SPER Publications and Solutions Pvt. Ltd.

Original Article

Self-care behavior in diabetic patients

M. Baghbani[1, 2], S. Deris[3], P. Abdoltagedini[3], H. Zareh Hoshyari Khah[4], A. Khanzadeh[5], S. Elhami[6*]

[1] Student research committee, Abadan School of medical sciences, Abadan, Iran, [2] operating room department, Student research committee, faculty of allied medicine, Iran university of medical sciences, Tehran, Iran, [3] Student research committee, Abadan School of medical sciences, Abadan, Iran, [4] Instructor, faculty of nursing and midwifery. Guilan university of medical sciences, Rasht, Iran, [5] Abadan School of medical sciences, Abadan, Iran, [6] Instructor, Abadan school of medical sciences, Abadan, Iran.

Correspondence: S. Elhami, Instructor, Abadan school of medical sciences, Abadan, Iran, **email:** S_elhami@yahoo.com

ABSTRACT

Objective: diabetes mellitus (DM) is the 6th and 9th cause of death in males and female, respectively and is an essential health challenge in all countries. The most important strategy for DM treatment is to control and prevent its side effects. Considering the importance of DM, this study aims to evaluate the attention of DM patients, referring to the elected clinic of Abadan University of Medical Sciences, to self-care programs". Methodology: this is a descriptive-analytical and a cross-sectional study. Samples were randomly selected from diabetic patients referring to the elected clinic of Abadan University of Medical Sciences. Self-care questionnaire was completed by DM patients with inclusion criteria using self-reporting technique. Data was collected and coded, and analyzed by SPSS 22.

Results: according to analyses, 70% of the studied cases were female and 30% were male. Total self-care behavior of the studied patients was reported to be in moderate level. The evaluation of self-care scores revealed that the maximum and minimum scores belong to healthy meal plan 25.37 (4.76) and regular physical activity (exercise) 3.62 (3.73), respectively. With the severity of 0.197, age had only an inverse correlation with regular physical exercises. In addition, no significant difference was observed between total self–care scores and the sub-scales of demographic variables. Conclusion: the results of this study suggest that relevant authorities should motivate patients to perform physical activities proportional to their age in order to promote self-care behavior among DM patients of Abadan. They should monitor the reason of week self-care behavior in the lack of regular exercises, controlled blood sugar and insulin-therapy and should endeavor to eliminate relevant hurdles.

Keywords: diabetes, diabetic patients, self-care

Introduction

Chronic diseases are essential health and therapy challenges of modern societies [1]. Diabetes is a prevalent chronic disease [2]. It is the 6th and 9th cause of death in males and females, respectively and is an essential health challenge in all countries so that WHO defines diabetes as *the silent epidemic* [1, 3]. In the 21st century, the increased prevalence of diabetes type 2 (DM II) and Impaired glucose tolerance (IGT) has turned to an epidemic problem due to urbanization, decreased physical activity, increased weight and obesity [4]. According to the International Federation of Diabetes reports, there were 382 DM patients across the world in 2013. It predicts that the number of DM patients will be raised to 592 million by 2035. This trend implies that one diabetic patient per second is added to DM patients' population [5]. DM patients subject to serious and killing effects of diabetes, including retinal damages and blindness, peripheral neuropathy, foot pain and shin pain, myocardial infraction, peripheral vein problems, final stage diseases of kidney, diabetic foot problems and amputation [6]. Involvement in such side effects has decreased life expectancy, increased relevant mortalities, imposed serious economic loads to family and society and affected the quality of life of both involved individuals and their families [7]. In The U.S., DM-induced expenditures was estimated to be 245 million dollars in 2015, 176 million dollars of which were associated with direct medical costs and 69 million dollars were indirect costs associated with lost working days, restricted activity, disability and early death [8]. Diabetes has currently no decisive treatment by it can be controlled [7]. Considering the ever-increasing prevalence of diabetes, it is evident that monitoring and treating diabetes and its acute effects demand considerable expenses to be borne by both patients and the health system of societies [3].

