

## Self-care behaviors in older people with diabetes referred to Ahvaz Golestan Diabetes Clinic, 2012

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### Abstract

**Introduction:** Aging is a critical period of life and elderly population is growing rapidly. Diabetes is one of the most common chronic diseases in older people and involving people in treatment process who has central role in disease control. This study performed to assess self-care behaviors and related factors in elderly patients with diabetes.

**Materials & Methods:** A cross-sectional study was performed on 200 diabetic patients referred to Golestan Diabetes Clinic in Ahvaz, 2012, who were selected by convenience sampling. Information was collected and evaluated based on questionnaire Summary of diabetes self-care activities, with scores of 0-91 in both section, personal data and self-care behaviors.

**Results:** The study population included of 117 female (58.5%) and 83 men (41.5%), with a mean age of  $63.67 \pm 6.5$ , respectively. 46% were illiterate, 69% married, 54.5% housewife and 20.5% were retired. Average of self-care score was 44.04. The blood sugar of 23% was not monitored. Exercise was perform two days a week in 14.5%. Foot care was not taken in 9.5% of people. There was positive association between total scores of self-care and duration of disease, education and having previous training ( $p=0.001$ ), but sex was not associated with total self-care scores ( $p=0.27$ ).

**Conclusion:** The results of this study showed that self-care behaviors in the elderly diabetic patients in Ahvaz was poor and special attention to the educational needs of this patients and planning is necessary.

**Keywords:** Elderly, Type 2 Diabetes, Self-care Behaviors

### Introduction

Aging is a critical period in human life, with the needs and issues that are necessary to be addressed by the society. Healthy aging is a human right that adds to the importance of aging and the prevention of its complications (1). Because of reduced mortality rates resulting from advances in medicine, health and education, and consequently an increase in life expectancy and longevity, the phenomenon of aging among the world's population is so important that if they being ignored, the human community will face very complex and perhaps intractable problems in the near future (2).

According to the Ministry of Health, Iran, the estimated people over 60 years in the world currently includes approximately 650 million people worldwide, which is expected to reach 2 billion people by 2050 (3). According to the latest census by the Statistical Center of Iran, the population over 60 years is estimated at 7.3% in 2011-12, and is expected to reach up to 10 million people in 2021, which is equivalent to 10% of the population of Iran (4). As was noted in the Day of the Elderly meeting, this age group consist of 4.5% of the population in Khuzestan in 2011-12, which increased by 5.44% in

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2012-13. This increase shows aging rate of the Khuzestan province population (5).

The risk of one or more chronic diseases increases with age and accounts for over 80 percent of mortalities, so that most people over 60 have at least one chronic disease, including diabetes that is one of the common diseases (6). Diabetes, as the most common disease caused by metabolic disorders, is a major challenge worldwide (7). The disorder is caused by glucose intolerance, which is created due to an imbalance between insulin supply and demand, and includes a set of metabolic disorders, the most common of which is hyperglycemia (8). The diabetic population is expected to increase from 284 million (6.4%) to 439 million adults (7.7%) in the world at 2030(9).

According to the U.S. Center for Disease Control in 2007, the diabetes was diagnosed at ages over 60 years is prevalent among 12.2 million people, which embraces 23.1% of the population in this age group (7). Based on the National Health and Nutrition Study, the prevalence of diabetes increases with age and peaks at 60-74 years of age (i.e., 17.6) and then decreases slightly to 14.9% at the ages over 75 years (10).

The prevalence of diabetes has been reported at 14% in Iranian adults (11). According to the Khuzestan's Diabetes Research Center, 10% of the population has diabetes – the figure that is increasing (5). The complications of diabetes are common among the elderly people who have higher risk of chronic heart failure, kidney disease, cognitive deficits, depression, physical disability, amputation as well as drug disorders (12).

In their study, Barry et al. showed that the elderly accounts for about 60 percent of health

care costs, 35 percent of hospital discharge, and 47% of hospitalization (13). A chronic disease like diabetes has a complex origin, gradual onset and unpredictable severity and recovery, which demands patient participation in the care because of the long process, and requires particular self-care behaviors in the whole life (14).

Since the disease affects all aspects of economic, financial, social and emotional aspects of the individual, the family and the community drug treatment is not sufficient in these patients, and nurses are able to assist them in enhancing their ability to perform daily activities, considering their vital role in the rehabilitation of these patients. Unconsciousness of people with chronic disease on self-care is one of the reasons for their re-admission to the hospital, which will be prevented by self-care educating(15).

