

**Self-Care and Related Factors in Patients with Type 2 Diabetes**

Nazila Nejaddadgar\*, Mahnaz Solhi, Shiva Jegarghosheh, Metra Abolfathi, Hossein Ashtarian

Technology and Research Deputy of Iran University of Medical Sciences, Iran

**Abstract**

**Background & Objective:** One of the factors that control the complication of diabetes is patient's involvement in the treatment process which is effective in improving quality of life as well as reducing health care costs. The aim of this study was to determine self-care behaviour and related factors in type 2 diabetic patients referred to the Diabetes Center of Ardabil.

**Methods and materials:** This cross-sectional *study* was conducted on 382 patients referred to the Diabetes Center of Ardabil, by using a simple random sampling method. Data were collected by utilizing a demographic questionnaire and the Summary of Diabetes Self-Care Activities questionnaire (SDSCA), which evaluates the status of patients' self-care during last seven days. Statistical analysis was carried out using SPSS version 16.0 and tests such as: t-test, chi-square and correlation coefficient.

**Results:** The mean score of self-care was low in 63.6% of patients; it was average in 31.7% of them, and good in 4.7% of diabetics. The mean score of self-care in patients was  $44.53 \pm 16.7$ , and the lowest mean score of self-care respectively was related to test blood sugar:  $3.6 \pm 3.9$ , regular drug use:  $4.9 \pm 2.4$ , and physical activity  $5.1 \pm 6.5$  respectively. The maximum mean scores were related to following healthy diet:  $16.25 \pm 6.4$ , and foot care:  $14.4 \pm 8.3$ . There was a significant relationship between gender and doing blood sugar test ( $P < 0.006$ ), education and self-care ( $P < 0.001$ ), marital status and self-care ( $P < 0.004$ ), income and nutrition ( $P < 0.001$ ).

**Conclusion:** The majority of diabetic patients had a poor score of self-care. The lowest score of self-care was related to doing blood sugar test, regular drug use and physical activity. For this reason it is recommended that regular educational and model-based interventions should be planned and given at regular intervals for improvement of self-care characteristics in patients with type 2 diabetes.

**Keywords:** Diabetes, Self-care, Type 2 diabetes, SDSCA questionnaire

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**Introduction**

Diabetes is one of the most common chronic diseases, and because of its growing trend, is considered to be one of the most important public health problems in the world. The disease has led to 9% of all deaths worldwide, and it is the fifth leading cause of death in Western societies, also the fourth reason for going to a doctor [1]. Currently, more than 230 million people worldwide are suffering from this disease, which will increase up to 380 million till 2025, as World Health Organization has predicted. Therefore, according to this in developed countries, the number of patients will be from 51 million to 72 million that is 42 percent increase in number as compared to 170 percent in developing countries, that will be from 84 million to 228 million [2]. Generally, in Iran the prevalence of diabetes is 2-3% of the country's population, it is about 3.7% in people over 30 years old and 13% in people with undiagnosed diabetes [3]. Studies have shown that despite normal living conditions, diabetics are affected by complications of diabetes such as neuropathy, nephropathy, stroke, etc. in the long term [4]. In other words, diabetes is the most important cause of blindness and chronic renal failure in

adults. Moreover, diabetics are at risk of heart disease, 2 to 4 times more than the non-diabetic patients [5]. Therefore, it is important due to its direct and indirect financial burden on the health care system and its impact on the quality of life, as well. The survey by the World Health Organization indicates that 16 percent of hospital costs and 58 percent of all amputations relates to diabetics [6].

Given that diabetes is a lifelong disorder with no cure, the lack of patients' participation in the process of treatment is one of the reasons for the lack of success and attaining the desired results in the care of diabetics. Therefore, the disease involves self-care behaviours by the patients throughout the lifetime [7]. According to the surveys, the most important reason for mortality in diabetics is lack of self-care behaviour [8]. Self-Care is patient's active participation in daily care activities such as regular drug use, diet, physical activity, blood glucose monitoring and foot care [9].

Inadequate self-care in diabetics is as a major problem which health care providers encounter. This issue not only has an impact on mortality rates but also, increases treatment costs. The results of a lot of studies show that diabetics have not

suitable self-care condition and do not participate in day care process while the treatment results of diabetes depends a lot on self-care behaviours [10].

