DOI: 10.53469/jcmp.2025.07(11).46

The Mediating Effect of Social Support Between Self-efficacy and Quality of Life in Young and Middle-aged Patients with T2DM

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Abstract: ***Objective:*** *To explore the mediating effect of social support on self-efficacy and quality of life in young and middle-aged T2DM patients, in order to improve their self-efficacy and quality of life.* ***Methods:*** *A total of 189 young and middle-aged T2DM patients who were hospitalized in the Department of Endocrinology, Affiliated Hospital of Youjiang Medical University for Nationalities from June 2024 to June 2025 were selected by convenience sampling. The social support scale, self-efficacy scale and concise health survey scale were used to investigate and analyze the social support level, self-efficacy level and quality of life level of young and middle-aged T2DM patients.* ***Results:*** *The total score of social support in young and middle-aged T2DM patients was (44.05±6.16), the total score of self-efficacy was (30.79±2.60), and the total score of quality of life was (75.21±6.25). Social support was positively correlated with self-efficacy (r =0.410, P<0.001), social support was positively correlated with quality of life (r =0.368, P< 0.001), and self-efficacy was positively correlated with quality of life (r=0.445, P <0.01). Social support played a partial mediating role between self-efficacy and quality of life in T2DM patients, and the mediating effect accounted for 25.07 % of the total effect.* ***Conclusion:*** *There is a positive correlation between social support, self-efficacy and quality of life in young patients with T2DM. Social support not only directly improves the quality of life, but also plays a partial mediating role by enhancing self-efficacy, and the mediating effect is significant.*

Keywords: Type 2 diabetes, Young and middle-aged, Social support, Mediating effect.

1. Introduction

Diabetes mellitus (DM) is a common chronic metabolic disease, and its incidence is increasing year by year. It is estimated that by 2030, the number of patients with type 2 diabetes will reach 439 million worldwide, of which type 2 diabetes mellitus (T2DM) is more common, which seriously affects the quality of life of patients [1,2]. T2DM not only requires long-term drug treatment, but also relies on strict self-management of patients in terms of diet, exercise, and blood glucose monitoring. In this process, the patient's self-efficacy is a factor affecting the patient's self-management effectiveness [3]. The existing research mostly explores the relationship between social support, self-efficacy and quality of life [4, 5]. Good social support can directly improve the quality of life of patients, but also can effectively improve their self-efficacy level. However, the internal mechanism of social support, self-efficacy and quality of life is not yet in-depth. As the backbone of society, young and middle-aged groups are facing the dual pressures of work and family, and their diabetes self-management problems are more prominent [6]. Therefore, exploring the mechanism of social support in the relationship between self-efficacy and quality of life in young and middle-aged T2DM is of great significance for formulating more targeted nursing intervention strategies. The purpose of this study was to explore the mediating effect of social support between self-efficacy and quality of life in young and middle-aged T2DM patients, in order to provide an empirical basis for improving the health management level of this population.

2. Data and Methods

2.1 General Information

Convenience sampling method was used to select 189 young and middle-aged T2DM patients who were hospitalized in the Department of Endocrinology, Affiliated Hospital of Youjiang Medical University for Nationalities from June 2024 to June 2025 as the research objects. Inclusion criteria: 1) in line with the World Health Organization (1999) recommended diagnostic criteria for T2DM [7]; 2) aged from 18 to 59 years old; 3) course of disease≥1 year; 4) clear consciousness, with basic reading, understanding and communication skills; 5) Informed consent and voluntary participation in this study. Exclusion criteria: 1) with severe acute complications of diabetes, such as diabetic ketoacidosis, hyperosmolar hyperglycemia; 2) patients with severe chronic complications or severe cardiovascular and cerebrovascular diseases; 3) with severe mental disorders or cognitive dysfunction, unable to cooperate with the completion of the questionnaire; 4) combined with malignant tumors or other serious wasting diseases; 5) is participating in other clinical intervention researchers.

2.2 Research Tools

(1) General information questionnaire

The study was designed by the researchers after reviewing the literature, including age, gender, marital status, education level, monthly income, place of residence, diabetes complications, and family history of diabetes.

(2) Social Support Rating Scale

The scale was designed by Chinese scholar Xiao Shuiyuan [8]. The scale consists of three dimensions: objective support (3 items), subjective support (4 items) and utilization of social support (3 items). The total score of the scale was 12-64 points, and the higher the score, the higher the level of social support. The total score of 45 points is high. The higher the score, the higher the patient 's social support. The Cronbach α coefficient of the scale was 0.89-0.94.

(3) General self-efficacy scale

The Chinese version of the self-efficacy scale [9] was used for measurement. The scale had 10 items, each item had 4 options, and the Likert4 score was used. The total score was 10-40 points. The higher the score, the better the patient's self-efficacy. The Cronbach α coefficient of the scale was 0.940.