Self-care behaviors, which include a good diet to control blood sugar, participating in appropriate physical activities, diet medication and blood glucose monitoring for diet modification, and exercise and medication, are important factors in the control of diabetes, and in case of failure, may lead to increased complications. However, providing good behaviors can reduce by 70-80%, the risk of heart disease that is a major cause of mortality in diabetic patients (16, 17). Jafarian Amiri et al. stated that there were lower FBS and BMI in diabetic patients who had better self-care behaviors (17).

In their study that expresses poor self-care behaviors among patients with diabetes, Ayele et al demonstrated that barriers for self-care behaviors should be well thought-out and self-care behaviors through sequential learning, the motivation and attitude conception of the

patient to be promoted reducing the morbidity and mortality caused by diabetes (18).

Various factors may directly or indirectly affect the self-care behaviors of diabetics. In their study, Bai et al stated that the self-care behaviors in the elderly people with diabetes were significantly affected by gender, education level, economic status, religious beliefs, social support and disease duration, and that there was also a negative relationship between depression and the self-care behavior (19). Given the importance of self-care behaviors in chronic diseases, and considering the fact that there is no accurate information on the self-care status of Iranian elderly people with diabetes, and that no similar study has been conducted in the city of Ahvaz, the researcher intended to perform a study to assess the self-care behaviors and its related factors in elderly people with diabetes in Ahvaz.

### Materials and Methods

This study was carried out a convenience sampling method on 200 diabetic patients aged 60 years and over, who referred to Ahvaz's Golestan Diabetes Clinic and at least one year has elapsed since diagnosis of diabetes. Sampling lasted from June to September 2012. Patients with kidney failure, stroke, myocardial infarction, as well as patients with malignancies or history of psychotherapy or limiting musculoskeletal disorders were excluded from the study because of inability to perform self-care behaviors.

The patients' informed consent to participate in the study was completed and, data were collected using a questionnaire for a summary of self-care behaviors as well as an interview.

This questionnaire is a standard tool developed by Toobert et al (20). Jafarian Amiri et al (17) used it in a study entitled "Self-Care Behaviors in Patients Referring to Clinics in the City of Babol" to measure self-care behaviors in 2010. A translation of the questionnaire was carried out under the supervision of the members of Babol's Nursing Faculty and an endocrinologist.

The reliability and validity of the Persian version of the questionnaire was confirmed by the researcher. For reliability or reliability of the questionnaire, the test retest was applied, which its reliability was equal to 0.75.

The questionnaire consisted of 29 questions divided into two parts: demographic characteristics (including 16 questions on gender, age, height, weight, education, etc.) and 13 questions on self-care activities (diet 4 items, physical activity 2 items, blood sugar monitoring 2 items, foot care 3 items, and regimen 2 items) during the past week in the form of closed questions with 8 options. On how to rate each of the self-care behaviors, one point was considered for each of questions on self-care behaviors, which if done daily, can get the score, and otherwise the point 0 was given. (Maximum and minimum scores received from each question over a week were 7 and 0, respectively, and the score range was between 0 and 91).

Questionnaires were completed by the researcher who asked questions from the patient and then were analyzed by SPSS Version 17. We used the Pearson and Spearman statistical tests to examine the relationship between variables and t-test to understand the significance of the relationship between the variables.

### Ethical considerations

This study was confirmed by the Ethics Committee of the Ahvaz Jundishapur University of Medical Sciences.

### Results

A total of 200 elderly people were contributed in the study included 117 (58.5%) women and 83 (41.5%) men, with a mean age of 63.67 ± 6.5. About literacy of elderly people, 46% were illiterate, and 36% had a primary education; and the number of illiterate women (34.2%) which was higher than men (22.9%). Housekeeper women and retired men included 54.5% and 20% of the study population, respectively. Majority of patients (69%) were married and 27% were people whose spouse has died. Seniors who lived with spouse and children was 41%, 21% with spouse, and 33% with children, and 5% alone. The average family size was 6 people. In terms of insurance status, 10% were not insured at all, 48.5% were covered by social insurance, 14.5% by rural insurance, 14.5% by medical services insurance, and 12% by army force insurance. The duration of diabetes was 5-10 years in 47% of the subjects. Complications occurred in 91% of patients, among which 60.9% were suffering from multiple complications (neuropathy, cataracts and a foot problem). Concomitant diseases were seen in 94% of subjects, and 49.7% had heart disease, high blood pressure and high cholesterol together. Oral medications and insulin were administered by 51.1% and 11% respectively; and 29% were being treated with medication, diet and exercise. Herbal medications to control blood sugar used in 10.5% of subjects. There was no previous training in 72% of elderly people.