The results of a study conducted by Monica et al. indicates that 37/9 percent of diabetics had not foot care and 37/7 percent did not exercise [11]. In chronic disease patients who have low self-care are susceptible to more complications [12]. Since the self-care, especially in patients with chronic disease such as diabetics are the most important factor in control and prevention of complications, this concept requires further investigation. This research has been conducted due to increase in the number of diabetics in our country and the lack of an educational plan and behavioural models. The main purpose of this study was to determine self-care status of diabetics in Ardebil. Results obtained, will determine required materials in order to provide intervention with educational models. The study can help policy makers design intervention program.

**Materials and Methods**

**Participants and design**

This was a cross-sectional study carried out during 9 months in 2014 at referral diabetes clinic in Ardabil, affiliated to Ardabil University of Medical Sciences. To detect the best predictor of self-care, considering the accuracy of 3% with a two-sided 5% significance level and a power of 80%, a sample size of 382 participants was necessary, given an anticipated dropout rate of about 10%. The study sample was selected through random sampling method. Patients who were selected had diabetes type 2 for at least one year. Data collecting tools included demographic and standard questionnaire, Summary of Diabetes Self Care Activities (SDSCA). Both content validity and test re-test reliability showed satisfying results; (CVR, CVI=0.83) and correlation rate of 0.84. All the patients were informed about the purpose of the study. For ethical issues, none of the patients were forced to take part in this study.

**Instruments**

Data collection tools were a demographic form with 21 items including Personal Information, Disease Information, Patients educational needs, and Summary of Diabetes Self Care Activities (SDSCA) questionnaire developed by Toobert with 15 items which evaluates the status of patients’ self-care during the last seven days. The questionnaire included the following dimensions: following healthy diet (5 items), exercise (2 items), blood–glucose testing (2 items), foot care (5 items), and taking medication (1 items).

Responses in each subscale were based on 7-days, ranged from 0 to 7, the higher number was indicative of days reflecting better self-care operation.

Scoring the questions for SDSCA included 1 for daily self-care and zero for not doing it. The maximum score in this tool was 105, which was indicative of the highest quality of self-care. Based on score categories guideline, these questionnaires scores were classified to three levels: good (76-100 and

higher), average (75-51), and poor (>50). Data were collected by trained interviewers.

Descriptive and analytical statistical tests were used to assess the demographic and disease-related characters. It was carried out using SPSS version 16.0 and tests such as: t-test, chi-square and correlation coefficient. The study was conducted in accordance with the principles of Ardabil University of Medical Sciences, So to follow the ethical considerations, the researcher described the study objectives to participants and informed consent was obtained.

**Results**

Results showed that the mean age of subjects was 46.23 ± 12.74. 48.4% of them were males and 51.3% females, 81.7% were married. In term of education 65.2% (249 cases) hold under diploma education, and 34.8% higher education. In this study 69.1% (264) of subjects in addition to the diabetes, were suffering from other chronic diseases. 81.2% of them had a history of hospitalization for at least two times, and 18.8% (72) more than twice, due to diabetes and its complications. 41.6% of subjects had been trained about disease and self-care, and 48.4% were interested in participating in educational programs.

In relation to complication reduction: 50.3% of subjects had annual eye exam, 28% dental check upto every 6 months, 25.9% annual injection of influenza vaccine, 29.8% regular monitoring of Hb A1C. The other demographic characteristics of subjects are shown in Table 1.

*Table 1: The Demographic Variables of Subjects*

Variable	Group	Frequency	Percent
Gender	Female	196	51.3
	Male	186	48.4
Marital status	Married	312	81.7
	Single	70	18.3
Education	Illiterate	102	26.7
	Primary	77	20.2
	High School	70	18.3
	Diploma	62	16.2
	Academic	71	18.6
Income	More than spending	41	10.7
	Less than spend	160	41.9
	Equal to the costs	181	47.4
Job	Housewife/	167	43.7
	unemployed	27	7.1
	Worker		
	Government employees	102	7.3
	NGO job	28	26.7

	Retired	57	14.9
Smoking	Smoker	124	32.5
	Non smoker	256	67
	Ceased	2	0.5

Patients' situation was poor in terms of self-care based on SDSCA questionnaire. Limitations, averages, standard deviation, total self-care score and its subscales are shown in (Table 2).