Access this article online	
Website: www.japer.in	**E-ISSN:** 2249-3379

How to cite this article: M. Baghbani, S. Deris, P. Abdoltagedini, H. Zareh Hoshyari Khah, A. Khanzadeh, S. Elhami. Self-care behavior in diabetic patients. J Adv Pharm Edu Res 2019;9(S2):71-76.
Source of Support: Nil, Conflict of Interest: None declared.

According to surveys, the lack of self-care behavior is the main cause of DM-induced mortalities [1, 3]. Health care providers should take this important fact into account that non-drug strategies are as effective as drug-based one, if not more effective, in preventing and treating DM. Therefore, concentration on patients' self-care behavior in chronic diseases, including DM, underpins the care model of such patients. If such patients are guided, through necessary education and support activities, to play the main role in this field, this can improve DM treatment and decrease care-related costs [7]. The results of Ricci-Cabello et al and Fransen et al showed that disrespecting self-care behaviors by DM patients is the main cause of the failure of health and treatment programs. In addition, according to different studies as well as the results of Sloan et al, supporting self-care initiatives can be accompanied by beneficial outcomes such as improved health and enhanced quality of life, increased satisfaction of patients, decreased health costs, decreased duration of hospitalization, rational use of care services, better management of disease symptoms and increased life expectancy [9-11]. Self-care programs of DM patients include controlling blood sugar, following a proper meal plan, performing physical exercises, observing drug regime and general foot care [5]. Majority of DM patents fail to achieve a satisfactory control because they fail to integrate self-care programs in their daily life [12]. In addition, incorrect and extremist self-care behaviors will result in DM side effects [13]. Self-care is of high importance for DM patients. It is a self-management plan in which patients contribute to 95% of disease management [14]. On the other hand, considering the various and chronic effects of DM it can be accepted that the ever-increasing population of DM patients, and susceptible individuals, will experience numerous limitations and problems, if no proper and fast interventions are put forward to prevent, control and treat DM [15]. This is why scholars decided to conduct a study with the aim of the evaluation of the attention of self-care behaviors by DM patients referring to the elected clinic of Abadan University of Medical Sciences, in order to provide relevant authorities with required information enabling them to determine the performance of this clinic and formulate appropriate plans to improve it.

Method of study

This is a descriptive-analytical and a cross-sectional study. It first obtained necessary permits from relevant authorities and arranged necessary coordination with them. This study was conducted on DM patients referring to Talegani hospital, Abadan. Considering similar studies and α=0.05, p=0.67 and d=0.06, sample size was calculated to be 235 using the following relation [7]:

$$n = \frac{(Z_{1-\frac{\alpha}{2}})^2 . p.q}{d^2}$$

To select samples, the researcher referred to the studied clinic once every week and selected DM patients in random, considering patients' file. The researcher, then, called the selected patients, explained study objectives to them and asked the items of self-care questionnaires from cases with inclusion criteria and fulfilled this questionnaire. The inclusion criteria were: definite DM I or DM II, diagnosed by the permanent physician of the clinic, consciousness of location, time and people, having degrees of self-care skills, lack of speech, auditory and mental disorders, confirmed by relevant physician. The self-care questionnaire consists of two parts. The first one addresses demographic information including age, sex, marital status, education, employment, drug type, years with DM and type of DM. The second part addresses "summary of diabetes self-care activities (SDSCA)". This questionnaire has 15 self-reporting items evaluating the self-care behavior of patients during the past 7 days. It covers different dimensions of DM self-care including meal plan with 5 items (total score = 0 to 35), exercise with 2 items (total score= 0 to 14), blood sugar test with 2 items (total score=0 to 14), insulin-therapy along with consuming oral pills with 1 item, (total score=0 to 7), foot care with 4 items (total score=0 to 28) and smoking with 1 item, (total score=0 or1). According to this scale, each behavior, except smoking, is scored by a point ranging from 0 to 7 and the total score is the sum of the scores of all items that ranges from 0 to 99. To better compare self-care behavior of cases and to clarify their status in different dimensions, self-care scores were divided into three groups in terms of different self-care dimensions and the total score of the questionnaire: week, moderate and strong [12]. The validity and reliability of questionnaire has been studied and confirmed by Hamadzade's study where mean score of content validity was derived 84.9% and Cronbach's alpha for internal reliability was derived 0.78 [12]. Collected data was coded and introduced to SPSS. Data was analyzed using descriptive statistics (frequency, percent, mean, standard deviation and statistical tables) and appropriate statistical tests including chi-square and logistic regression. Significance level was set to be $p \leq 0.05$.

