



New Advances in Diabetes Care Group Education Research

Ling Zhang ^{a†}, HongMei Liu ^{b#}, Jing Zhang ^{a*‡} and Qian Niu ^{c‡}

^a Department of Nursing, Changzhi Medical College, China.

^b Shaanxi Provincial People's Hospital, China.

^c Shaanxi Provincial People's Hospital, Shaanxi University of Traditional Chinese Medicine, China.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IJTDH/2022/v43i1530646

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/90258>

Original Research Article

Received 22 June 2022
Accepted 05 August 2022
Published 10 August 2022

ABSTRACT

Objective: This study aims to evaluate the effectiveness of health education in diabetes.

Methods: This study investigated 40 diabetic patients treated in a tertiary A hospital from February 2022 to May 2022 through convenient nearby sampling. Eligible patients were evaluated by the general basic information questionnaire, diabetes self-behavior management scale through the number of lectures.

Results: Through the questionnaire survey, it was found that the average self-behavior management score of patients who have been in diabetes care group was 63.3, which was much higher than the 41.3 points for patients without group education. And patients participating in diabetes group education scored higher than those who did not participate in group education in terms of diet, exercise, and foot care.

Conclusion: Group education can improve the self-behavior management ability of diabetic patients.

[†] Class 1806;

[#] Associate Senior Nurse;

[‡] Associate Professor;

[‡] Director of Junior Nurse, Master Tutor;

*Corresponding author: Email: taxitidao@163.com;

Keywords: Diabetes; group education; effect evaluation; nursing.

1. INTRODUCTION

Diabetes mellitus is a common chronic metabolic disease, [1], which is characterized by hyperglycemia and its incidence increases year by year, affecting the quality of life of patients [2] to varying degrees. Studies have shown that in the past 40 years, with the aging of population and lifestyle changes in China, the prevalence of diabetes and the incidence of complications are increasing year by year [3], and the prevalence of diabetes has soared from 0.67% in 1980 to 10.4% in 2013 [4]. In the epidemiological evolution of type 2 diabetes in China for more than 30 years, the probability of diabetes among adults in China has increased significantly, and patients with diabetes and impaired glucose tolerance have accounted for 3.2% and 4.8% [5] of the total population over 20 years old, respectively. Diabetes in China is mostly based on type 2 diabetes, and type 1 diabetes, gestational diabetes and other special types of diabetes are less common. Psychological, social, and family factors play a pivotal role in the onset of diabetes and glycemic control [6].

The International Diabetes Alliance estimates that the number of diabetes patients worldwide will reach nearly 550 million by 2030, and diabetes prevention and treatment has become a worldwide public health issue. Foreign studies have shown that interventions, such as health education, strict lifestyle control, can reduce the risk of onset of type 2 diabetes by up to 58%. At present, the self-management ability of type 2 diabetes patients in China is not strong, but it has gradually improved with the great help of society.

Group education is of great significance for diabetics. The International Diabetes Alliance proposes five principles for the comprehensive treatment of diabetes, namely diabetes education, diet therapy, exercise therapy, drug therapy, and self-blood glucose monitoring, of which diabetes education is the key [7]. Diabetes health education is an important basic management measure of diabetes. And effective self-management has proved to be one of the best models of behavioral intervention in diabetes, [8]. The application of nursing mode of health education group is of great significance for integrating medical resources, promoting nurse-patient communication, strengthening patients' self-management ability and improving patients' quality of life. [9]. Group education members with

the same or similar abilities are divided into several groups according to the degree of knowledge acceptance and targeted educational activities are carried out, which can improve the ability of patients' self-support and mutual supervision [10].

Therefore, it is very important to conduct group health education for diabetic patients, to increase the understanding of their own diseases, to improve treatment compliance, and to master self-behavior management. This study investigated 40 diabetes patients, grouped and questionnaire eligible patients through the number of lectures. The diabetes self-behavior management scale was used as the main body to score and analyze the obtained data. For diabetes group education, the adherence to diet, exercise, psychology, medications and self-therapy of patients were analyzed and discussed.

2. DATA AND METHODS

2.1 General Information

From February to May 2022, 40 patients, who were treated in the Diabetes Department of Endocrinology of Shaanxi Provincial People's Hospital, were selected for the questionnaire survey. Study inclusion criteria: ① patients who met the 1999 WHO diagnostic criteria for type 2 diabetes; ② patients who had normal thinking and verbal communication skills; ③ patients who has been informed and participated in this investigation voluntarily; ④ patients who have had diabetes for six years or more. Exclusion criteria: ① patients whose relevant information is incomplete or not filled in as required; ② patients with intellectual disabilities or visual impairment; ③ patients who do not have the ability to think independently.

