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Original Article

The status of self-care behaviors among type 2 diabetic patients: a cross-sectional study

Maryam Nikbina [1], Kobra Doostifar [2], Rusdiana Rusdiana [3] *, Ahmad Moradi [2], Tayabbeh Marashi [4], Mohammad Nikzadian [5]

[1] Department of Midwifery, Shoushtar Faculty of Medical Sciences, Shoushtar, Iran
[2] Department of Public Health, Shoushtar Faculty of Medical Sciences, Shoushtar, Iran
[3] Department of Biochemistry, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia
[4] Department of Public Health, School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[5] Department of Medical Emergecies, Shoushtar Faculty of Medical Sciences, Shoushtar, Iran

* Correspondence to: Rusdiana Rusdiana, Department of Biochemistry, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia. E-mail: address: rusdiana@usu.ac.id

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Abstract

Performing self-care behaviors is an essential method that helps the patient to control and manage the disease. The present study was conducted to determine the status of self-care behaviors in patients with type 2 diabetes. In this cross-sectional study, 322 patients with type 2 diabetes referred to comprehensive health centers in Andimeshk city, Iran, were examined. The required data were collected through socio-demographic questionnaires and the summary of diabetes self-care activities (SDSCA) measure. The total self-care score was 59.32±18.54 and at an average level. The highest score was related to the specific diet aspect, and the lowest was assigned to the foot care aspect. Less than a quarter (23.91%) of the patients reported a good self-care level. It seems necessary to plan for continuous and permanent training about self-care activities in patients with diabetes mellitus.

Keywords: self-care, behavior, type 2 diabetes, patient.

Introduction

As one of the most critical health problems and the most common chronic metabolic disease in the world, diabetes has become a global epidemic and a significant healthcare burden worldwide in recent decades [1].

The International Diabetes Federation (IDF) estimated that 537 million adults were affected by diabetes worldwide in 2021 and predicted that this number would rise to 783 million by 2045 [2]. Statistics show that more than 11% of people over 25 have type 2 diabetes in Iran. According to a report published by the World Health Organization in 2018, at least 10% of Iranians over 18 suffer from hyperglycemia, which is more than the estimated prevalence of hyperglycemia worldwide [3].

This disease is one of the world's ten leading causes of death, and its most essential complications include heart attack, stroke, kidney failure, and lower limb amputation [4]. Many of these disease complications are preventable, or at least their occurrence can be delayed by careful blood glucose management, providing a basis for preventive care such as early diagnosis of disorders, intervention and treatment. As a result, patients with diabetes mellitus and less ability to perform self-care behaviors are more affected by the complications of this disease [5]. Diabetes requires particular self-care behaviors throughout life [6]. Failure to perform self-care behaviors is the most crucial factor in increasing complications and the cause of death of patients with diabetes mellitus [7]. Several studies on diabetes have determined that only a tiny share of chronic diseases such as diabetes are cared for and treated by professional medical staff, while most of these chronic diseases are managed and controlled by the patient and his family [8, 9].

Self-care behaviors are integral to caring for people with diabetes and include exercise, diet, blood glucose testing, foot care, and treatment adherence. Improving self-care behaviors is the first step in helping patients better control their disease. This issue makes the importance of understanding the factors affecting the self-care behaviors of patients with diabetes mellitus more prominent and also requires the design and strengthening of interventions related to self-care behaviors. It also helps caregivers to treat the disease better and reduce its associated complications [10].

According to the above and the significance of self-care behaviors in diabetes improvement and management, the present study was conducted to determine the status of self-care behaviors in patients with type 2 diabetes in Andimeshk city.

Material and methods

This cross-sectional study was conducted on 322 patients with type 2 diabetes referred to comprehensive health centers in Andimshek city, Iran, in 2020. The sample size was determined based on the following formula at a 95% confidence interval (a p-value of 0.05) and the assumption of a favorable self-care rate of 70% in patients with diabetes. The subjects were selected via a simple random sampling method.

$$n=(z1-\alpha/2)^2\, p(1-p)/d^2$$

In this study, two instruments were employed to collect data: a socio-demographic questionnaire, which included information related to age, gender, marital status, education level, income status, and duration of diabetes and a summary of diabetes self-care activities (SDSCA) measure.

