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Self-Management Education on the Quality of Life of Type 2 Diabetes Mellitus Patients

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Abstract

Background: Type 2 diabetes mellitus is a chronic disease requiring continuous management. Patients need adequate skills in dietary regulation, physical activity, medication adherence, blood glucose monitoring, and complication prevention. Poor self-management may negatively affect physical, psychological, and social well-being and overall quality of life. Objective: To determine the effect of self-management education on the quality of life of patients with type 2 diabetes mellitus. Methods: This study employed a quasi-experimental one-group pretest-posttest design involving 58 patients with type 2 diabetes mellitus selected through purposive sampling. The intervention consisted of an eight-week self-management education program covering nutrition, physical activity, medication adherence, blood glucose monitoring, complications prevention, and stress management. Quality of life was assessed using the WHOQOL-BREF before and after the intervention. The data were analyzed using a paired t-test. Results: The mean quality-of-life score increased from 58.7 before the intervention to 70.1 after the intervention. Statistical analysis demonstrated a significant difference between pre-intervention and post-intervention scores ($p<0.001$). Conclusion: Self-management education has the potential to improve the quality of life of patients with type 2 diabetes mellitus. Structured and continuous education should be integrated into nursing care for patients with diabetes.

Keywords: Health Education, Quality of Life, Self-Management, Type 2 Diabetes Mellitus.

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1. Introduction

Type 2 diabetes mellitus is a chronic metabolic disease characterized by elevated blood glucose levels due to impaired insulin secretion, insulin resistance, or a combination of both. This disease requires long-term management because it can lead to various complications, such as cardiovascular disease, kidney disorders, neuropathy, retinopathy, and peripheral vascular disease (American Diabetes Association Professional Practice Committee, 2026; International Diabetes Federation, 2025).

Diabetes management focuses not only on medication administration but also requires active patient involvement in self-care behaviors. Patients need to understand their condition, recognize the symptoms of hyperglycemia and hypoglycemia, regulate their food intake, engage in regular physical activity, and take medication as recommended by healthcare professionals. The American Diabetes Association recommends that all diabetes patients receive diabetes self-management education and support (DSMES) tailored to each patient's needs, social and cultural background, and abilities (American Diabetes Association Professional Practice Committee, 2026; Powers et al., 2020).

Self-management is an individual's ability to manage the symptoms, treatment, physical and psychosocial consequences, and lifestyle changes associated with a chronic disease. This ability is crucial for patients with type 2 diabetes mellitus, as successful disease control largely depends on their daily behavior (Schulman-Green et al., 2012).

Quality of life is a crucial indicator in evaluating the success of diabetes management. Quality of life encompasses physical condition, psychological well-being, social relationships, and the environment in which an individual lives (World Health Organization, 1996). Patients who struggle to manage their disease may face activity limitations, anxiety about complications, the burden of treatment, and decreased productivity (Glasgow et al., 1997; Jacobson et al., 1994).

Self-management education is an intervention that can help patients improve their knowledge, skills, motivation, and confidence in managing their disease. Education is not simply about providing information; it needs to be accompanied by skills practice, goal setting, problem-solving, and ongoing behavioral evaluation (Beck et al., 2017; Powers et al., 2020). Systematic reviews and meta-analyses have shown that self-management education and support programs can improve various clinical outcomes in patients with type 2 diabetes (Chrvala et al., 2016; Ma et al., 2026).

Although diabetes education has become an integral part of healthcare services, its implementation still faces various challenges. Some patients lack understanding of dietary management, engage in inconsistent physical activity, do not regularly monitor their blood glucose levels, or have difficulty maintaining medication adherence. Factors such as education, age, family support, economic status, and access to healthcare can also influence the success of self-management (Hermanns et al., 2015; Schulman-Green et al., 2012).

Based on these issues, self-management education needs to be provided in a structured manner and tailored to patient needs. This study aims to determine the effect of self-management education on the quality of life of patients with type 2 diabetes mellitus.

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2. Research Methods

This study used a *quasi-experimental design* with *a one-group pretest-posttest approach* . Quality of life measurements were conducted before and after self-management education to determine changes in quality of life scores in type 2 diabetes mellitus patients. The study population consisted of patients with type 2 diabetes mellitus undergoing healthcare services at primary healthcare facilities. A sample of 58 respondents was selected using *purposive sampling* .

The research instruments consisted of a questionnaire on respondent characteristics and the WHOQOL-BREF to measure quality of life. The WHOQOL-BREF covers four domains: physical health, psychological health, social relationships, and the environment. Scores are transformed onto a scale of 0–100, with higher scores indicating better quality of life (Anisah & Djuwita, 2019). Data analysis used a *paired t-test* to determine the difference in mean quality of life scores before and after the intervention. The statistical significance level was set at 0.05.

3. Results And Discussion

a. Result

Table 1. Distribution of Respondent Characteristics

Characteristics	Frequency	Percentage
Age		
35–44 years	7	12.1%
45–54 years	18	31.0%
55–64 years	21	36.2%
≥65 years	12	20.7%
Gender		
Man	24	41.4%
Woman	34	58.6%
Education		
Basic education	19	32.8%
Intermediate	29	50.0%
College	10	17.2%
Long time suffering from diabetes		
<5 years	23	39.7%
5–10 years	25	43.1%
>10 years	10	17.2%
Total	58	100%

Based on Table 1, the largest age group was 55–64 years old, with 21 respondents (36.2%). Most respondents were female, with 34 respondents (58.6%). Based on education, the secondary education group was the largest, with 29 respondents (50.0%). Most respondents had had diabetes for 5–10 years, with 25 respondents (43.1%).

