RESEARCH ARTICLE

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# Self-care Assessment in Patients with Diabetes in Qom city in 2013

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**Background & Aims of the Study:** Diabetes is considered a major concern in the third millennia A.D. and is increasing day by day. This disease shows a high prevalence in Iran as well. Meanwhile, self-care is the best solution for controlling and preventing diabetes. This study aimed at self-care assessment in patients with diabetes in Qom city in 2013.

**Materials & Methods:** A total of 251 diabetes patients referring to Qom city Diabetes Association were chosen through simple accidental method. Two questionnaires including demographic and SDSCA standard questionnaires and also an information paper were used in this study. The questionnaires were completed through an organized interview in order to achieve the best accuracy. The data was analyzed by SPSS18 software by less than 0.05 significance.

**Results:** The results showed that 32.99% of the subjects had no self-care activity against diabetes and only 7.97% of the subjects followed self-care activities during the week. FBS rate among the patients was 157.74 mg/dl and HbA1c rate was 7.74 mg/dl, and self-care score was also 46.53. The results showed an adverse significant relation between self-care and FBS plus HbA1c rates.

**Conclusions:** Diabetic Patients lacked a desirable self-care condition in such a manner that patients didn't take care of self-care activities including: having a diet, doing enough physical activity, controlling blood sugar, taking care of their feet, and also consuming drugs or injecting insulin, completely and regularly. Consequently, FBS and HbA1c rates were undesirable in the subjects.

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## Background

Today morbidity and mortality have taken a different approach in most of the countries, and infectious and communicable diseases are replaced by chronic and uncommunicable diseases to the extent that these diseases' mortality is 2-5 times more than infectious diseases in Asian countries (1). Iran has also

been recently in this epidemiologic pass. Diabetes is a serious global problem in such a manner that 2004 reports stated that there is at least 194 million diabetic patients all over the world and according to WHO prediction it will reach about 333 million patients by 2025 (2).

Diabetes is currently known as a major public health concern in the third millennia and is considered the fifth main reason of morbidity in the world (3). This disease results in 4 million deaths annually which is 9% of all the deaths in the world (2). National Study of Investigating the Risk-factors of Communicable Diseases has estimated diabetes rate by 7.7% in 2008, in Iran (4).

Today diabetes is highly remarked due to its high prevalence, the costs imposes to health system, and also its various negative effects on the patients (5), since, affecting diabetes chronic troubles decreases life expectancy and increases mortality rates and imposes a great financial burden to individuals, families, and society and affects individuals and families' life quality (6).

Diabetes has no definite remedy currently but can be controlled. Meanwhile, health-care providers should remember that non-drug treatment strategies work as effective as drug treatments at preventing and treating diabetes troubles (7). Therefore, emphasizing on self-control in chronic diseases forms the basis of patients' care model and directing them towards egotism through education can improve the disease control and leads to care costs reduce (8). Diabetes is a chronic disease that needs self-care behaviors to be most effectively controlled (9, 10).

Meanwhile, self-care is considered one of the most essential ways to control the disease (11) and strongly depends on one's tendency and intention in self-management and taking self-care actions (12). Self-care activities among diabetic patients include: having an adequate diet to control the blood sugar, doing enough physical activity, having a drug diet, self-controlling the blood sugar to adjust their diet, exercising, and consuming drug (13, 14).

Neglecting each self-care activity results in an increase in the disease troubles and sticking to those activities reduces cardiovascular troubles responsible for 70-80% of the deaths in diabetic patients (15). Thus, self-care activities are considered the most important factors in controlling chronic diseases like diabetes (16).

Nevertheless, studies indicate that self-care condition isn't perfect in diabetic patients and they lack enough self-care potentials (17, 18). Dailey study results showed an undesirable self-care condition in diabetic patients (19, 20). Studies by Jafarian (21), Shakiba Zadeh (22), Morovati (23), and Baghaie (24) showed similar results in such a manner that in a study by Shahab Jahanloo only 27% of diabetic patients followed the advised nutritional directions (25).

Self-care activities may be so difficult and often require making essential changes in life style that most of the patients would neglect the physicians' advice despite being aware of the troubles, and as a result the disease troubles would probably increase.

However, studies by Heisler (26), Rubbin (27), and Mahmoodi (28) showed a positive self-care effect on blood sugar and HbA1c control. A study by Parchman also showed that diabetic patients who were self-caring continuously had lower HbA1c rates (29). Studies by Waltson (30), Kitis (31), and Schilling (32) also stated that patients with better self-care had lower blood sugar rates.