The SDSCA measure is a self-report questionnaire for measuring self-care levels in patients with diabetes mellitus. It consists of 15 items to measure patients' self-management in the last seven days, simultaneously focusing on six different diabetes self-care (regimen) aspects, including diet (5 items), exercise (2 items), blood glucose testing (2 items), medication (1 item), foot care (4 items) and smoking (1 item). The subjects report the frequency of their behaviors during the past seven days on a scale ranging from 0 through 7: if a person has performed the desired behavior in the past seven days, a score of 7 is given, and if he/she has not performed any activity on any day, a score of 0 is given. Higher scores indicate the patient's optimal self-care level during the past seven days. The range of scores for this entire scale is between 0 and 105. Based on the obtained self-care scores, they were divided into three levels: poor (less than 35), moderate (35–70), and good (above 70). Cronbach's alpha of the questionnaire was calculated as 0.87 [11].

The inclusion criteria were age equal to or older than 30 years, at least one year of type 2 diabetes and willingness to participate in the study. Exclusion criteria included suffering from severe mental illnesses and diabetes complications. The data analysis was done by SPSS 21 software and data were analyzed using descriptive statistics, independent T-test and One-way ANOVA.

Ethical considerations

Informed consent was taken from the subjects and they were assured about the confidentiality of their information to comply with ethical considerations.

Results

A number of 322 patients with type 2 diabetes participated in this study. The average age of the subjects was 52.40±9.12, and 50.93% were female. Most of the subjects were married (80.12%) and 10.56% of them were illiterate. The disease duration in 31.37% of them was less than five years. Most subjects (65.84%) reported their financial situation as poor. In the present study, a significant correlation was observed between the mean scores of self-care behaviors and gender, marital status, education level, duration of diabetes, and income status (Table 1).

The findings related to general self-care behaviors and related subscales show that the studied patients scored the highest in the specific diet aspect and the lowest in the foot care aspect (Table 2).

Also, the classification of the total self-care score of the studied group showed that less than a quarter of the people reported a good self-care level (Table 3).

Discussion

The present study showed that patients with diabetes have an average level of self-care behaviors. The mean score of total self-care was 59.32±18.54. Dedefo *et al*. and Ayele *et al*. reported that the self-care level of patients with diabetes was moderate [12, 13].

In this study, the highest score of self-care behaviors was related to the specific diet aspect. Almomani

Table 1: Socio-demographic characteristics of the study participants (n=322).

Respondents Characteristics		Frequency (%)	Self-Care Mean (SD)	P-value
Age	30–39	58 (18.01)	58.74±16.53	0.515
	40–49	102 (31.68)	61.16±15.32	
	≥50	162 (50.31)	58.85±14.86	
Gender	Male	158 (49.07)	61.26±16.10	0.044
	Female	164 (50.93)	58.43±17.58	
Marital status	Married	258 (80.12)	62.19±16.45	≤0.001
	Single	64 (19.88)	57.27±13.54	
Educational status	Illiterate	34 (10.56)	53.04±12.83	0.021
	Primary	161 (50.00)	56.99±11.76	
	Middle	52 (16.15)	59.36±16.11	
	University	75 (23.29)	64.12±15.41	
Duration of diabetes	≤5 years	101 (31.37)	56.62±14.54	0.013
	5–10 years	122 (37.89)	58.30±12.77	
	>10 years	99 (30.74)	63.31±16.22	
Income	Inadequate	212 (65.84)	55.88±15.42	≤0.001
	Adequate	110 (34.16)	62.22±17.01	

also reported in his study that the highest average was associated with the use of drugs [9]. These results were obtained by Alotaibi and Al-Johani *et al.*, confirming these research findings [14, 15].

Another part of self-care of the patients with type 2 diabetes mellitus examined in this study was foot care. This aspect assigned the lowest amount of self-care behaviors, which is consistent with the results of Ausili *et al.* [16]. The results of Al-Qahtani *et al.* and Hirpha *et al.* also depicted that the patients with diabetes mellitus are in poor condition in terms of foot self-care behaviors [17, 18]. According to the findings of Salmani's study, only 15% of the patients took care of their feet properly [19]. Since foot care is simple and does not require special costs, it seems that providing training in this regard can effectively prevent diabetic foot ulcers and the discomforts and costs associated with it [20].

The subjects participating in the present study scored only about 50% on the blood glucose management subscale. D'Souza *et al.* concocted their study on self-care behaviors in patients with type 2 diabetes mellitus, showing that most adults had high fasting blood glucose and their HbA1c control status was weak and uncontrolled [21]. In Gemeda *et al.*, the majority of respondents (63.4%) did not perform self-monitoring of blood glucose (SMBG) [22]. Choi *et al.* also obtained similar results [23].

Table 2: Details of self-care behaviors in diabetic patients (n=322).

Self-care behaviors	Mean±SD	Range	Score obtained (%)
Diet	24.43±4.92	0–35	69.80
Exercise	6.94±4.23	0–14	49.57
Blood sugar test	6.99±2.86	0–14	49.93
Foot care	9.16±5.78	0–28	47.00
Medication	5.95±1.94	0–7	85.00
Smoking	5.85±1.10	0–7	83.57
Overall self-care behaviors	59.32±18.54	0–105	56.45

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Table 3: Classification of participants' overall self-care score (n=322).

