

## A Systematic Review Study on the Effect of Multimedia Training on Self-Care Behaviors and Quality of Life in Diabetic Patients

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### ABSTRACT

**Introduction:** Type 2 diabetes is a disorder of glucose metabolism by decreasing the production of insulin and its consumption by tissues and thus increasing blood glucose levels. that is a major global health problem. In this study, we plan to measure the effect of education on self-care behaviors in diabetic patients by systematic review. Therefore, this systematic review study aimed to investigate the effect of multimedia training on self-care behaviors and quality of life in diabetic patients.

**Materials and Methods:** In this systematic review, we examined ten articles which was related to the effect of multimedia training on self-care behaviors and quality of life in diabetic patients. The criteria for entry of articles, including studies published in Persian and in English, could be accessed to their full text, published over the past 25 years, and studies on the impact of multimedia education on self-care behaviors and quality of life in diabetic patients. Exit criteria include unnamed, unannounced, and non-scientific studies as well as articles that lacked the full text of the article.

**Results:** In this study we examined ten articles about the effect of multimedia training on self-care behaviors and quality of life in diabetic patients. In one of these studies, the mean of self-care of patients before intervention (3 months' self-care e-learning) was 24.98% in the experimental group and 21.12% in the control group, after intervention, the control group was 28.82% and in the control group it was 20.02%. According to this study, there was a significant difference between the mean of self-care scores before and after 3 months of education.

**Conclusion:** According to the studies, it can be concluded that e-learning on self-care in diabetic patients has a positive effect on the control of the disease. So that the average self-care score of individuals is improving. Lifestyle modification through e-learning also improves self-management of patients with diabetes. Therefore, planning for patients with diabetes at a wider level and other chronic patients is recommended. In general, the results of the researches confirmed the positive effect of educational programs and self-care on patients' quality of life. Therefore, designing and implementing self-care educational programs based on the educational needs of patients with long follow-up is recommended.

**Keywords:** Multimedia education, Self-care behaviors, Quality of life, Diabetic patients

### INTRODUCTION

Type 2 diabetes is a disorder of glucose metabolism by reducing insulin production and its consumption by tissues, and thus increasing blood glucose, which is a major global health problem. Chronic glucose increase leads to degradation, impaired function and insufficiency of various organs, especially the eyes, kidneys, nerves and heart and vessels. The disease has

become widespread in the late 20th century, and there is currently no sign of stopping it (1-6). Given that diabetes is a threat to the world, it can be said that 6.3 percent of the world's population now has diabetes. It is a metabolic disorder characterized by chronic hyperglycemia that affects the various organs of the individual and reduces longevity. It also has many complications such as blindness, nephropathy, neuropathy, and cardiovascular disease. (7-13).

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Diabetes is the fifth cause of death in most countries of the world, causing disability, high cost of treatment and increased mortality. Diabetic patients are more likely to develop cancer than the general population (14-20).

Depression is the most common psychiatric disorder among diabetic patients. Depression and occupational stress daily can cause some health disorders. Job stress is a physical and emotional response that can lead to illness and injury (21-26). Diabetes is one of the most common endocrine complications in thalassemic patients (27). Thalassemia is a hereditary anemia that is associated with a decrease in the synthesis of the globulin chain or ineffective hematopoiesis (28, 30).

In diabetic patients, lack of attention to quality of life it can be associated with many adverse consequences, including non-compliance with the drug and diet, non-compliance with rehabilitation programs, self-care and eventually exacerbation of disease and early death. Diabetic patients, on the other hand, face multiple psychological complications due to their personal, familial and financial problems, as well as various issues such as high and high blood sugar levels and dietary restrictions. That can greatly affect self-care and quality of life (31).

In this study, we plan to measure the effect of education on self-care behaviors in diabetic patients by systematic review. Therefore, this systematic review study aimed to investigate the effect of multimedia training on self-care behaviors and quality of life in diabetic patients.

### **MATERIALS AND METHODS**

In this systematic review, the criteria for entry of articles, including studies published in Persian and English, Access to their full text might have been published over the past 25 years and studies on the effect of multimedia training on self-care behaviors and quality of life in diabetic patients. Exit criteria include unnamed, unannounced, and non-scientific studies as well as articles that lacked the full text of the article.

In order to achieve the goal of the study and to improve the accuracy of its study and its comprehension, this integrated overview study was conducted based on the Broome method. The method is done in the form of three steps in the search of texts, data evaluation and data analysis, so, in the search phase, post-retention

studies texts are examined in four stages in terms of inclusion criteria. After obtaining the conditions for entry into the study, the content of the study is evaluated and at the end the analysis of the data was done.

This study uses articles published in the last 25 years regarding the effect of multimedia training on self-care behaviors and quality of life in diabetic patients. It was conducted in English and English by searching articles in search engines, authoritative scientific sites and databases SID, Google Scholar, Embase, Research Gate, Science direct, Pub Med, and Springer. In the first phase, 36 articles were found. Of these, 10 related articles that have been published in the last 25 years have been reviewed.

To achieve relevant studies, a wide range of keywords including Multimedia education, Self-care behaviors, Quality of life and Diabetic patients was used as a one-to-one search, combined with the method "And" and "OR".

### **RESULTS**

The results of one study showed that there was no significant difference between the two groups in terms of age, gender, educational status and employment. The mean of self-care of patients before intervention (3 months of self-care e-learning) was 24.98% in the experimental group and 21.12% in the control group. After intervention, the control group was 28.82% and in the control group it was 20.02%. According to this study, there was a significant difference between the mean self-care scores before and after 3 months of training (32).