Results

This study evaluated 325 DM patients referring to the elected clinic of Abadan University of Medical Sciences. The age range of cases was 19-80 (mean= 56.7). Of 235 cases, 9.4% (22) were smoking and 90.6% (213) were not. Years with diagnosed DM ranged from 1 to 40 (mean=9.66 years). The minimum fast blood sugar (FBS) was 70 and the maximum one was 425(mean=183.32). Regarding the number of hospitalization, the minimum number was 0 (181 cases) and the maximum one was 7 (1 case) (mean=0.33). Of the studied cases, 92% has been hospitalized at least for 1 time due to DM problems. Table 1 shows the demographic information of the studied DM patients.

Table 1: demographic information of the studied DM patients

Demographic information		Frequency	Percent (%)
sex	Female	163	70

	Male	70	30
Marital status	Married	220	95.2
	Single	11	4.8
Residence status	Urban settings	204	95.2
	Rural settings	11	4.8
Race	Lorish	13	5.7
	Kurdish	3	1.3
	Arab	135	59
	Fars	75	32.8
	other	3	1.3
Education	Illiterate	69	30
	Primary school	69	30
	Guidance school	27	11.7
	High school	4	1.7
	Diploma	43	18.7
	Over diploma and above	18	7.8
Occupation	Employed	51	21.8
	Jobless	140	59.8
	Disabled	13	5.6
	Retired	30	12.8
DM type	I	13	5.6
	II	220	94.4
Insurance	Yes	224	97
	No	7	3
Drug	Insulin	47	20
	Oral pills	166	70.6
	No drug	5	1.2
Prevalence of side-effects	Hardo	17	7.2
	Hypertension	85	36.5
	Retinopathies	25	10.7
	Kidney failure	4	1.7
	Hypertension + Retinopathies	43	18.5
	Hypertension + Kidney failure	10	4.3
	Retinopathies + kidney failure	4	1.7
	All items	5	1.2
	No item	57	24.3

According to self-care analysis conducted on the studied DM patients, 41 cases (17.4%), 154 cases (65.5%) and 40 cases (17%) showed strong, moderate and week self-care behavior, respectively. The frequency of self-care behavior showed that the minimum and maximum scores of healthy meal plan are 0 and 35, respectively (mean=25.37±7.46). Regarding regular physical activities, the minimum and maximum scores are 0 and 18, respectively (mean= 3.73±3.62). The minimum and maximum scores of BS level are 0 and 14, respectively (mean=4.98±5.09) while the minimum and maximum scores of insulin-therapy are 0 and 7, respectively (mean= 6.24±1.92). Regarding general foot care, the minimum and the maximum scores are 0 and 28, respectively (mean= 7.42±20.21) and regarding total self-care score, the minimum and maximum scores are 28 and 91, respectively (mean= 60.46±15.12). These figures indicate that the self-care behavior of the studied cases is moderate. The evaluation of the self-care scores of cases reveals that they obtained the maximum score in observing healthy meal plan (7.46) 25.37 and the minimum score in regular physical activity (3.620 (3.73). In addition, the evaluation of the correlation between age and total self-care showed that with a severity of 0.197, age has only an inverse correlation with regular physical activity. Table 2 shows Pearson's correlation coefficient and sig. level between age and total self-care and self-care sub-scales.