Self-care behaviors	Frequency	Percentage (%)
Good	77	23.91
Moderate	136	42.24
Poor	89	27.64

Studies show that complications and high costs in patients with diabetes are mainly caused by inadequate blood glucose management [24].

Regular blood glucose management is necessary for patients with diabetes to know their condition and timely detect the increase or decrease of blood glucose and prevent its subsequent complications. To regularly measure blood glucose, people with diabetes need knowledge and skills in this field; they also need access to equipment such as glucometers and blood glucose test strips [25]. In the present study, the reason for the low score of this aspect of self-care behaviors can be considered to be the high cost of blood glucose management, lack of patients' financial ability, lack of blood glucose measurement skills, insufficient training of patients in this field, and low understanding of the severity of the disease by patients.

Physical activity is essential to the non-pharmacological treatment (or management) of diabetes mellitus. Doing sports activities is extremely important because, in addition to therapeutic effects, it has positive psychological and physiological effects. Exercise can play a role in treating patients with diabetes as much as insulin therapy and food abstinence [26]. Most people with diabetes do not have enough physical activity, which increases insulin resistance [27].

Regular exercise can improve blood glucose management, aid in weight loss, and reduce cardiovascular risk factors [28]. The present study showed that the patients scored 50% on the exercise aspect, which is consistent with Durai *et al*. and Mohandas *et al*. [29, 30].

Dietary modifications are essential components of the diabetes program. A balanced diet is a cost-effective way to reduce complications and mortality from diabetes [31]. The results of our study indicate that patients with diabetes obtained an average score (69.80%) in the diet subscale. Regarding adherence to the diet, the results of the present study are consistent with the findings of Raithatha [32] conducted in India. Chourdakis *et al*. also reported that 76% of patients followed a healthy diet the previous week [33].

Regarding the smoking aspect, because most patients were not smokers, for this reason, self-care has a higher score. In this study, only about 15% of patients reported that they had smoked at least once in the past week, which is consistent with Mohandas' findings and shows a better situation than previous studies [30]. It is also possible that people hide their smoking.

This study depicted that there is no significant difference between age and self-care behaviors. Firooz *et al*. and Baji *et al*. reported similar results [25, 34]. Also, it showed that the mean score of self-care behaviors was higher in men than in women. In Akyol *et al*. and Bai *et al*., men had higher self-care abilities [35, 36]. The results of Firooz are consistent with the results of the present study [34]. It seems that the effect of gender differences on self-care behaviors can be affected by other variables such as the patients' knowledge level and physical-psychological and behavioral conditions.

In the present study, there was a significant difference in the subjects' mean score of self-care behaviors in terms of marital status. In such a way, married people had a higher average. Davari *et al*. depicted that married individuals perform more and more proper self-care behaviors [37]. Usually, married ones have a more robust support network and social relationships, leading to better self-care behaviors.

In this study, a significant difference was observed between the education level and self-care behaviors: with the increase in education levels, the mean score of self-care behaviors also increased. This finding is consistent with Xu *et al*. [38].

However, higher education levels and sufficient knowledge about the disease facilitate the self-care process, increasing judgment and decision-making power to perform correct self-care behaviors.

In the present study, there was a significant difference in the subjects' mean score of self-care behaviors in terms of income status. Baumann *et al*. showed that self-care behaviors were performed more properly in diabetic patients with higher incomes. Baumann also concluded that low income makes performing self-care behaviors challenging [39]. Patients with a better economic status have fewer problems in paying medical expenses, which can lead to their psychological security due to paying costs because financial issues affect their psyche.

Other findings of the present study showed a significant difference between disease duration and self-care behaviors, which is consistent with the results of Bai *et al*. [36]. As the duration of diabetes increases, patients gain more knowledge and skills regarding self-care behaviors, improving self-care behaviors.

The present study is cross-sectional, and the data was collected via the self-reporting approach; these two issues can be considered research limitations.

Conclusion

The findings of the present study illustrated that general self-care is at an average level and poor self-care behaviors were reported in some subscales. This situation indicates that patients with diabetes still do not understand the importance of self-care behaviors. Therefore, it is necessary that the training provided by the health team should be continuous and permanent.

Conflict of interest

The authors declare no conflict of interest.

Ethics approval

The approval for this study was obtained from the Ethics Committee of the Shoushtar Faculty of Medical Sciences (approval ID: IR.SHOUSHTAR.REC.1399.012).

Consent to participate

Written informed consent was obtained from the participants.

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