The mean total score on self care for women and men was 43.6% and 44.6%, respectively; and there was no significant difference. On average, contributors were observed diet for 3 days, exercise for 2 days, blood sugar control for 2 days, foot care for 3 days and the proper use of the drug for 6 days a week. In this study, a significant relationship was found between total score of self-care and duration of the disease, education level and having previous training ( $p = 0.001$ ); and scores of self-care behavior increased with these factors, but gender was not associated with the total score of self-care ( $p = 0.27$ ).

### Discussion

In this study, only 10.5% of the subjects observed a good diet for 5-6 days a week. It may be due to the desire to eat sweet and fatty foods, lack of knowledge, lack of vision, and low economic status (in some cases, such as the consumption of fruits and vegetables). According to the study of Deovina et al, more than half the people ate a high-fat diet for 3 days per week, and only one fifth had enough consumption of fruits and vegetables, among which women had a higher proportion than men. The subjects who reside in the United States for a longer time followed better diets because of cheaper price and the availability of various food products in this country (21). In the study of Zack et al on the elderly, 66% of subjects had a healthy diet for 5 days per week (22).

In the study of Jafarian Amiri et al on the elderly people in Tehran, 41.3% of the patients did not adhere to the healthy diet, which was stated to be due to low level of literacy of most people (17). In addition, 92% and 57.7% of the subjects followed the diet in the study of

Nelson et al, (23) and the study of Bai et al (19), respectively. Physical activity improves the quality of life and is associated with reduced complications diabetes by 50-60% in long term (24). The study of Madarshahian et al demonstrated that regular exercise can improve the cognitive status of elderly patients with diabetes (25). In the present study, 28.2% of women and 19.3% of men did not exercise at all, in total, 14.5% of the subjects had a physical activity for only 2 days a week. Some causes of this poor behavior are adverse weather conditions and lack of access to appropriate places for physical activity and physical weakness resulting from aging.

In the study of Deovina et al, one third of people had physical activities every day, and less than one fifth of people did certain exercises like swimming all week. People with higher education and men had more physical activity than women and those with less education. Poor eyesight, fear of hypertension and hypoglycemia and the risk of other diseases have been cited as the barriers to physical activity among the elderly people; but the race had no effect on this behavior (12). In the study of Zack et al, 45% of people had physical activities for more than 5 days per week. In this study, diet and physical activity which are among the behaviors related to lifestyle had lower scores than the behaviors related to diet therapy (22). In the study by Jafarian Amiri et al, 29.4% of the subjects had no adequate physical activity (17), while 75% of people had a good physical activity in the study of Nelson et al. This difference may be due to differences in the sociocultural support (23).

The long-term control of diabetes depends on self-monitoring of blood glucose and has a

great impact on the regulation of drugs, diet and activity, especially among the elderly who have higher risk of hypoglycemia and higher complications. No blood glucose monitoring was observed among 23% of elderly people with diabetes in Ahvaz, and only 9% of the population controlled their blood sugar all days of the week. Poor economic situation and lack of insurance coverage for the purchase of blood glucose test strips are barriers to blood glucose monitoring in the elderly. In the study of Deovina et al, one third of patients did not adhere to blood glucose monitoring. The elderly people who are younger and those who their disease was diagnosed more recently had lower adherence to glycemic control, based on the proposed program.

In this study, family support and trust to the physician had a great influence on the acceptance and performance of self-care behavior (21). In the study by Zack et al, 73.3% of the individuals conducted blood glucose control for more than 5 days a week. This study found that the social support received has been improved the blood sugar control (22). In the study of Nasuroba et al 58% of the subjects controlled their blood sugar once a day (17), while 42.3% of people did not even do it in the study of Ayele et al (18). Foot care is particularly important because of the prevalence of neuropathy and peripheral arterial diseases in the elderly people with diabetes and an increased risk of subsequent amputation. In the present study, 9.5% of people did not follow foot care, and 14.5% were taking care of their feet for 4 days per week, while only 2% were taking for 7 days a week. It was due to the lack of awareness and attitude towards it. In the study

by Zack et al, 65% conducted foot self-care behaviors for 5 days per week.