**Table 2:** Mean, standard deviation, limits of total self-care score and its subscales

Variable	Possible limit	Observed limit	Mean ± SD
Total self-care	0-105	103-12	44.53 ± 16.7
Following healthy diet	0-35	35-1	16.25 ± 6.4
Doing blood sugar test	0-14	0-14	3.6 ± 3.9
Taking medication	0-7	0-7	4.9 ± 2.4
Physical Activity	0-14	0-14	5.1 ± 6.5
Foot care	0-35	0-35	14.4 ± 8.3

The majority of diabetic patients had a poor score of self-care. In this study, self-care was poor in 63.6% (243) of subjects, 31.7% (121) average and 4.7% (18) was good. The lowest scores were related to blood glucose testing  $3.6 \pm 3.9$ , taking medication  $4.9 \pm 2.4$  and physical activity  $5.1 \pm 6.5$ , and the highest scores were following healthy diet  $16.25 \pm 6.4$  and foot care  $14.4 \pm 8.3$ .

Chi-square tests showed significant relationship between income and self-care ( $P < 0.001$ ). There were no significant differences between self-care and gender. Correlation tests showed a significant positive relationship between regular drug use and income ( $P < 0.001$ ), gender and blood sugar test ( $P < 0.006$ ), educational level and self-care ( $P < 0.001$ ), Marriage and self-care ( $P < 0.004$ ), income and nutrition ( $P < 0.001$ ).

From 5 self-care determinant dimensions, diet and doing blood sugar test had maximum and minimum score respectively. About 75% of subjects did not have regular physical activity program, and 65% of them had less than 5 unit fruit and vegetables in their nutrition program.

**DISCUSSION**

Self-care is an action in which people use their own knowledge, skills and power as a source, in order to establish and maintain health, and to prevent and deal with illness as well. It is an important factor in reduction of disease prevalence, health promotion and finally improvement of the quality of life [12].

It is a broad concept encompassing hygiene (general and personal), nutrition (type and food quality), lifestyle (physical activities, leisure etc.), environmental factors (living condition,

social habits, etc.) socio-economic factors (income level, cultural beliefs, etc.) and self-medication.

For its significant role in chronic disease, this study was designed to determine the self-care practices and its related components among patients with type 2 diabetes. The findings of the present study showed that most of subjects had low self-care behaviors. These findings are similar to those of Vosoghi [13] Julia [14] Jalilian [15] study, in which the majority of diabetics had poor score of self-care. Also, Oksel [16] and Bernal [17] in their study on cardiac patients have reported poor self-care score. These findings are consistent with the obtained results in the current study. This result could be due to the characteristics of the patients in the present study.

The subscales of diet and blood sugar testing had higher and lower mean score respectively. Almost in more components of self-care, the status of women was better than men, this difference was not statistically significant, these findings are consistent with the Vosoghi's [13], Baghae [18] and Sigurardo's [19] study. It seems that gender differences in self-care behaviours can be affected by knowledge, level of education and behavioural motivation. In this study level of education was an influencing factor in self-care behaviours meaning that patients with higher education had better self-care than others. These finding are similar to Karter's [20] Connell's [21] and Vosoghi's study [13].

In the present study married patients had better self-care than singles, these finding are similar to Abootalebi's study [22,23]. It seems spouse as a supporter, has an effective role in taking self-care behaviors.

In the present study diet had the highest score, so that 59.2% [22] of patients in terms of diet were in good condition. Several studies suggest that diet is an effective factor in controlling, and improving the quality of life in type 2 diabetes [24,25]. It seems traditional culture; utilizing healthy food and relatives' cooperation are the most important factors in patients' diet [26]. Also the lowest scores were related to blood sugar testing, consumption of drugs and physical activity. So, 82.5% [315] of patients didn't do blood sugar test regularly. Inaccessibility and inability to use glucometer were reasons for not doing regular control of blood glucose.

Also 19.9% (76) of patients had physical activity for at least 30 minutes in a week. These finding are similar to Hordern's study [27]. Study limitations include the lack of cooperation of patients, and self-report. Regular educational interventions to upgrade components of self-care and improve diabetics' quality of life are recommended.

**Conclusion**

The findings showed most of patients who referred to the center of diabetes had poor self-care, so it is necessary to do promotional interventions.

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## \*Correspondence to

Nazila Nejaddadgar

Ardabil University of Medical Sciences

Iran

**E-mail:** [naziladadgar60@gmail.com](mailto:naziladadgar60@gmail.com)