**Aims of the study:** This study aims at self-care assessment in patients with diabetes in Qom city in 2013.

## Materials & Methods

This study is a descriptive-analytic and cross-sectional one and the study population included all Qom city Diabetes Association diabetic members in 2013. Hence, 251 diabetic patients referring to the mentioned association were chosen from 4153 members through simple sampling method. Patients with at least one year of diabetes diagnosis record and a private file in the association entered the study voluntarily.

Exclusion criteria included unwillingness to cooperate, and also having more than 75 or less than 15 years old. The data was collected through two SDSCA and demographic questionnaires and also an information paper. SDSCA questionnaire is a scale invented by Toobert and Glasgow.
This is a self-report questionnaire consisting of 12 questions designed to evaluate self-care behavior indicators which examines 4 aspects of personal management in the original version (diet, exercise, blood sugar revision, and injection), and in the last version examines 5 aspects (diet, exercise, blood sugar test, feet-care, and smoking) during the last seven days. This instrument has been scored by seven-point-Licert-scale.

Toobert showed a reasonable internal constancy for diet (0.64), exercise (0.83), and blood sugar test (0.80), and it was considered a reliable indicator for diabetes self-management (33). Furthermore, the questionnaire's reliability and validity were confirmed by Pour Sharifi in Iran (34).

The internal constancy in the current research equaled 0.86 by means of Cronbakh Alpha scale. In this scale each action receives a score from 0 to 7 and a total following score is achieved through adding each question's scores. Besides this questionnaire, the subjects' last FBS and HbA1c tests information (during the last 3 months) were gathered by virtue of an information record paper.

The patients received enough information about the study goals before filling the questionnaires out, in order to consider ethics and the subjects participated in the study willingly.

**Data analysis:** Eventually, the data was analyzed by SPSS18 software by using central statistics indicators, and Pearson correlevance coefficients, independent-T and ANOVA tests with less than 5% significance.

## Results

Findings showed that the subjects included 48.2% (121) males and 51.8% (130) females. 59.4% (149) of them had junior degrees, 24.3% (61) had senior degrees, 8.8% (22) had academic degrees, and 7.6% (19) had religious degrees. Furthermore, 13.6% (9) affected diabetes type 1, and 96.4% (242) affected diabetes type 2 Patients' age and disease interval mean were 45.71±11.33, and 7.57±9.81 years, respectively.

The results demonstrated that 22.99% of the subjects had no self-care activities against diabetes and only 7.97% of them followed their daily self-care activities during the week. The activities' details are presented individually in table 1.

**Table 1: Distribution of self-care behaviors on weekdays**

| Days of the week | Diet | | Physical Activity | | Glycemic control | | Foot Care | | Taking medications or insulin | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | N | % |
| **0** | 92 | 36.7 | 97 | 38.6 | 88 | 35.1 | 126 | 50.2 | 11 | 4.4 | 414 | 32.99 |
| **1** | 40 | 15.9 | 66 | 26.3 | 65 | 25.9 | 45 | 17.9 | 15 | 6 | 231 | 18.41 |
| **2** | 31 | 12.4 | 22 | 8.8 | 43 | 17.1 | 31 | 12.4 | 20 | 8 | 147 | 11.71 |
| **3** | 2 | 11.2 | 20 | 8 | 34 | 13.5 | 14 | 5.6 | 22 | 8.8 | 118 | 9.40 |
| **4** | 24 | 9.6 | 15 | 6 | 12 | 4.8 | 14 | 5.6 | 26 | 10.3 | 91 | 7.25 |
| **5** | 22 | 8.8 | 14 | 5.6 | 5 | 2 | 8 | 3.2 | 32 | 12.7 | 81 | 6.45 |
| **6** | 10 | 4 | 13 | 5.2 | 2 | 0.8 | 8 | 3.2 | 40 | 15.9 | 73 | 5.82 |
| **7** | 4 | 1.6 | 4 | 1.6 | 2 | 0.8 | 5 | 2 | 85 | 33.9 | 100 | 7.97 |
| **Total** | 251 | 100 | 251 | 100 | 251 | 100 | 251 | 100 | 251 | 100 | 251 | 100 |

The results showed that FBS and HbA1c rates, and self-care score in the patients were 157.74±43.63 mg/dl, 7.74±2.83 mg/dl, and 46.53±10.61, respectively. The results showed an adverse significance between self-care and FBS plus HbA1c rates (Table 2).