People with higher education did take care of their feet more (22). In the study of Jafarian Amiri et al 66.7% of people did not take care of their feet at all, which its reason was stated not to have attitude towards the importance of this behavior (17). The proper use of drugs is an important part of self-care behaviors in diabetes. In the present study, 32.5% of the elderly people properly used drugs 7 days a week. Medication regimen was a behavior with the highest score among the participants and was observed better than other variables. This is based on the belief among the elderly that the merely consumption of drug is sufficient to control diabetes, which implies a lack of awareness of the disease in patients. In the study of Deovina et al, half the patients were not taking medications on time. Medication adherence in women, who were older when migrating to the United States and have a longer history of diabetes, were better than others (21). In other study of Zack et al 97.5% of people (22), 78.4% in the study of Ayele et al (18), and 61.7% in the study of Jafarian Amiri et al followed the medication regimen (17).

In all these studies, the highest score of self-care behavior was related to compliance with the treatment regimen. Ayele et al. stated that the awareness and sensitivity to the complications of non-adherence to medication regimens perhaps result in proper performance of the behavior, while there is no sensitivity to other behaviors such as foot care and blood glucose checking (18).

In this study, a significant relationship was found between the total score of self-care and the disease duration, the level of education and

previous training, but gender was not correlated with self-care scores. In the study by Zack et al, gender was also not correlated with self-care behavior. Previous training has improved behaviors, and lower levels of education were associated with poorer behavior (22). In the study by Chang et al, gender was not correlated with self-care behavior (17). In the studies of Walston et al (17) and Deovina et al, diet and physical activity were better in women and men, respectively (21). In the study by Bai et al on diabetes in Taiwanese elderly people, self-care behaviors were significantly affected by gender, education level, economic status, religious beliefs, social support, and disease duration; and a negative correlation was found between depression and self-care behavior (19). In addition to the above cases, race and ethnicity, the risk of other chronic diseases and lifestyle has been reported in Chiou et al study to be the factors that influence self-care behaviors in the elderly (26). In this regard, particular attention has been paid to social support and cultural differences between diabetic patients (19, 24, 27).

The main limitations of this study include cross-sectional nature, the small number of samples and the sampling method. Analysis of the factors affecting self-care behaviors can be made in a longitudinal study with a larger sample size. Cultural, racial and religious differences in the elderly people have been not taken into consideration in the present study.

### Conclusion

Self-care behaviors are subject to certain factors such as clinical conditions, therapy regimen, demographic indicators and lifestyle

of the patient, among which the latter can be modified; and raising awareness will undoubtedly help improve the behaviors and control chronic diseases. There were poor self-care behaviors among Ahvaz diabetes elderly, which may cause problems, family stress, and subsequent heavy costs to the health system, so there is the need to pay special attention to this group of patients. Social support, attention to cultural differences, and emotional support of family are among the factors that are not usually included in the training programs for this age group. Therefore, these factors are

proposed to be taken into account in future studies because of its importance.

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#### References

- 1.Hasanpur A, Masoodi R, Naderipur A, Purmirza R. The effect of physical activity program on quality of life in elderly people in Shahrekord. *Iran Elderly Journal*. 2007; 2(6): 437-444. [Persian]
- 2.Heidari M, Shahbazi S. Effect of self-care training program on quality of life of elders. *Iran Journal of Nursing*. 2012; 25(75): 1-8. [Persian]
3. Hekmatpour D, Shamsi M, Zamani M. The effect of healthy lifestyle education programs on promotion of physical activity in elderly of Arak. *Medical Daneshvar*. 2012; 19 (98) :33-42. [Persian]
4. Najimi A, Azadbakht L, Hassanzadeh A, Sharifirad G. The effect of nutrition education on risk factors of cardiovascular diseases in elderly patients with Type 2 diabetes: a randomized controlled trial. *Iranian Journal of Endocrinology and Metabolism*. 2011; 13 (3) :256-263. [Persian]
5. Ghanavati T, Shaterzade Yazdi MJ, Goharpey Sh, Arastoo AA. Functional balance in diabetic neuropathy. *Iranian Journal Of Endocrinology & Metabolism* 2009; 11(1): 58-65. [Persian]
6. Aldrich N, Benson WF. Disaster preparedness and the chronic disease needs of vulnerable older adults. *Prev Chronic Dis*. 2008 ;5(1): A27.
7. Nematpoor, Sorur. Psychological and psychiatric aspects of diabetes. First edit, Ahvaz.2011, page 4-18. [Persian]
8. Vivienne NUF, Courtney M, Edwards H, Dowell J, Shorting Baggett LM, Chang PJ. Development and validation of the Chinese version of the diabetes management self – efficacy scale. *International Journal of Nurse Student*. 2008; 45(4): 534-542.
9. Matinolli H.M, Kyngas H, Kaariainen M. The effectiveness of motivational interviewing as a form of care for adults with type 2 diabetes: a descriptive review. *JNEP*.2012; 2(2).
10. Chiniwala N, Jabbour S. Management of diabetes mellitus in the elderly. *Current Opinions In Endocrinology, Diabetes & Obesity*. 2011; 18: 148-52.
11. Noohi E, Khandan M, Mirzazade A. Effect of electronic education on self- care in type 2 diabetic patients who refer to the Diabetic Center in Kerman University of Medical Science. *Research of Nursing*. 2011; 6(22): 73-80. [Persian]

