these results indicate the necessity for specialized education for nurses employed at the diabetes association and interior wards of hospitals. In this direction, Torres et al. (28) showed that employees of the health field need to increase their knowledge and preparation for different aspects of dia-

betes and pay more attention to patients' issues and assessment of interference in order to promote the control of diabetes. Based on the results of Abazari et al. (29), although, preventing and controlling diabetes had formally been put among the health priorities since 15 years ago and significant efforts were dedicated to education of patients and people who are at risk and even the general public, in this field and alternatively this task basically assigned to nurses and they have defined role of "the educator nurse" but, in this field, just one period with 8 learners implemented in 1389; the findings of this article and results of the present study showed the necessity for diabetes specialized education for nurses who educate about diabetes. In the present study, lack of specialized centers presenting services (associations and clinics) to patients with diabetes was among the most important and high priority barriers from the viewpoints of all three groups. In the study of Abazari et al. (18), non-appropriate distribution of medical centers was reported as an obstacle by participants, who tended to follow medicinal diet and participate in an educational plan implemented by medical centers. Not spending enough time by medical staff to answer the family and patients' questions was one of the important obstacles from the viewpoint of families and patients and there was a statistical significant difference between the viewpoint of nurses and patients and their family (P = 0.0001). In addition, the necessity of educating patients has been confirmed by the study of Caliskan et al. (30) but this cannot be implemented because of the lack of time and low number of nurses; these results were consistent with the findings of our study. In the present study, not following the patient' treatment at home by a nurse with mean score of 3.61 was an important barrier, and it was the third barrier related to health-medical systems. As stated by Shirazi and Anousheh (31), there are different educational courses for nurses to prepare them for educating about diabetes in different Asian and European countries, yet Iran is facing problems such as lack of nurse staff. In the present study, the barrier of not paying attention to family and patients' beliefs and culture by medical staff was of high importance; in this direction, the results of Ali and Jusoff (32) showed that health experts related to diabetes management need to understand patients' beliefs and limitations. In addition, based on the results of Shakibazadeh et al. (33) educating about diabetes must be based on culture-centered interference and designed based on the viewpoints of patients and employees, who are in direct contact with patients. The other important barrier stated in the present study was not repeating the educational classes and there was a significant difference between the viewpoints of nurses and patient (P = 0.005) and the viewpoints of nurses and family members (P = 0.01). Moreover,

in the study of Uchenna et al. (20), 73.5% of participants mentioned irregular educational sessions and 84.8% mentioned limited number of sessions as barriers for not following their medicinal diet to control diabetes, that agree with the results of our research. In the present study, lack of insurance support was among the most important barriers related to medical-health systems of controlling diabetes from the viewpoints of the three groups. In this direction, results of the study of Rahimian-Boogar et al. (34) showed that self-management of diabetes in patients, who have insurance and insurance support was significantly higher in comparison with individuals with no insurance (P = 0.001). Significant differences were observed between mean scores of barriers related to medical-health systems (P = 0.0001) that were not observed between mean scores from the viewpoint of patients and nurses (P < 0.0001) and between the viewpoint of patients and family members in barriers related to medical-health systems based on Tukey's separation test (P = 0.58); therefore, in the present study, existence of a considerable difference between the viewpoint of nurses and patients and families in caring and controlling diabetes is completely evident regarding barriers related to medical-health systems that is one of the reasons for failure to control blood glucose. As stated previously, the criteria for achieving success and controlling blood glucose is to have consistent teamwork and more coordination with the viewpoint of patients and their family; therefore, if planning designed by medical staff to control blood glucose and diabetes disease is not confirmed and accepted by patients and their family because of different viewpoints in this field, a rift being made in the function of these groups in practice that would not conform to each other and its result would be non-access or imperfect access to desirable controlling diabetes. In this direction, results of Pun's study (35) showed that people presenting health care can make their medical aims possible by making patients skilled and supporting family members, and the first step to make patients skilled is to overcome barriers and to know barriers for controlling diabetes from the viewpoints of medical staff and patients. In Shahady's study (36) that was conducted in Florida patients and their family members were among important members of diabetes-controlling team and their cooperation in treatment caused better self-management and medical staff were required to know the viewpoint of patients and their family about barriers. Therefore, based on the results of Nam et al. (16), formally recognizing the cooperation relationship between patients and medical staff is of importance in managing diabetes disease and would result in cooperation of patients, families and medical staff in disease management. Regarding the significant differences between the viewpoints of these three

groups in this study, perhaps these differences account for the lack of success in controlling patient glucose levels, because medical teams focus on barriers that are not so important to patients and their families, while barriers which are important to patients and their families are less considered by members of the medical team.

5.1. Limitations of Research

As the data was in the form of self-report then the spiritual status of under-research samples while filling the questionnaire could have affected the style of answering questions and may have resulted unreal answers.

5.2. Ethical Considerations

Ethical considerations of the present study consisted of asking the permission of the concerned chairmen and presenting a letter of introduction, introducing the researchers to the research units and asking their interest for participating in this research, explanation and realization of the research aim for each research unit, assuring the research unit that no registered personal information would be revealed, giving non-participation right to under-research samples, not exacting expense to under-research units, providing the chairmen of diabetes association and interior wards of Ahvaz's Imam ,Razi and Golestan hospitals with the results of the research.

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