(4) MOS 36-ItemShort-Form Health Survey

MOS 36-ItemShort-Form Health Survey scale [10] was used to evaluate the quality of life of patients. The scale includes 8 dimensions: physiological function, physiological function, body pain, general health status, vitality, social function, emotional function and mental health, with a total of 36 items. The score is 0-100 points. The higher the score, the better the quality of life of the patients. The Cronbach α coefficient of each dimension of the scale was 0.72-0.88.

2.3 Methods of Data Collection

After unified training, the members of the research team conducted a questionnaire survey on diabetic patients hospitalized in the Department of Endocrinology, Affiliated Hospital of Youjiang Medical University for Nationalities, using paper questionnaires and electronic questionnaires. On the premise that the patient voluntarily agreed to the survey, the confidentiality measures were informed, and the questionnaire was filled out anonymously. A total of 200 questionnaires were distributed. A total of 11 questionnaires were excluded, such as too short filling time, the answer was the same option and incomplete filling. The effective questionnaire was 189, and the effective recovery rate was 94.5 %.

2.4 Statistical Methods

SPSS 25.0 and AMOS 26.0 were used for data analysis. The measurement data were expressed as mean ± standard deviation and the count data were expressed as frequency and composition ratio. Hierarchical linear regression model was used to analyze the mediating effect of social support between self-efficacy and quality of life. When P<0.05, the difference was statistically significant.

3. Results

3.1 General Information of Diabetic Patients

Among 189 patients with diabetes, 101 were female and 88 were male. The age was 29-55 (44.24±8.09) years old. There were 89 cases of junior high school and below, 86 cases of high school and technical secondary school, and 14 cases of junior college and above. There were 95 cases from rural areas, 40 cases from urban areas and 54 cases from urban areas. Monthly income of 5000 yuan 44 cases; the course of diabetes was 10 years in 19 cases; hypoglycemic methods were oral drugs in 81 cases, insulin therapy in 72 cases, oral drugs plus insulin in 43 cases.

3.1 Social Support, Self-efficacy and Quality of Life Scores of Young and Middle-aged Patients with T2DM

The results showed that the total score of social support in young T2 DM patients was (44.05±6.16) points, the total score of self-efficacy was (30.79±2.60) points, and the score of quality of life was (75.21±6.25) points, as shown in Table 1.

Table 1: The scores of social support, self-efficacy and quality of life in patients with T2DM

scale	Score range	game
social support	31~56	44.02±6.11
self-efficacy	22~38	30.79±2.60
quality of life	66~87	76.44±5.15

3.2 Correlation Analysis of Social Support, Self-efficacy and Quality of Life in Young and Middle-aged Patients with T2DM

Pearson correlation analysis showed that social support was positively correlated with self-efficacy (r=0.410, P<0.001), social support was positively correlated with quality of life (r = 0.368, P<0.001), and self-efficacy was positively correlated with quality of life (r=0.445, P<0.01) in young and middle-aged T2DM patients, as shown in table 2.

Table 2: Correlation analysis of social support, self-efficacy and quality of life in young and middle-aged patients with T2DM

scale	social support	self-efficacy	quality of life
social support	1	0.410[a]	0.368[a]
self-efficacy	0.410[a]	1	0.445[a]
quality of life	0.368[a]	0.445[a]	1

Note: a is P < 0.001.

3.3 The Mediating Effect of Social Support Between Self-efficacy and Quality of Life in Young and Middle-aged Patients with T2DM

Social support was used as the dependent variable, self-efficacy as the independent variable, and quality of life as the mediating variable. Through Bootstrap sampling 5000 times, the mediating effect test results showed that the indirect effect was 0.10, the direct effect was 0.307, the total effect was 0.410, and the mediating effect accounted for 25.07 % of the total effect. The mediating effect model is shown in Figure 1.

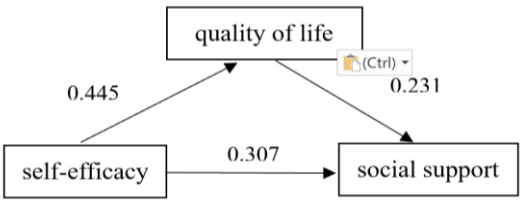

Figure 1: The mediating effect model path of social support between self-efficacy and quality of life

