ORIGINAL ARTICLE

Self-Management Education and its Association with Resilience in Diabetic Patients

Mohammad Mehdi Hakimian[1], Farid Abolhassani Shahreza[2], Narjes Hazar[3*]

1. MA, Specialist in Counseling and Guidance, Tehran University of Medical Science, Tehran, Iran.
2. MD, Associate Professor of Internal Medicine, Health Services Division, National Institute of Health Research, Tehran University of Medical Science, Tehran, Iran
3. MD. Community Medicine Specialist. Deputy for Health Affairs, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

[*]**Correspondence:**
Narjes Hazar, Community Medicine Specialist. Deputy for Health Affairs, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
Email: narjeshazar@yahoo.com
Tel: (98) 913 259 2217

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Abstract

Objective: Resilience is the personal ability to adapt successfully with unpleasant situations and maintain or regain bio-psychological well-being. Resilience could be promoted through Self-management educational programs. In this study, we tried to investigate if self-management education could improve resilience in diabetic patients.

Materials and Methods: The current study was a semi experimental trial. All patients were diagnosed with diabetes type 2. Intervention was the self-management education program. Fasting Blood Sugar (FBS), post prandial (2hpp) and resilience score were evaluated at the beginning and at the end of the study. T-test and Analysis of covariance (ANCOVA) were used for comparison between two groups.

Results: Although two groups had no significant difference in FBS, 2hpp and resilience score mean values initially, significant decreases occurred in all variables in intervention group in comparison the control group at the end of the study (*P*-value:0.005; <0.001 and 0.006 respectively). The results of ANCOVA analysis showed that post-test resilience score in intervention group was significantly higher than control group (*P*-value:<0.001).

Conclusion: self-management education can effectively improve resilience in diabetic patients.

Keywords: Resilience, Diabetes, Self-management education.

Introduction

Diabetes is one of the most important risk factors of morbidity and mortality. It is estimated nearly 1.5 million people have died directly due to diabetes in 2012 (1). According to the projection of World Health Organization, diabetes will stand at the 7th position of global death causes in the year 2030 (2). Moreover, diabetes can be a detrimental factor, affecting different parts of the body and contributing to micro and macro vascular complications (3). Although, it is well known that lowering of blood glucose to near normal could prevent future diabetes complications, most patients have a great difficulty to achieve an acceptable level of blood glucose (4). One factor that is considered to be correlated with poor control of glucose level in diabetic patients is disease-

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related psychological distress (5). Chronically ill patients should face with their condition during a long period of time. This makes them feel overwhelmed (6). Some factors such as self-efficacy (confidence), self-esteem and optimism can lower the negative effects of distress and enable patients to reach better control of blood glucose level. These factors in addition to the ability to handle and solve problems; constitute a construct named resilience (6). Resilience is the personal ability to adapt successfully with unpleasant situations and maintain or regain bio-psychological well-being. In addition, resilience can be a promotional factor to better adherence to medical recommendations and life style modifications and therefore, patients with higher resilience can cope better with their condition and achieve an acceptable quality of life (7). Resilience could be promoted through Self-management educational programs (8). In the case of chronic disease, it is well accepted that a major contributing factor to poor control of diabetes is the neglected roles that patients themselves should play in managing their disease (4). Self-management education, as a critical component in diabetes management, tries to train patients with suitable knowledge, skills and ability about diabetes management in order to attract their active participation in the care process (9,10). Thus, these patients will be able to solve their problems, make informed decisions and have interactive collaboration with health care providers. Consequently, Self-management education would be effective in decreasing hospitalization and costs, improving disease control and quality of life (11). Although the efficacy of self-management practices in resilience improvement is accepted in some groups like nurses (8). But convincing evidence in the case of chronic diseases specially diabetes mellitus is limited. In the present study, we tried to investigate if self-management education could improve resilience in diabetic patients.

Materials and Methods

This study was designed as a semi-experimental trial consisting of an intervention and a control group. The study was conducted in a major diabetes outpatient clinic related to the Diabetes Research Center in Yazd, a city located in the center of Iran. The protocol of the study was approved by the ethical committee of Diabetes Research Center. All steps of the study were described by the head researcher for enrolled patients in detail, and they were asked to read and endorse the informed consent.

Participants

All enrollees were diagnosed type 2 diabetic patients. They were at least high school graduates and had not received any psychiatric drug or intervention during the six month period ending in the study.

Intervention and control groups

At the beginning of the study and before randomization, a blood sample was taken from all participants in order to evaluate fasting blood glucose. After that, patients were provided with breakfast and another sample was taken 2 hours later to evaluate two hours post prandial glucose (2hpp). Patients were also asked to fill out the Persian version of Connor and Davidson Resilience scale which was psychometrically evaluated in the context of Iran (12). After these stages, patients were randomly assigned to either intervention or control groups. The intervention was a group-based self-management educational program provided in 12 weekly sessions. The topics embedded in the program were: recognition of diabetes disease and its complications, self-monitoring of blood glucose, suitable diet and physical activity for diabetics, foot care, self-awareness skills, anger control skills, stress management skills, positive thinking skills, happy-living skills and problem solving skills. Patients in control group were provided with no specific intervention and their routine care was continued as before. At the end of the study, patients were asked to complete

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resilience questionnaire again and FBS and 2hpp were also checked.