Table 2. correlation between age, total self-care and self-care sub-scales

	Healthy food diet	Regular exercise	BS test in home	Insulin-therapy	General foot-care	Total self-care
Pearson's correlation	0.090	-0.197	-0.074	0.120	0.065	0.021
Sig. level	0.178	0.003	0.270	0.074	0.330	0.752

The results of this study showed that total self-care is the same for all demographic variables and there is no significant difference between total self-care and demographic information sub-scales. Table 3 summarizes the relationship of total self-care and demographic information.

Table 3: relationship of total self-care and demographic information

Demographic variable		Mean (STD) total self-care	Statistic	Sig. level
Sex	Male	61.03 (15.57)	5339.5	0.438
	Female	60.28 (15.04)		
Marital status	Single	59.00 (14.30)	-0.334	0.739
	Married	60.57 (15.25)		
City	Abadan-urban area	61.83 (14.88)	2.041	0.074
	Abadan-rural area	57.91 (15.86)		
	Khorramshahr-urban area	57.67 (16.30)		
	Khorramshahr-rural area	44.75 (11.92)		
	Majnoon island	52.80 (5.54)		
	Arvand kenra	50.00 (8.83)		

Race	Lorish	59.08 (16.09)	2.260	0.064
	Kurdish	57.33 (11.24)		
	Arab	58.92 (15.22)		
	Fars	63.84 (14.72)		
	Others	44.00 (5.29)		
Education	illiterate	59.10 (14.06)	2.135	0.062
	Primary school	58.38 (15.90)		
	Guidance school	62.18 (13.98)		
	High school	51.75 (10.37)		
	Diploma	64.35 (15.74)		
	Over diploma and above	67.44 (11.45)		
Employment	Employed	58.69 (15.90)	0.972	0.407
	Jobless	61.14 (14.59)		
	Disabled	55.23 (13.59)		
	Retired	62.17 (16.86)		
Insurance	Yes	60.65 (16.24)	1.385	0.167
	No	5.57 (13.77)		
Insurance type	Free insurance	5.57 (13.77)	0.825	0.624
	Social security insurance	61.06 (15.05)		
	Oil company insurance	62.23 (13.14)		
	Health insurance	56.54 (14.93)		
	Niroogah (Power plant) insurance	63.89 (12.71)		
	Farhangian (teachers) insurance	57.20 (11.71)		
	Rural social insurance	63.25 (16.19)		
	Treatment services insurance	65.18 (17.73)		
	Dena insurance	59.50 (7.78)		
	Janbazan (disabled veteran) insurance	54.40 (18.55)		
	Imdad (Imam khomeiny Charity Institution) insurance	64.00 (9.90)		

Discussion

This study was conducted to evaluate the attention of DM patients, referring to the elected clinic of Abadan University of Medical Sciences, to self-care programs. Study results reported a moderate level for self-care behavior of the studied DM patients whereas the study of Firooz et al (2015) and Vosooghi Karkazloo et al (2011) reported a week level [16, 17]. This difference may be traced in the different self-care questionnaires used by the studies, and higher missed-data and lower self-care knowledge of DM patients of Mashhad and Birjand compared to Abadan patients. However, the results of this study agree with the studies of Baghaei et al (2005) and Parham et al (2013) who reported a moderate level for the self-care status of DM patients [18, 19]. The results of this study revealed that healthy meal plan and general foot care received the maximum attention by the studied DM cases while insulin-therapy, performing BS test at home and regular physical activity (exercise), received the weakest attention, respectively. This disagrees with the results of Baji et al (2014) who reported higher self-care behavior in observing healthy meal plan and consuming drug and lower self-care behavior in performing daily BS test and regular physical activities, respectively [20]. This difference may be originated from the beliefs and attitudes of DM patients to drug and insulin-therapy and their socio-economic status and cultural structure. Our results agree with the results of Jordan et al (2011) who reported week performance of DM patients in performing daily BS test, consuming drug and performing physical activities [21]. The evaluation of the correlation of age and total self-care with self-care dimensions showed that with the severity of 0.197, age has only an inverse correlation with regular physical activity (exercise) so that as age increases, physical activity decreases. The results of this study agree with those of Karkazloo et al (2011) and other studies indicating a significant inverse relationship between age and self-care ability level [17, 22-25]. In other words, younger patients show more activity and stronger self-care behavior. The mean age of the studied DM patients is 56.70. The reason why they show a moderate self-care level may be attributed to their higher mean age.