12. Tabatabaee A, Peimani M, Hesshmat R, Pazhoohi M. Status of diabetes care in elderly diabetic patients referred to Shariati Hospital Diabetes Clinic. *Journal of Diabetes and Lipid Iran*. 2010; 10(2): 161-16. [Persian]
13. Kozaki K, Murata H, Kikuchi R, Sugiyama Y, Hasegawa H, Igata A, Toba K. Activity scale for the elderly as a measurement for the QOL of local elderly individuals and the assessment of the influence of age and exercise. *Nippon Ronen Igakkai Zasshi*. 2008; 45(2): 95-188.
14. Bagheri H, Ebrahimi H, Taghavi N, Hasani M. Evaluation of quality of life in patients with diabetes mellitus, based on its complications, referred to Emam Hossein Hospital, Shahroud. *J Shahrekord Univ Med Sci*. 2005; 7 (2): 50-56. [Persian]
15. Masoodi R, Kheiri F, Safdari A. Effect of Orem self care program based on Orem's Theory on self-esteem in Multiple Sclerosis patients. *Journal of Gorgan University of Medical Sciences*. 2010; 12(3): 37-44. [Persian]
16. Masoodi R, Mohammadi I, Ahmadi F, Hasanpour A. The effect of self-Care program education based on Orem's Theory on mental aspect of quality of life in multiple sclerosis patients. *Nursing and Midwifery Iran*. 2009; 22(6): 53-64. [Persian]
17. Jafarian Amiri R, Zabihi A, Babae F, Ashkooi N, Bijani A. Self-care behaviors of diabetic patients referred to Clinics of Babol. *Journal of Babol University of Medical Sciences*. 2009; 12(4): 72-78. [Persian]
18. Ayele K, Tesfa B, Abebe L, Tilahun T, Girma E. Self care behaviors among patients with diabetes in Harari, Eastern Ethiopia. *The Health Belief Model Perspective*. 2012; 7(4): e35515.
19. Bai YL, Chiou CP, Chang YY. Self-care behaviour and related factors in older people with Type 2 diabetes. *J ClinNurs*. 2009; 18(23): 3308-15.
20. Toobert DJ, Hampson SE, Glasgow RE. The summary of diabetes self-care activities measure. *Diabetes Care*. 2000; 23(7): 943-50.
21. Deovina N. Jordan, James L. Jordan. Self-care behaviors of Filipino-American adults with type 2 diabetes mellitus. *J Diabetes Complications*. 2010; 24(4): 250-8.
22. Zack A, Fischer JG, Johnson MA, Reddy S. Performance of diabetes self-management behaviors by older adults in Georgia Senior Centers. *Journal of American Dietetic Association*. 2010; 9(110): A117.
23. Nelson KM, Farland L, Reiber G. Factors influencing disease self-management among veterans with diabetes and poor glycemic control. *J Gen Intern Med*. 2007; 22(4): 422-7.
24. Speer E.M, Reddy S, Lommel TS, Fischer JG, Heather S, Park S, et al. Diabetes self-management behaviors and HbA1c improved following a community-based intervention in older adults in Georgia senior centers. *J Nutr Elder*. 2008; 27(1-2): 179-200.
25. Madar Shahian F, Hasan Abadi M, Khosh Niat M. The effect of regular exercise on Cognitive status of elderly patients with type 2 diabetes and overweight. *Iran Diabetes & Lipid* 2011; 10(5): 553-559 . [Persian]
26. Chiu C-J, Wray L. Factors predicting glycemic control in middle-aged and older adults with type 2 diabetes. *Preventing Chronic Disease*. 2010; 7(1): 135-140.
27. Angela C, Janic Y, Joanne L, Chan W. Effectiveness of culturally tailored diabetes self-management program for Chinese Americans. *Diabetes Educ*. 2012; 38(5): 685-94.