

Original Article

The effect of self-care intervention program on daily living activities among patients with diabetes mellitusMehdi Jamalini^{1*}¹ Department of Nursing, School of Nursing and Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran

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ABSTRACT

Background & Aim: The most important goal of providing care for patients with diabetes mellitus (DM) is to increase the level of activity and hence prevent the progression of the disease. DM is a chronic disease with no definitive treatment, however it can be controlled with proper self-care.

Methods & Materials: This was a pre-test and post-test semi-experimental study without a control group. The statistical sample included 70 patients with DM who were gradually selected from among members of Sabzevar diabetes association, Iran, in a random manner. The patients were under self-care training program for 3 sessions of 2 hours. Data were collected using the self-care diabetes activity questionnaire and Barthel Activities of Daily Living (ADL) Index and were analyzed using the analysis of covariance (ANCOVA) in SPSS.

Results: Findings showed that the mean daily activities of patients were significantly different before and after self-care program, indicating the positive effect of self-care training program on daily activities of patients.

Conclusion: The present study showed that self-care education program significantly and positively affected the daily activities of patients. Therefore, such training is recommended in order to improve the health status and reduce the progression of DM.

Introduction

Today, developing and developed countries are experiencing epidemic diseases, especially diabetes mellitus (DM) (type 2). The incidence of the disease in most countries is still continuously increasing. The number of individuals with DM reached from 118 million in 1995 to 220 million in 2010 and has been anticipated to reach 300 million individuals by 2025. DM is one of the most common metabolic diseases that is associated with insufficient relative or absolute insulin, increased blood glucose, and impairment

in metabolism of carbohydrate, lipids, and protein (1). The incidence of DM is about 6.4% worldwide, varying between 3.8% and 10.2% depending on the geographic region (2). In the United States, more than 25.8 million individuals are estimated to suffer from DM, although almost one-third of these cases have not been diagnosed. In 2010, the number of individuals over the age of 20 who had recently diagnosed with DM, increased to 1.9 million (3). By the year 2000, the global incidence of DM was 171 million, and it is expected to reach 366 million individuals by 2030 (4). DM type 2 accounts for more than 90% of all types of DM. The ultimate goal of treating DM is to maintain blood sugar at normal levels without reducing blood glucose (5). More than 95% of the treatment process among patients with DM type 2 is performed by the patients themselves, and the

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treatment team has little control on patients over the interval between visits (6). Since DM is a chronic disease and there is no definitive treatment, it can be controlled with proper self-care (7). This leads to increased attention to promote self-care activities that include various aspects like physiological, social, emotional, and spiritual aspects (8). These patients require special self-care behaviors in their lifetime (9). Self-care is an active and practical process that is guided by the patient and is essential for the prevention of short-term and long-term complications (10). In the study by Vosoghi Karkazloo et al., it was shown that the self-care capacity of patients with type 2 DM was poor, moderate, and good in 68.5%, 29.5% and 2.2% of cases, respectively (11). In a study conducted by Parham et al., it was also found that 53.5% of patients with DM did not perform self-care behaviors (12). Research findings have shown that observance of self-care activities in addition to improving the quality of life (QOL) of individuals with chronic disease and their families, had a very important role in reducing the use of resources of health service delivery system, so that the results indicated 40%, 17%, 50%, 50%, and 50% decrease in referral to general practitioners, referral to specialized physicians, referral to emergency centers, hospital admissions, and absenteeism days, respectively (13). According to existing studies, the most important causes of mortality among patients with DM are the lack of proper self-care and the lack of basic and daily activities of life and, hence, a decrease in the health level of patients; this is related to the complications of the disease, which causes dangerous diseases including heart attack, stroke, and end-stage renal disease (ESRD) (2, 14). Therefore, the most important goal of providing care for patients with DM is to increase the level of activity and hence prevent the progression of the disease. Measurement of activities of daily living is one of the best ways to identify and assess the health status. The daily life activities include the activities and tasks that individuals perform on a daily basis in their daily lives. In the area of health care, it refers to daily activities of self-care at the individual's place of residence, an out-of-home environment, or both

(15). De Vriendt et al. divided activities of daily living into three parts: basic activities; behaviors related to individual care, like dressing and bathing, daily activities related to equipment; such as cooking and doing housework and shopping, advanced daily activities; including voluntary behaviors influenced by cultural and motivational factors that represent satisfactory activities beyond individual autonomy, such as social activities and humanitarian activities. The sum of the above three types of activities of daily living form the activities that a person performs in his/her daily life (16). Therefore, considering the chronicity of DM, its long process and high costs, in addition, due to the low level of self-care among patients with DM, and in order to find ways to improve it, this study was carried out aiming to investigate the effect of self-care intervention program on daily living activities among patients with DM referred to Diabetes Association in Sabzevar City, Iran, in 2017.