This study found no significant relationship between sex and self-care level. This disagrees with the results of Akyol et al (2007) indicating a significant relationship between sex and self-care level. The effect of sex and self-care level may be influenced by other variables including physical, mental, and behavioral status of patients as well as their financial independence [22]. On the other hand, our results agree with Artinian et al (2002) indicating a significant relationship between sex and self-care level [24].

This study observed no significant relationship between education and self-care level whereas Karkazloo et al (2011) found in their study a positive significant relationship between them [17]. This difference may be originated from the effect of educating self-care on general understanding of people which is proportional to the education level of the studied DM patients.

There was no significant relationship between residence place and self-care level. However, Akyol et al (2007) and Karkazloo et al (2011) reported in their study a significant relationship between them [17, 24]. Again, this difference may be originated from the fact that self-care is educated in the same manner to DM patients of rural and urban settings. On the other hand, our

results agree with the study of Artinian et al (2002) who did not report a significant relationship between residence place and self-care level.

Regarding employment, marital status, insurance type and race, this study found no significant relationship between them and self-care level. The study of Firooz et al (2014) confirms this finding [16]. This can confirm the accurate education of self-care initiatives to DM patients of Abadan with any possible race, job and income. In addition, educating self-care behaviors to DM patients of Abadan who are not under insurance coverage will not be stopped.

Conclusion

Our results reported a moderate self-care behavior for Abadan DM patients. It found an inverse significant relationship between age and physical activity. It is suggested, therefore, that relevant authorities should motivate patients to perform physical activities proportional to their age in order to promote self-care behavior among diabetic patients of Abadan. They should monitor the reason of week self-care behavior in the lack of regular exercises, controlled blood sugar and insulin-therapy and should endeavor to eliminate relevant hurdles.

Acknowledgement

This study is the product of the student research approved by Abadan University of Medical Science with the ethical code IR.ABADANUMS.REC.1395.123 The authors of this study are very thankful to the research deputy of their faculty for their financial support. We are very thankful to all patients and individuals assisted us in conducting this study.