The obtained samples were divided into control group and experimental group according to the number of times they participated in the diabetes group education. 20 cases in the control group and 20 cases in the experimental group completed the survey. Among them, they were 11 males and 9 females in the control group, with an average age (59.55 ± 10.52) years old. There were 10 males and 10 females, with an average age (60.80 ± 9.09) years old. The difference was not statistically significant about the gender of the

two groups and comparison of the review ($P > 0.05$), which can be analyzed and studied.

2.2 Health Education Content Materials

2.2.1 Basic education on diabetes

The etiology and pathogenesis of diabetes are extremely complex, and there is no thorough radical cure. Diabetic patients are most diagnosed with hyperglycemia during physical examination. As the course of the disease progresses, there are various acute and chronic complications, and the autoimmune immunity of the patients with diabetes is much lower than that of normal people. The initial clinical manifestations of diabetes are polydipsia, polyuria, more eating and weight loss (three more and one less). Diabetic patients can improve the quality of life by controlling blood sugar and controlling their own behavior and diet, and can also reduce or delay the occurrence and development of complications. Systematic group health education of diabetic patients can improve their understanding of their own diseases, and then achieve the purpose of better control.

2.2.2 Diabetes diet treatment

Diet treatment is the basis of all diabetes treatment and is an integral part of the prevention and control means at any stage in the course of diabetes. Poor eating habits can have an associated increased risk of cardiovascular disease, such as hypertension, dyslipidemia, and obesity. Patients' mastery of appropriate basic dietary knowledge can achieve the purpose of providing reasonable nutritional choices, achieving and maintaining ideal body weight, maintaining blood sugar and blood lipid levels, and maintaining reasonable control of heat energy and maintaining standard body weight to reduce the likelihood of complications.

2.2.3 Diabetes mental health education

Diabetes mellitus is a lifelong disease, and there is no radical cure at present. A proportion of patients may be troubled with losing enthusiasm for life or worrying about anxiety for lifelong medication or insulin injections. Through appropriate psychological counseling for patients and other patients in the group, group education can enhance patients' enthusiasm and yearning for life and establish confidence in disease control. Good mental state is also one of the factors that affect blood glucose control.

2.2.4 Diabetes sports education

Appropriate mild exercise can reduce the incidence of diabetes, improve the metabolic indicators of sick patients, improve insulin sensitivity, higher control of the stability of blood glucose and lipid metabolism disorders, and achieve to reduce the incidence of complications [11].

2.2.5 Diabetes blood glucose control education

The blood glucose change of diabetic patients is not constant in a day. The normal fasting blood glucose should be controlled within 6.1 mmol / L, and the blood glucose level is affected by diet, mood, exercise and drugs. Group health education promotes the self-control of their blood glucose by teaching the dangers of hypoglycemia, the benefits of self-measuring blood glucose, and the factors that cause blood glucose fluctuations.

2.2.6 Diabetic foot management education

Group health education should guide patients to change their shoes and socks frequently, wash the foot once a day and the water temperature is maintained at 37-40°C. Therefore, before washing feet you can use elbow or ask a family member to test the water temperature. Besides, foot soaking time should be controlled within 10 minutes, and finally dry with a light soft towel, and the focus is on the water droplets between the toes that are not easy to be dried. When cleaning the foot, check the foot at the same time, whether there is sensory loss, numbness, tingling, whether redness and swelling occur. Patients should pay attention to mosquito bites in summer, and frostbite in winter. Do not walk barefoot in uneven places, when going out you should choose light and soft, breathable shoes and socks. The best time to buy shoes is in the afternoon, and the first time to wear new shoes should not be too long (within half an hour is appropriate), and then you can increase the length of time little by little. Before wearing shoes, the interior of the shoes should be checked for foreign bodies and unevenness, and if there is any discomfort, even if it is handled.

2.3 Methods

2.3.1 Educational method

The control group participated in the group education was taught by specialized diabetes nurses (30 minutes each time 3 times a week).

The teaching content refers to the Guidelines for the Prevention and Treatment of Type 2 Diabetes in China, which is roughly an overview of diabetes, diet treatment, exercise treatment, self-detection of blood glucose, and prevention and treatment of complications. At the same time, ensure that the patients who participate in the group education are present every time to learn.