Methods

The present study was a semi-experimental cross-sectional study without control group. The statistical population of this study consisted of 70 patients with DM type 2 who referred to Diabetes Center in Sabzevar in 2017. Sampling was performed by gradual random sampling method. To do this, you can refer to all patients who are gradually returning or individuals as one in between or based on their file number. So, patients can be examined as one by one or based on their case number. In this case, the sampling is performed gradually and randomly. In some studies, the starting point may be selected rather than the number. In this study, eligible samples were selected among the individuals who were referred to the association. To ease the training and for better learning of the patients, they were divided into three groups (two groups of 25 and a group of 20). Then, the time and place of holding the training sessions also how to hold were arranged in coordination with the patients of each group as 3 sessions of 2 hours per 2 weeks for each group, in addition, the training place was specified to be the rooms of Sabzevar diabetes association according to patients' demands.

Table 1. Content of training sessions on self-care programs for patients with DM

Sessions	Teachings and goals
First session	Getting acquaintance of the members of the group together and agree on the rules Identification of the features and characteristics of patients by the researcher Getting acquaintance of individuals with DM type 2 (Symptoms, causes, and treatment) Investigation of problems that members face in relation to disease Creating a new attitude towards disease among patients
Second session	Psychological challenges of families with patients with chronic illnesses Negative mood settling solutions Stress related to disease Stress management techniques Marital conflicts around the DM axis Conflict resolution rules and problem solving
Third session	Familiarity with behavioral problems among patients with DM Enhancement behavior techniques Techniques to reduce undesirable behaviors Ways of increasing responsibility in relation to the treatment assignments Generalized learning Review of the trainings and goals

DM: Diabetes mellitus

Self-care training was based on the care needs of patients with DM during scheduled times and using lecture methods, educational compact discs (CDs), and pamphlets. The content of the meetings is also given in table 1.

Data were collected in two stages before and after the intervention. So that the first stage of the collection was prepared before the beginning of the first training session and the second phase was prepared one week after the last training session.

The study inclusion criteria were: full satisfaction of individuals to participate in the study, confirmation of type 2 DM by physicians, diagnosis of type 2 DM for at least one year, lack of acute complications and diabetic foot ulcers, age range of 20-65 years for both men and women, presence of reading and writing skills in the patients or a close member of their family, and the lack of previous experience of similar training on self-care. In addition, the exclusion criteria included receiving intervention and education related to the present study at the time of the study, other acute or chronic psychological illnesses during the implementation of the study, unwillingness to attend the training sessions, and the reluctance to continue the training for any reason and avoid attending training sessions even for one session.

For data collection, three questionnaires of demographic information, self-care DM activity questionnaire, and ADL index were used. DM self-care activities questionnaire is one of the most

widely used measurement tools for self-care DM behaviors among adults and adolescents. The questionnaire contained 77 questions in physiological, social, emotional, and health and disease dimensions, and all responses included 3 options of yes, sometimes (somewhat), and no. Each question had a score of 0 or 1 and the total score of this questionnaire varied from 0 to 77, with 0 and 1 being the lowest level of self-care and the highest level of the disease, respectively, in addition, the score of 77 indicated the highest total self-care and the highest level of health scores. Mirzaee et al. in 2010 demonstrated that DM self-care activities questionnaire was a valid and reliable instrument to assess the needs of self-care of patients with DM with a 95% confidence interval (CI) (17). The Barthel Activities of Daily Living (ADL) Index also contained 10 components including bowels, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs, and bathing, and the special score of each component ranged from 0 to 15, and the total score of the questionnaire ranged from 0 to 100, with the scores of 0 and 100 indicating the highest and lowest dependence on doing daily life activities, respectively. The ADL index is the most commonly used tool by researchers and health and medical staff to assess the level of individuals' ability to perform daily activities. This indicator was proposed by Barthel in 1969 to assess the activities of daily life, and its validity and reliability have been proven in numerous studies.