**Table 2: Correlation between age, duration of disease, FBS, HbA1c and self-care in patients**

| | | Age | Duration of illness | FBS | HbA1c | Self-care |
|---|---|---|---|---|---|---|
| **Age** | r | 1 | | | | |
| | P | - | | | | |
| **Duration of illness** | r | 0.41 | 1 | | | |
| | P | 0.007 | - | | | |
| **FBS** | r | 0.11 | 0.134 | 1 | | |
| | P | 0.147 | 0.223 | - | | |
| **HbA1c** | r | 0.27 | 0.205 | 0.31 | 1 | |
| | P | 0.230 | 0.198 | 0.018 | - | |
| **Self-care** | r | 0.53 | 0.612 | -0.50 | -0.453 | 1 |
| | P | 0.066 | 0.211 | 0.006 | 0.024 | - |

Independent-T test showed a significant difference between to genders in self-care rates. ANOVA results also showed the mean of self-care scores differs according to educational status and is significantly more among subjects with academic and religious education. The details are presented in table 3.

**Table 3: Mean scores of patient care in terms of sex, education, type of diabetes**

| Variables | | Mean | Standard deviation | P |
|---|---|---|---|---|
| **Sex** | Female | 53.12 | 8.18 | P<0.001 |
| | Male | 39.94 | 12.54 | |
| **Education** | Secondary | 41.72 | 12.33 | P=0.021 |
| | High | 41.85 | 14.41 | |
| | Collegiate | 51.93 | 10.54 | |
| **Diabetes Type** | Regional | 49.97 | 8.80 | P=0.083 |
| | I | 48.25 | 6.68 | |
| | II | 44.81 | 11.23 | |

Furthermore, there is a significant difference in FBS and HbA1c rates between male and female subjects. FBS and HbA1c means and standard deviations are also presented according to

gender, educational status, and diabetes types in table 4.



**Table 4: Mean FBS and HbA1c in patients by sex, education, type of diabetes**

| Variables | | FBS | | | HbA1c | | |
|---|---|---|---|---|---|---|---|
| | | Mean | Standard deviation | P | Mean | Standard deviation | P |
| **Sex** | Female | 138.27 | 21.18 | P=0.021 | 6.51 | 1.56 | P=0.011 |
| | Male | 177.22 | 32.43 | | 8.97 | 2.31 | |
| **Education** | Secondary | 178.07 | 27.23 | P=0.039 | 8.76 | 2.03 | P=0.044 |
| | High | 168.21 | 21.19 | | 8.27 | 1.29 | |
| | Collegiate | 140.67 | 11.87 | | 6.81 | 1.21 | |
| | Regional | 144.01 | 19.54 | | 7.12 | 1.64 | |
| **Diabetes Type** | I | 140.25 | 14.54 | P=0.043 | 7.44 | 0.91 | P=0.58 |
| | II | 175.23 | 27.64 | | 8.04 | 2.73 | |

## Discussion

Diabetes and such disorders are treated and managed mainly by the patients through self-care activities. Self-care is a central concept in health promotion and refers to the choices patients make and activities they do to get along with the problem or to recover or regain their health (35). Any negligence in self-care activities by diabetic patients leads to an increase in diabetes troubles and doing appropriate self-care activities reduces cardiovascular troubles responsible for 70-80% of deaths among diabetic patients (36).

The results showed that self-care in the subjects was not in a suitable condition in such a manner that at least 50% of the scores couldn't be obtained. Previous studies on diabetic patients' self-care activities in Qom city also declared it as in a study by Abedini the majority of diabetic patients had a moderate function (37). However, diabetes self-care improper condition in diabetic patients has unfortunately become so current that self-care condition in diabetic patients from Asian countries like Singapore (38), India (39), Taiwan (40), and Iran (41), and also European countries (42), and the United States (43) lacked an appropriate condition and it requires more effective and practical public health and clinical interventions. It may be the reason that turned diabetes to a challenge for primary health care in 21 century by WHO and Diabetes International Federation, and this challenge is even more serious in the Middle East (44).

In this study, in spite of the importance of self-care, only7.97% of the patients did all the advised self-care activities daily. In a study by Safford 37.9% of diabetic patients had no feet-care and 37.7% didn't exercise (45). Also in a study by Jafarian 41.3% of the patients had a good diabetic diet, and 32.8% of them checked their blood sugar only once a week (21). In a study by Jafarian only 3% of the patients controlled their disease by having a diet and 61.4% of them didn't have adequate exercise (46). In a study by Hariss and Lostman 35-75% of the subjects had no adequate diet, 20-80% had no insulin injection, 30-70% didn't have

feet-care, and 70-81% had no regular exercise (47).