In another study, according to the data analysis, the mean self-actualization before intervention in the intervention group was 32.93 and in the control group was 30.67. After intervention, the intervention group was 34.86 and in the control group it was 33.82. The mean of responsibility in the intervention group was 14.64 and in the control group was 14.41. But after the intervention, the intervention group was 16.71 and in the control group it was 16.03. Therefore, the results of this study indicate that there is no significant difference in lifestyle dimensions and total score between intervention and control groups before intervention. But after intervention between the two groups, there is a significant difference in the dimensions of prosperity, accountability and overall lifestyle (33).

According to a study, there was no statistically significant difference between self-concept of the two groups before intervention. However, there was a significant difference between the Piers-Harris self-concept test scores in both control and post-intervention groups (3 sessions of 4 hours training with CD-ROM) (34).

In another study, the mean fasting blood glucose and oral glucose tolerance test at 1 hour and 2 hours in both groups were not statistically significant. But the blood glucose level in the education group was lower than that of the in-person training group via SMS service. Therefore, the effect of multimedia education through SMS is more effective in controlling the blood glucose levels of pre-diabetic pregnant women (35).

In one study, the control and intervention groups were homogeneous for demographic information in the intervention group after 12 weeks of training for insulin injections and follow-up, they controlled and even lowered the blood sugar of the intervention group and Self-care and independence of these patients were strengthened and, consequently, their quality of life was improved (36).

In another study, the mean of self-care score before intervention in the intervention group was 33.7 and in the control group  $32 \pm 6$ , but after the intervention, the intervention group was 5.53 and in the control group it was  $37 \pm 7$ . Therefore, the impact of mobile-based education has had a dramatic effect on self-care in patients. Therefore, the use of mobile-based training programs is recommended because of easy access, lack of time and space constraints (37).

In another study, SMS-based education in the telegram environment compared with the face-to-face model improves self-care and reduces the average glycosylated hemoglobin in diabetic patients. The mean of hemoglobin glycosylated pre-test in the training group was 7.95 in the training group and 7.64 in the training group. But after the test, the group received 7.55 short-term training and 7.45 in the training group (37).

Other study results showed a positive and direct self-care effect on patients' quality of life. In the mean of quality of life before self-care education in control group was 48.75 and in intervention group 49.16 But after two months of intervention, in the control group it was 52.20 and in the intervention group was 57.36 (39).

Other study results showed that the quality of life of the patients before intervention in the multimedia training group was 83.2, in the successful experience group 83.1 and in the control group 85 After 5 intervention sessions, the mean of quality of life in the first group was 87.7, the second group was 86.9 and the third group was 85.1. As a result, the quality of life of type II diabetic patients has increased in the multimedia teaching method and successful person experiences than in the control group (40).

Other study results showed that 6 months of standardized training through SMS could provide effective communication with patients with diabetes and increase their awareness. It is possible to reduce the mean values of glycosylated hemoglobin and prevent complications of the disease (41).

## **DISCUSSION**

Type 2 diabetes is a disorder of glucose metabolism by reducing insulin production and its consumption by tissues, and thus increasing blood glucose, which is a major global health problem. Chronic glucose increase leads to degradation, impaired function and insufficiency of various organs, especially the eyes, kidneys, nerves and heart and vessels. The disease has become widespread in the late 20th century, and there is currently no sign of stopping it (1-6). In this study, we plan to measure the effect of education on self-care behaviors in diabetic patients by systematic review. Therefore, this systematic review study aimed to investigate the effect of multimedia training on self-care behaviors and quality of life in diabetic patients.

According to a study (32), which studies the impact of e-learning on self-care behaviors in people with type 2 diabetes, showed that there was a significant difference between the mean of self-care scores before and after 3 months of education. It can be concluded that e-learning on self-care of diabetics has a positive effect on disease control, so that the average self-care score of individuals improves.

Also, according to study (33), aimed at the effect of lifestyle modification through e-learning on self-management of diabetic patients, showed that there was no significant difference in lifestyle dimensions and total score between intervention and control groups before intervention but After intervention between the two groups, there is a significant difference in

the dimensions of prosperity, accountability and overall lifestyle. It can be said that lifestyle modification through e-learning improves self-management of patients with diabetes. Therefore, planning for patients with diabetes at a wider level and other chronic patients is recommended.

Also, in study (34), which aimed to compare the effect of group and e-learning on self-concept of diabetic adolescents, it can be said that CD-ROM can help in self-care education and subsequently strengthen the self-concept of diabetes patients, especially adolescents.

According to study (35), it can be said that both methods of training via SMS and face-to-face training have the same effect and they can reduce blood glucose levels in pre-diabetic pregnant women, although in the training group it was more than a short message service.

According to study (38), it can be said that multimedia textual education in the telegram environment improves self-care than in-person training. As well as a decrease in the mean values of glycosylated hemoglobin in diabetic patients. This training platform can be used to facilitate the process of self-care education in patients.

## CONCLUSION

According to the studies, it can be concluded that e-learning on self-care in diabetic patients has a positive effect on the control of the disease. So that the average self-care score of individuals is improving. Lifestyle modification through e-learning also improves self-management of patients with diabetes. Therefore, planning for patients with diabetes at a wider level and other chronic patients is recommended.

In general, the results of the researches confirmed the positive effect of educational programs and self-care on patients' quality of life. Therefore, designing and implementing self-care educational programs based on the educational needs of patients with long follow-up is recommended.

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