

## Self-Care Level in Diabetic Patients

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### Abstract

**Objective** The present study was done with the objective of assessing the self-care practices among diagnosed type 2 diabetes mellitus patients in hospital of Islamic Azad University of Medical Sciences in Tehran, Iran.

**Methods** In this cross-sectional study, 314 Iranian patients older than 18 years of age with type 2 diabetes were completed Diabetes Self-Management Questionnaire. Data was analyzed by ANOVA, t-test, correlation and liner regression.

**Results** A significant association was found between the diabetes self-management sum scale and body mass index, Dietary control subscale and body mass index, Physical activity subscale and body mass index & job and Healthcare use subscale and diabetes treatment ( $p < 0.05$ ).

**Conclusion** Due to the high BMI in respondents, Overweight and obese respondents need to be advised by health professionals on physical activities and proper diet to achieve healthy weights to avoid complications related to diabetes mellitus.

**Keywords** Diabetes self-management, Type 2 diabetes, Diabetes Self-Management Questionnaire

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### Introduction

Diabetes is a serious health problem that is responsible for four million deaths a year and 9% of all deaths in the world (3-1). Diabetes is a chronic disease that significantly affects the quality of life of people with diabetes and can lead to adverse health outcomes for individuals, families and communities (4). In 2017, 347 million people worldwide are at risk of diabetes, which is expected to increase by 55% by 2035, while more than 90% of cases of type 2 diabetes (T2DM) (5). With increasing incidence of diabetes worldwide, it is expected to continue to be a major cause of morbidity and mortality(6). Diabetes mellitus type 2 is a chronic disease in Smalls et al. In 2014, with more than 25.3 million people in the United States and 366 million people worldwide(7) . During epidemiological studies and studies of recent decades, several epidemiologic studies have been conducted on the prevalence of Type 2 diabetes in Iran, according to which the population of diabetics in Iran in the year 87 was estimated to be more than 1.5 million. The results show that the prevalence of type 2 diabetes in Tehran and its surrounding areas and in Isfahan is between 7-8%(8). Diabetes self-care (DSM) is a vital part of diabetes management. This disease requires special self-care behaviors of all life (9). Changes have shown that DSM has improved the quality of life (QOL) of patients with diabetes, leading to the prevention and reduction of long-term diabetes-related complications (10 ,1). Individual motivation can be increased for self-care in a variety of ways, since self-care support, especially in developing countries, has a significant value in raising the quality of community health(11) . To prevent severe morbidity and mortality, the treatment of diabetes requires repeating the self-care behaviors required in several areas(13 ,12). The aim of this study was to evaluate the self-care of diabetic patients in hospitals and educational centers of Islamic Azad University.

### Methods

A cross sectional study was conducted in October 2016 with a sample size of 314 people. These samples included people with diabetes who had diabetes for more than a year and who were admitted to an outpatient clinic for reasons other than diabetes complications in hospitals affiliated to Islamic Azad University, Tehran Medical Branch (Amir al-Momenin-Bouali) Amir al-Momenin or Bu'ali. In order to measure diabetes self-management, we used the Diabetes Self-Management Questionnaire (DSMQ). DSMQ is a reliable and reliable tool that can assess the effectiveness of self-care behaviors associated with glycemic control. In Mehravar et al (2016) study, forward and backward translation techniques for the translation and cultural adaptation of the questionnaire into the Persian language were carried out. The test-retest reliability of the scale was assessed using the intra-class correlation coefficient. With intra-class correlation coefficient values of 0.80, 0.72, 0.80, and 0.81 for the glucose management, dietary control, physical activity, and healthcare use subscales of the questionnaire, respectively. The Cronbach's alpha coefficient value was 0.72, demonstrating adequate internal consistency of the questionnaire(14). The self-reported questionnaire consists of 16 items divided into four subscales. The first subscale evaluates glucose management, and is scored by items 1, 4, 6, 10, and 12 of the questionnaire. The second subscale addresses dietary control and is scored by items 2, 5, 9, and 13. The third

subscale evaluates physical activity and is scored by items 8, 11, and 15 of the questionnaire, while the fourth subscale evaluates healthcare use and is scored by items 3, 7, and 14 of the questionnaire. A sum scale score was derived as a global measure of self-care. The patient's agreement with each item was scored using a four-point Likert type scale, ranging from 0 (does not apply to me) to 3 (applies to me very much). Patient records were examined for information regarding demographic information (sex, age, body mass index [BMI], ethnicity, marital status, and education), current diabetes treatment (use of oral hypoglycemic agents and insulin), the duration of diabetes, and the presence of complications of diabetes(15). The quantitative and qualitative data are presented as mean values (standard deviation [SD]), frequency (percentage), and Inferential statistics (correlation test, T test, ANOVA and Regression). A liner regression model was used between diabetes self-management (healthcare, diet, physical activity, blood glucose) and the demographic information (age, sex, body mass index [BMI], marital status, Educational level, diabetes duration, diabetes treatment, Residency).