Nevertheless, some studies showed different results as in a study by Nelson 73% of the patients had enough physical activity, 92% had a healthy diet, and 98% took care of their feet (48). In a study by Nwasuruba 85.3% of the patients stuck to their medication diet all the week and 58% of them were controlling their blood sugar at least once a day (49). The fundamental reason for these differences may refer to the patients' ability in the disease' self-care or self-management through educational interventions, because specific factors regarding diabetes including inadequate knowledge about diabetes (50), a low health literacy level, and lacking enough knowledge about correct diabetes care methods may prevent diabetes effective self-management (51).

In this study FBS and HbA1c rates were not in a desirable condition due to lack of appropriate self-care. Studies by Kashfi (52), Aqamollaie (53), and Qenaie (54) also confirmed the aforementioned condition in patients without self-care activities. Meanwhile, researchers believe that in chronic diseases like diabetes, the disease approaches gradually and makes patients less aware of the disease malignancy, hence, they won't be concerned enough to start self-caring and would affect the disease troubles.

In this study there was an adverse significant relation between FBS plus HbA1c rates and self-care activities in such a manner that the more self-care activities were done, the less FBS and HbA1c rates became, vice versa. This is obvious, however. Similar condition was shown in studies by Tol (55), waltson (30), Kitis (31), and Schilling (32).

Unlike some studies, in this study self-care rate among female subjects was significantly more than male subjects means that men were less likely to accept treatment and did generally weaker than women in self-care activities.

In a study by Chang women were more regular than men in having a healthy diet. Also in a study by Dashif self-care condition among women was remarkably better than in men. In a study by Waltson (30), McCollum (58), and Tal (59) men had a better self-care condition than women.

In a study by Jafarian (21), Hatamlouie (59), and Baghaie (24), there was no significant difference in self-care rates between men and women.

Furthermore, educated people had a better self-care condition and did self-care activities much more properly. Similar results were reported in a study by Jafarian (21), Chang (56), Dewalt (60), Sloan (61) and Osbom (62). Even in a study by Shakibazadeh (22) educational status was considered a second preventive factor for self-care activities. Thus, higher educational status, facilitates the disease' self-care and self-management, whereas, lower educational status puts self-care in real hazard, therefore, improving commitment to self-care behaviors can be the first step to help patients specially male patients and also less educated ones to best manage and take care of their disease.

Although the mean of self-care in diabetic patients was higher in type1 diabetic patients compared to type 2 diabetic ones, but there was no significant difference between diabetic types, which type 1 diabetes limited sample seems to be the reason. Studies by Abedini (37), Ruggiero (63) and Karter (64) also showed that type 1 diabetes patients had a better self-care condition compared to type 2 diabetic patients.

Also, FBS and HbA1c rates showed a significant difference between two genders, as these rates were significantly lower among women due to their better self-care condition, and these rates were also significantly lower among subjects with academic and religious education. These findings show that the better self-care condition was, the less these rates were. Studies by Tol (55) and Sabet Sarvestani (65) were similar and confirmed these results. It is being more and more important according to the adverse relation between self-care and FBS plus HbA1c rates in such a manner that without self-care, as HbA1c increases to 1%, FBS rate increases to almost 30 mg/dl (66) and it follows a 20-30% increase in cardiovascular-resulted deaths (67, 68).

## Conclusion

Diabetes require life-time self-care behaviors and it is determined that the disease acute and chronic troubles can be prevented or it can be delayed by a continuous follow-up. Nevertheless, promoting self-care and achieving a desirable self-control condition are considered this century's major challenges and necessities for diabetes. These results showed that self-care didn't have a good condition among Qom city Diabetes Association members, in such a manner that they didn't do self-care activities including: having a diet, doing physical activity, controlling blood sugar, taking care of their feet, and also consuming drugs or injecting insulin, properly and regularly that follows undesirable FBS and HbA1c rates among them, as well.

It seems that self-care depends on personal, mental, and social factors and understanding them would help health service providers design and perform appropriate and strong interventions to promote diabetes self-management behaviors. Hence, we believe that more studies should be conducted on self-care and factors affect it based on Behavioral Change theories and models, longitudinally.

## Footnotes

**Conflict of Interest:**

The authors declared no conflict of interest.

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