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Table 2. Comparison of Mean Quality of Life Scores Before and After Education

Measurement	n	Average	Standard Deviation
Before education	58	58.7	8.6
After education	58	70.1	7.9
Score changes	58	11.4	—

According to Table 2, the average quality of life score before education was 58.7, while after education it increased to 70.1. There was an average increase of 11.4 points after respondents participated in the eight-week self-management education program.

Table 3. Results of Paired T-Test Analysis

Variables	Average Before	Average After	Average Difference	p-value
Quality of life	58.7	70.1	11.4	<0.001

The analysis results showed an increase in quality of life scores after self-management education. A p-value <0.001 indicated a statistically significant difference between pre- and post-intervention scores. Thus, in the work data of this study, self-management education showed a positive influence on the quality of life of type 2 diabetes mellitus patients.

b. Discussion

Characteristics of Type 2 Diabetes Mellitus Patients

The study found that most respondents were aged 55–64 years. Age may affect chronic disease management due to changes in physical function, mobility, and comorbidities. Patients with long-standing type 2 diabetes mellitus require adaptability and consistent self-care behaviors. Education level also influences health information comprehension; however, simple language, visual aids, demonstrations, and repetition can improve patients' understanding regardless of formal education..

The Influence of Self-Management Education on Quality of Life

The study showed an increase in the mean quality-of-life score from 58.7 to 70.1 after self-management education, indicating that structured education can improve patients' understanding of their condition and self-care abilities. Education supports diabetes management through nutritional regulation, regular physical activity, medication adherence, and blood glucose monitoring. The American Diabetes Association Professional Practice Committee (2026) emphasizes the importance of ongoing, individualized education and self-management support through goal setting, problem-solving strategies, and evaluation of health outcomes and well-being. Similarly, Ma et al. (2026) found that diabetes self-management education contributes to improved management of type 2 diabetes. Although the primary outcome of many studies is glycemic control, improved disease management skills may also contribute to better health status and quality of life).

The Role of Nutritional Regulation in Self-Management

Nutritional management is an important component of type 2 diabetes care, involving the regulation of food quantity, type, quality, and distribution rather than eliminating carbohydrates. Nutrition education helps patients manage portions, identify carbohydrate sources, increase vegetable and fiber intake, and limit added sugars.

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Realistic dietary recommendations and family support can also help patients maintain healthy eating habits (American Diabetes Association Professional Practice Committee, 2026; Davies et al., 2022; Powers et al., 2020).

Physical Activity and Improved Well-Being

Physical activity is an essential component of diabetes self-management because it improves insulin sensitivity, helps maintain body weight, enhances fitness, and supports cardiovascular health. Activities such as walking, light exercise, and strength training should be tailored to patients' abilities, clinical conditions, risk of hypoglycemia, and complications. Regular physical activity may also improve psychological well-being, energy levels, daily functioning, and self-confidence (American Diabetes Association Professional Practice Committee, 2026; Davies et al., 2022; Powers et al., 2020).

Medication Compliance and Blood Glucose Monitoring

Medication adherence is essential in diabetes management. Patients need to understand medication benefits, dosage schedules, potential side effects, and the importance of consulting healthcare professionals before changing or stopping treatment. Self-management education also helps patients understand blood glucose monitoring and its role in evaluating responses to diet, physical activity, and therapy, thereby supporting appropriate treatment adjustments and informed decision-making (American Diabetes Association Professional Practice Committee, 2026; Davies et al., 2022; Powers et al., 2020).

The Role of Stress Management and Family Support

Type 2 diabetes mellitus can cause psychological burdens, including anxiety about complications, dietary restrictions, and treatment costs. Stress management through relaxation, therapeutic communication, realistic goal setting, and social support can help patients maintain self-care behaviors. Family involvement in medication reminders, meal preparation, physical activity, and emotional support is also important. Therefore, patient-centered education should consider patients' psychosocial needs, self-confidence, experiences, and family support (American Diabetes Association Professional Practice Committee, 2026; Powers et al., 2020).

Implications for Nursing Services

Nurses play a strategic role in improving self-management among patients with type 2 diabetes mellitus as educators, counselors, facilitators, and motivators. Education should be continuous and tailored to patients' knowledge, habits, barriers, and abilities through counseling, group discussions, demonstrations, and educational media. Regular evaluation and family involvement are also essential to ensure that patients understand and apply self-care behaviors in daily life. Therefore, self-management education should be integrated into ongoing nursing care (American Diabetes Association Professional Practice Committee, 2026; Beck et al., 2017; Powers et al., 2020).

This study, using a single-group pretest-posttest design, has limitations due to the lack of a control group. Therefore, it cannot be definitively determined whether changes in quality of life scores were due to the educational intervention. Other factors such as medication changes, family support, health conditions, and patient experiences during the study may also influence the results. Measuring quality of life using questionnaires

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is subjective and can be influenced by respondents' perceptions. Future research is recommended to use a control group, a larger sample size, and a longer follow-up period to assess the sustainability of the benefits of self-management education.

4. Conclusion

Self-management education is one intervention that can help improve the ability of type 2 diabetes mellitus patients to manage their disease independently. Education covering nutrition, physical activity, medication adherence, blood glucose monitoring, complication prevention, and stress management can support improved quality of life. Based on the research data, the average quality of life score increased from 58.7 before education to 70.1 after education, with a statistical test result of $p<0.001$. These results indicate a significant difference between the measurements before and after the intervention. Self-management education programs are recommended as part of ongoing nursing services involving patients, families, nurses, and other health workers.

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