References

1. Vosoghi Karkazloo N, Abootalebi Daryasari GH, Farahani B, Mohammad nezhad E, Sajjadi A. The study of self-care agency in patients with diabetes (Ardabil). scientific Quarterly of Birjand Nursing & midwifery Faculty 2012; 8(4):197-204 [text in Persian]
2. Hinkle JL ,Cheever KH. Brunner&suddarth's textbook of medical-surgical nursing. Translation Asadi noghabi AA, Toosarvandani mosapour M. Tehran: Jameenegar; 2014.vol.11P.155-156.
3. Nicoogoftar M, Esshaghi F. Forecast of Self-care behaviors of diabetic patients based on attachment styles and health locus of control. Mediating role of gender Quarterly journal of health psychology2013؛1(4):84-96[text in Persian]
4. Azizi F, janghorbani M, Hatami H, compilers. Epidemiology and control of prevalent diseases in Iran.3en ed. Tehran: khosravi; 2010.P.72[text in Persian]
5. Reisi M, Mostafavi F, javadzade H, Mahaki B, Tavassoli E, Sharifirad G. Communicative and critical health Literacy and self-care behaviors in patients with type 2 diabetes. Iranian journal of diabetes and metabolism 1393؛14 (3):99-208. [text in Persian]
6. Afshari M, Tol A, Taghdisi M, Azam K. The effect of the combinatorial program on improving foot care in type2 diabetic patients referred to diabetes clinic of samirom city: application of basnef model. Journal of health system research, Health education supplement 2014 Sep;9(4):1697-1707. [text in Persian]
7. Parham M, Rasooli A, Safaei pour R, Mohebi S. Assessment of effect of self-caring on diabetic patients in Qom diabetes association 2013. Quarterly Journal of sabzevar university of medical sciences 2014; 21(3): 473-484. [text in Persian]
8. Diabetes report card 2014.Available at: www.cdc.gov/diabetes/library/reports/congress.html.Accessed Oct28, 2015.
9. Ricci-Cabello I, Ruiz-Pérez I, Rojas-Garcia A, Pastor G, Rodríguez-Barranco M, Gonçalves DC. Characteristics and effectiveness of diabetes self-management educational programs targeted to racial/ ethnic minority groups: a systematic review, metaanalysis and meta-regression. BMC Endocr Disord.2014; 14(1):60.
10. Fransen MP, Beune EJ, Baim-Lance AM, Bruessing RC, Essink-Bot ML. Diabetes Self-Management Support for Patients with Low Health Literacy: Perceptions of Patients and Providers. J Diabetes 2014.
11. Tan TS, Brown MB, Funnell MM, Anderson RM. Social Support, Quality of Life, and Self-Care Behaviors Among African Americans with Type 2 Diabetes. The Diabetes Educator.2008; 34(2):266-276.
12. Hamad zadeh S, Esati G, A determination of self-care performance among diabetic patients in endocrine clinic of Taleghani hospital in Tehran, Iranian journal of Nursing Reseach 2014;8(4):11-18. [text in Persian]
13. Guyton J, Hall E. Guyton Hall Textbook of medical physiology. Translation Ghasemi A, Mohammadi M. Tehran: Khosravi, 2012.vol.2 p.478, 482. [text in Persian]
14. Funnell MM, Anderson RM. The problem with compliance in diabetes. JaMa. 20-1709 :(13) 284.
15. Vazini H, Barati M. Predicting Factors related to self-care Behaviors among type2 Diabetic patients based on Health belief model. Journal of Torbat Heydarieh University of medical sciences 2014؛ 1(4):16-25. [text in Persian]
16. Mozlem R, Firoz M, Hosseini J, Hassanzadeh F, Kimiaii A. Self-care of patient with diabetes type II. Journal of Sabzevar University of Medical Sciences 2016; 22(6):1018-1024
17. Vosoghi Karkazloo N, Abootalebi Daryasari GH, Farahani B, Mohammadnezhad E, Sajjadi A. The study of self-care agency in patients with diabetes (Ardabil). Modern Care, Scientific Quarterly of Birjand Nursing and Midwifery Faculty. 2012; 8 (4): 197-204
18. Baghaei P, Zandi M, Vares Z, Masoodialavi N, Adidhajbagheri M. Self-care behaviour of patients with diabetes in Kashan centers of diabetes. Quarterly Journal of Feiz. 2008; 12 (1): 88-93. [text in Persian]

19. Parham M, Riahin AA, Jandaghi M, Darivandpour A. Self-Care Behaviors of Diabetic Patients in Qom. Qom Univ Med Sciense Journal .2013;6(4):81-7 [text in Persian]
20. Baji Z, Zamani alavijeh F, Nouhjah S, Haghighizadeh MH. Self-care Behaviors and Related Factors in Women with Type 2 Diabetes. Iranian Journal of Endocrinology and Metabolism 2015; 16(6): 393-458. [text in Persian]
21. Jordan DN, Jordan JL. Self-care behaviors of Filipino-American adult with type 2 diabetes Mellitus. J Diabetes Complication 2010; 4: 250-58.
22. Akyol AD, Cetinkaya Y, Bakan G, Yarah S, Akkus S. Self-care agency and factors related to this agency among patients with hypertension. J Clin Nursing. 2007; 16 (4): 679-87.
23. Dashiff CJ, Mccaleb A, Cull V. Self-care of young adolescents with type1diabetes. Journal Pediatr Nursing. 2006; 21(3):222-32.
24. Artinian NT, Magnan M, Sloan M, Lange P, Michigan D. Self-care behaviors among patients with heart failure. Heart & Lung: J Acute Critical Care. 2002; 31 (3):161-72.
25. Coyle RL. Information retrieval of self-care and dependent care agents using net wellness. [Dissertation]. Ohio: The College of Nursing of Cincinnati University; 2000.