4. Discussion

4.1 Analysis of Social Support, Self-efficacy and Quality of Life in Young and Middle-aged T2DM Patients

The results of this study on 189 young and middle-aged T2DM patients showed that the social support, self-efficacy and quality of life of this group were generally at a medium level, which was basically consistent with the conclusions of many domestic studies [11-13], and there was still a large room for improvement. The total score of social support in

young and middle-aged patients with T2DM was (44.05±6.16), indicating that patients could obtain certain social support, but some patients still felt insufficient support, especially under the dual pressure of work and family, the support from friends and colleagues was relatively limited. In terms of self-efficacy, the average score of self-efficacy scale for young and middle-aged T2DM patients was (30.79±2.60) points, which reflected that when patients faced specific self-management tasks such as diet control, regular exercise and blood glucose monitoring, their confidence was not stable, and they were easily shaken by external interference or poor short-term effects. The comprehensive score of quality of life was (75.21±6.25), among which the score of physiological function dimension was relatively high, while the scores of mental health, social function and energy dimension were low, suggesting that the disease and its management burden had a significant negative impact on the psychological state and social participation of patients. In summary, young and middle-aged T2DM patients face multiple challenges in disease management, such as insufficient self-efficacy, insufficient social support, and impaired quality of life. Targeted interventions are urgently needed to improve their health status.

4.2 Correlation Analysis of Social Support, Self-efficacy and Quality of Life in Young and Middle-aged Patients with T2DM

The results of this study showed that there was a significant positive correlation between social support, self-efficacy and quality of life in young and middle-aged patients with T2DM. This is consistent with the research results of Zhang Nuwen et al. [14] on elderly patients with vascular dementia, which confirms the core value of social support in the management of chronic diseases. The research results of Tan Tingna et al. [15] on patients with nasopharyngeal carcinoma after radiotherapy also show that patients' self-management efficacy and social support can affect the quality of life of patients. Social support can not only directly improve the quality of life of patients, but also indirectly improve the quality of life by enhancing their self-efficacy. Social support provides patients with emotional comfort, information guidance and material assistance, which effectively alleviates the anxiety and loneliness caused by the disease, thus directly improving the quality of life of their psychological dimension. At the same time, the encouragement and affirmation from family, friends and medical team can significantly enhance the confidence and ability of patients to manage diseases, that is, to enhance their self-efficacy. The object of this study is the young and middle-aged group. Patients in this age group face multiple pressures from work, family and disease management. The construction mechanism of their social support network and self-efficacy may be unique. Future research can further explore the specific influence path of social support from different sources on self-efficacy and quality of life, and provide empirical basis for formulating more targeted intervention strategies, so as to construct a virtuous cycle model of social support-self-efficacy-health behavior-quality of life.

4.3 Social Support Plays a Partial Mediating Role Between Self-efficacy and Quality of Life in Young and Middle-aged Patients with T2DM

Through the chain mediation model, this study deeply explored the mechanism of social support in the relationship between self-efficacy and quality of life in young and middle-aged T2DM patients. The results confirmed that social support played an important part of the mediating role. Social support played a partial mediating role between self-efficacy and quality of life, and the mediating effect accounted for 25.07 %. This result reveals that social support is not only a direct booster of quality of life, but also a catalyst for improving self-efficacy as an internal driving force. This finding is similar to the conclusion of Wang Jing et al. [16] on T2 DM patients, and their research also emphasizes the conduction effect of social support between psychological factors and health outcomes. The study of Banik et al. [17] confirmed that social support is the key driving force to stimulate and consolidate the process of self-efficacy. It can have an indirect positive effect on the quality of life through self-efficacy. Previous studies have also shown that self-efficacy, as an internal positive protective factor, interacts with social support as an external protective factor to work together to improve the quality of life of patients [18]. The reason may be due to the positive interaction between self-efficacy and social support. Patients with high self-efficacy are more active and better at building and using their own social support networks. They believe that they can handle their relationships well, so they are more willing to ask others for help and gain strength from others' help. On the contrary, patients with low self-efficacy may choose to close themselves because of inferiority or fear of rejection. Even if there are support resources around them, they cannot be effectively used. In clinical nursing practice, intervention measures should not only be limited to improving patients' self-management ability, but also should work together to build and strengthen their social support system. By encouraging patients to actively communicate, promoting family participation, and linking community resources, we can break the vicious circle of low self-efficacy and insufficient social support, thus forming a benign interaction model of enhancing self-efficacy-expanding social support-improving quality of life, and providing a more operational practical path for the comprehensive management of young and middle-aged T2DM patients.

In summary, social support plays a partial mediating role between self-efficacy and quality of life in young and middle-aged T2DM patients. Social support can not only directly improve the quality of life of patients, but also indirectly improve health outcomes by enhancing their self-efficacy. Therefore, clinical interventions should focus on building a multi-dimensional social support system as a core strategy to stimulate patients' self-management potential and comprehensively improve their quality of life.

Fund Source

Baise Scientific Research and Technology Development Plan Self-raised Funds Project (20222926).

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