## Results

The mean age of participants in this study was  $60.46 \pm 13.48$  years. Most male participants were 52.1% (Table1). The mean (SD) of the DSMQ scores is presented in Table 2. The highest subscales of DSMQ are for Healthcare use subscale ( $6.45 \pm 2.35$ ). According to correlation test, DSMQ sum scale with age had no significant correlation but had a negative correlation with body mass index ( $P=0.006$ ). T-test showed the DSMQ sum scale was not significantly different between men and women in married and single individuals and in subjects with type 1 and type 2 diabetes. According to this test, the average DSMQ sum scale was higher among those with higher incomes than those without income ( $P=0.037$ ). ANOVA showed the average DSMQ sum scale varied between educational levels ( $P=0.002$ ) and this difference was significant between illiterate and graduate groups and higher. However, there was no significant difference between DSMQ sum scale and diabetes duration, as well as diabetes treatment. The regression model was meaningful about the relationship between DSMQ sum scale and subscale variables and independent variables of age, gender, body mass index, marital status, job, educational status, diabetes mellitus types, diabetes duration, diabetes treatment and residency ( $p<0.05$ ). This model, based on these independent variables, is capable of predicting DSMQ dependent changes, and the value of this explanation is 0.034 (Table 3).

Table 1. Patient characteristics,

Characteristics	Total (n=314)
Age	60.46±13.48
Body mass index (kg/m2)	27.52±4.99
Sex	
Female	151(47.9)
Male	164(52.1)
Marital status	
Single	45(14.3)
Married	270(85.7)
Educational level	
Illiterate	64(20.3)
high school education	125(39.7)
diploma and higher	126(40.0)
Diabetes duration	2.08±1.03
diabetes treatment	
Exclusively oral hypoglycemic agents	186(59.8)
Exclusively insulin	61(19.6)
Medication and insulin	63(20.3)
Residency	
Tehran	276(87.6)
Out of Tehran	39(12.4)

Table 2. The mean (SD) of the DSMQ scores

	Mean	Std. Deviation
DSMQ sum scale	13.2316	3.32740
Healthcare use subscale	6.4504	2.35368
Physical activity subscale	5.0019	3.18769
Dietary control subscale	5.3222	2.45980

Table 3. Multiple linear regression for the sum scale score of diabetes self-management<sup>1</sup>

Factor	Coefficient	95% C.I. <sup>2</sup>		p value
		Lower	Upper	
DSMQ sum scale				
body mass index	-.094	-.177	-.011	.026
Glucose management subscale				
Age	1.04	.05	1.098	.05
educational level	.508	.075	.941	.022
Dietary control subscale				
body mass index	-.070	-.129	-.010	.021
Physical activity subscale				
body mass index	-.091	-.166	-.017	.016
job	-.804	-1.573	-.035	.041
Healthcare use subscale				
diabetes mellitus types	1.507	.230	2.784	.021
diabetes treatment	.426	.070	.782	.019

<sup>1</sup> The variables age, diabetes treatment, marital status, job, body mass index, gender, Diabetes duration (years), educational level, diabetes mellitus types. <sup>2</sup> 95% CI<sup>2</sup> = 95% confidence interval for adjusted odds ratio.

## Discussion

To manage diabetes effectively and in order to control good glycaemia, patients need to have a high level of knowledge about diabetes. This can strengthen attachment to medications, an appropriate diet, and physical activity(16). Differences in findings could be due to differences in study populations as well as the type of tools used to measure these outcomes. In this study, the overall self-care average was relatively low. Vosoghi and his colleagues had a poor level of care in research units (17). Various studies show that self-care status in diabetic patients is not in good condition, which is consistent with the result of the study and partners(18). Baghaei et al., reported the self-care status of diabetic patients referring to the Kashan diabetes center was at moderate level(19) similar to the findings of Anbari and colleagues (20). Kassahun et al., found that a significant number of diabetic patients had a low level of knowledge, poor self-care behaviors, and a low level of medication (21, 4). Low education level and poor adherence to medications were poor predictors of self-concept behaviors (22). According to the findings, in the regression model, the correlation between body mass index and DSMQ sum scale was significant. In the present study, the relationship between body mass index and scores on the Dietary control subscale was significant in the regression model. This conclusion is also consistent with the various studies (21, 23-26). In the present study, the relationship between scores on the physical activity subscale and body mass index and job was significant. This was expected due to findings in numerous other studies. (27-31). Kriska et al show that physical activity leads to a lower incidence of type 2 diabetes in several prospective studies (21, 32-34). Although BMI and physical inactivity are independent predictors of diabetes, the association with BMI is more than physical activity in the combined analysis (35). Firooz et al. looked at the relationship between physical activity in patients with diabetes and self-care and claimed that there is a significant correlational between the two (36). In the study of Mashitani et al., found the quality of life associated with diabetes treatment was correlated with self-care in insulin injection, especially in Japanese patients < 65 years with type 2 diabetes (37). Different strategies exist in different countries based on their own caring practices. Improving social protection for patients with diabetes facilitates self-care in diabetes and helps to improve glycemic control (38, 15). A unique challenge for optimal diabetes self-care is the integration of the various skills and behavioral changes (39). Beneficial and harmful actions of family members affects self-care and control of glycaemia in adults with type 2 diabetes (T2D) and low socioeconomic status (40). The most important person in the diabetes team is a patient who, with correct training, can play a role in controlling the disease and preventing its progress and complications(41). Evidence from earlier studies supports the concept that having good knowledge and training for good care can significantly reduce DM complications (42). If the patient's view of the disease changes as a dangerous and uncontrollable disease, it has taken an important step in controlling its illness. (43). Therefore, considering the low status of self-care behaviors in patients, community health officials must develop a comprehensive program to improve the health of these patients, paying particular attention to self-care behaviors.

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