Connor and Davidson Resilience scale

This questionnaire has been created by Connor and Davidson in 2003 in order to measure individual's ability to confront successfully with difficult situations (13). There are 25 items provided on Likert scale from 0 "not true at all" to 4 "true nearly all the time". Each responder can get a score from 0 to 100 and greater score represents higher resilience.

Ethical approval and Informed consent

All procedures performed in this study were in accordance with the ethical standards of Yazd's diabetes research center committee and with the 1964 Helsinki declaration. Informed consent was obtained from all individual participants included in the study.

Statistical analysis

SPSS 16 was utilized to analyze data. Baseline characteristics comparison between two groups was done with independent sample T-test and chi-square method. Analysis of covariance (ANCOVA) was the method of choice to evaluate the effects of intervention on post intervention FBS, 2hpp and resilience score after controlling pre-intervention measurements. If essential assumptions of ANCOVA were not established, comparing mean values of differences between pre and post-intervention using independent sample T-test was the only method of comparison between two groups.

Results

Sixty two diabetic patients were enrolled in the study (31 in each group). There was no significant difference between two groups according to the baseline characteristics (Table 1).

Variables changes:

Although two groups had no significant difference in FBS, 2hpp and resilience score mean values initially, significant decreases occurred in all variables in patients belonging to intervention group in comparison with those who were in the control group at the end of the study (*P*-value:0.005;<0.001 and 0.006 respectively). The results are displayed in Table 2 in detail.

Discussion

Nowadays, It is accepted that those kinds of interventions which place the diabetic patients at the center of attention and decision making and attract their contribution in disease management, are the most effective ones (14). Such interventions could be delivered in the form of self-management education that basically consists of different domains including physical activity, proper diet, appropriate medical therapy and regular blood sugar monitoring (15). In addition, some types of psychological and behavioral techniques

Table 1. Participants' basic characteristics at the beginning of the study

Variables		Intervention	Control	*P*-value
FBS	Post.int	127± 30.7	135 ± 27.3	
	difference	-12.7	-0.41	0.005
2hpp	Post.int	188.8 ± 41.6	219.3 ± 50.2	
	difference	-36	-0.06	<0.001
Resilience score	Post.int	73.16	64.8	
	difference	8.77	0.19	0.006

Table 2. Comparison of variable changes between two groups

Variables	Intervention	Control	*P*-value
Age (year)	53±6.6	52.1±6.7	0.582
Gender (male%)	25.8	38.7	0.277
FBS (mg/dl)	139.9±33.7	135.6±27.1	0.583
2hpp (mg/dl)	225±52.1	219.4±50.3	0.672
Resilience score	64.4±11.2	64.6±11	0.937

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such as problem solving are considered as important components of self-management interventions (16). The results of the present study revealed that blood glucose level inpatients belonging to intervention group significantly decreased at the end of the study. A large body of evidence is available on the effectiveness self-management education in lowering blood glucose level and it is demonstrated that this type of education is capable enough to delay diabetes-related complications (17). In addition, engagement of patients in such a collection of interventions would be effective in improving diabetes-related knowledge and has positive impacts on psychological and behavioral aspects (18,19).

As demonstrated in this study, aforementioned interventions can effectively improve resilience or its components in diabetic patients. Learning self-management activities and applying them in daily living, enhances self-efficacy in patients; leading to well-adaptation with difficult circumstances and wellbeing improvement (8). Patient education raises the knowledge on the benefits of diabetes self-management interventions and the correct way those should be performed. Therefore, patients feel that they can take self-management behaviors easily and effectively which it makes them confident (20).

In this trial, patients were educated how to encounter with daily problems and find the best solutions. Patients, who are trained with problem solving techniques, learn that each problem is a challenge and can be solved, so they find themselves more efficacious in facing and combatting with problematic situations. This leads to alleviation of undesirable impacts of problems and better adjustment with daily life (21).

In this study, we scheduled to teach patients how to think in a positive way about stressful life events. Positive thinking is a process that encourages people to pay their attention to advantages of different situations and ignore their dark sides. When people become positive thinkers, they face with life events optimistically and find themselves brave enough to challenge with stressful situations. In the case of illness, positive thinking empowers patients to overcome the disease distress. Therefore, they will become capable to cope better with difficulties of their condition and experience a higher level of wellbeing (22).

One of the strengths of current study is group rather than individual education. Belonging to a group provides members with the opportunity to exchange their experiences and receive teammates' feed backs (23). There is some evidence that patients receiving this type of education are more satisfied compared to patients participating in individual-based interventions. Moreover, group-based education could be an effective way of cost saving (24).

According to the authors' knowledge, this is the first study that evaluates the effects of self-management education on resilience improvement, as an outcome, in the context of chronic illnesses. A short period of follow up demonstrated that this course of education would significantly promote resilience in diabetic patients. Studies with longer durations of follow-up, are required to assess sustainability of improved patients' resilience with the passage of time.

Conclusion

Based on the results of present study, self-management education might enhance resilience in diabetic patients. Self-management activities increase self-efficacy and help patients to well adapt themselves with difficult situations. Furthermore, patients who learn the possible ways of encounter with problems acquire a better view of their abilities and have more chance to win in difficult situations.

Conflict of interest

None

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