Table 2. Mean and standard deviation (SD) of age, body mass index, blood glucose and hemoglobin glycosis

Variable	Statistics	Mean \pm SD	Minimum	Maximum
Age (year)		43.00 \pm 13.00	20	65
BMI (kg/m ²)		27.00 \pm 4.52	19	35
FBS (mg/dl)		177.60 \pm 32.00	108	254
Glycosylated hemoglobin		6.89 \pm 0.92	5	9

SD: Standard deviation; BMI: Body mass index; FBS: Fasting blood sugar

The validity and reliability of this index were calculated, and the Cronbach's alpha coefficient of the index was 0.81. Finally, the data were collected and analyzed by SPSS software (version 20, IBM Corporation, Armonk, NY, USA).

In order to implement ethical considerations in the present study, the following components were observed in the study: voluntary participation of individuals in the study, providing sufficient information regarding the study for all participants, observance of privacy of clients, and follow-up therapy in case of necessity even after the end of the study.

Results

44 (62.8%) and 26 (37.2%) of the subjects were women and men, respectively. The descriptive findings of the study are presented in table 2. The mean age, mean body mass index (BMI), average blood glucose, and average glycoside hemoglobin of the patients were 43.00 \pm 13.00, 27.00 \pm 4.52, 177.60 \pm 32.00, and 6.89 \pm 0.92, respectively. Moreover, table 3 demonstrates the comparison of mean and standard deviation (SD) of self-care scores and daily activities of patients before and after intervention. The mean self-care scores before and after the intervention were 118.15 \pm 2.52 and 127.40 \pm 2.32, which increased by 9, and the mean daily activities score of patients after the intervention was 65.72, with 57.22 before the intervention, which increased about 8 points.

Independent t-test results showed that after intervention, mean scores of all items of self-care in the study group increased significantly

after training compared to before it ($P \leq 0.05$).

In other words, according to statistics, educational intervention had a significant effect on self-care behaviors among patients, and patients had greater ability to perform their self-care activities and hence, were able to increase their daily activities.

Discussion

The findings of this study indicated the effectiveness of self-care intervention program on daily activities of patients. Different findings suggest that, over time, self-care intervention has a more positive effect on the parameters of daily activities among patients with DM. In the present study, the QOL of patients increased after intervention, which was statistically significant. This increase in QOL can be enhanced by the participation of patients in their classes and self-help leaflets. In the present study, the mean of observation of care among women patients was higher than that of men, which may be due to the high population density of women. This conclusion is consistent with the findings of the study by Shams et al. in Urmia, Iran (18).

In addition, patients in families with high education levels were more likely to follow tips and more participate in self-care activities, as they believed the importance of the subject due to their familiarity and awareness. Momoko and Takashi in their study on type 2 DM in Japan showed that there was a positive correlation between the level of critical knowledge with perceived care in DM and self-efficacy (19).

Table 3. Comparison of mean and standard deviation (SD) of self-care scores and daily activities before and after intervention

Time	Statistics	Before intervention	After intervention	P-value
		Mean \pm SD	Mean \pm SD	
Self-care		118.15 \pm 2.52	127.40 \pm 2.32	< 0.001
Daily activities		57.22 \pm 1.26	65.72 \pm 1.46	0.001

SD: Standard deviation

The findings of this study indicated that the educational intervention designed to improve self-care behaviors of patients had a lot of positive effects. These results are consistent with the findings in the studies conducted by Saeid Pour et al. (20), Tavousi et al. (21), Babazadeh et al. (22), Bidi et al. (23), and Gallegos et al. (24). The present study has been carried out only in the Sabzevar diabetes association with gradual random sampling method; due to these two limitations, it is necessary to be cautious in generalizing the findings of this study. In general, the high incidence of DM worldwide has made DM self-care program one of the important components of treatment for these patients, which not only can control blood glucose, but also reduce the complications of DM. The effectiveness of the self-care plan has led to the development of standardized social protocols in some countries to be used in health centers. The findings of this study also showed that self-care among patients with DM can be effective nursing intervention in promoting health (25-27).

It seems that the use of health education programs for patients is a necessity and can improve all aspects of their life. Therefore, in view of the incidence of DM in Iran, and given the success of the study, it is necessary to make appropriate policies for the improvement and treatment of DM through assessment of educational requirements in order to improve the general health of patients with DM. In designing educational interventions, self-care should be considered as one of the most important factors among patients with DM type 2, and factors like the development of sports culture and facilities in the city should be considered.

Considering the costs of DM for patients, for the future planning in the education and control of DM, it is recommended to invest in self-care rather than investing in direct control of glycosylated hemoglobin, and hence increase the ability to perform daily living activities among patients.

Conclusion

The findings of this study indicate that the self-care educational program has affected the

daily activities of patients with DM.

Conflict of Interests

Authors have no conflict of interests.

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