2.3.2 Data collection method

Eligible patients were surveyed in general questionnaire (self-designed), including gender, age, medical history, health care, Toobert diabetes self- behavior management scale (Summary of Diabetes Self-Care Activities, SDSCA), covering general information, dietary control, blood glucose control, exercise control, medication compliance, foot management control and other aspects.

2.3.3 Data analysis method

The data in this study were analyzed and processed using the statistical software SPSS.

3. RESULTS

3.1 Comparison of Self-Behavioral Management Scale Scores in the Two Groups of Patients with Diabetic Disease

Using t test to study the differences in the number of participants in group education, the

self-behavior management scale of diabetic patients can be seen from the table below: samples of different numbers of group education participated in the scale showed significant difference for the total score of the scale ($p < 0.05$), suggesting that the average of those had never participated in group education(41.30) would be significantly lower than the average of those who had participated in group education (63.30).

3.2 Comparison of Dietary Control between the Two Groups

A total of 4 differences in dietary control content were studied using the t-test, all of which showed significant differences ($P < 0.01$).

The data indicated that diabetic patients who have participated in education would pay attention to their diet control, and the number of days to eat according to diabetes diet requirements is much greater than that of patients who did not participate in diabetes group education. Patients who participated in the group education paid more attention to the types of vegetables and fruits in their daily diet, and the number of days consuming greasy food or whole fat dairy products was also significantly lower than that of the control group.

It is suggested that the diet of the experimental group was better than the control group in terms of required diet, intake of fruits and vegetables and greasy food.



Fig. 1. Comparison of the scores on the self-behavioral management scale

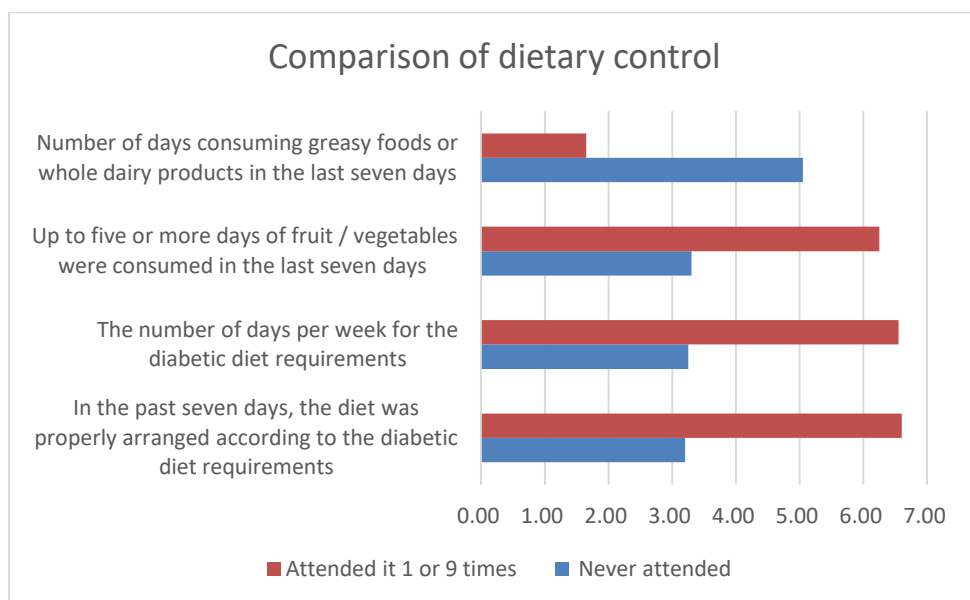


Fig. 2. Comparison of dietary control

3.3 Comparison of Motor Control in two Groups of Patients

The difference in the number of participants in group education for the two items in the study can be seen from the following table. Samples of different numbers of participants in group education showed significant difference in both of the following situations ($p < 0.05$): 1. In the past seven days, Exercises that last longer than 30 minutes have been performed in the past seven days (including walking); 2. all moderate intensity

activities have been performed in the last seven days (including brisk walking, swimming, cycling, etc.), meaning that both problems were different. Studies have proved that the experimental group is more inclined to do moderate exercise suitable for their own situation (such as walking, etc.), while the control group prefers to do moderate-intensity exercise. Exercise should follow moderate, regular and individualized exercise principle, while inappropriate exercise may cause damage.

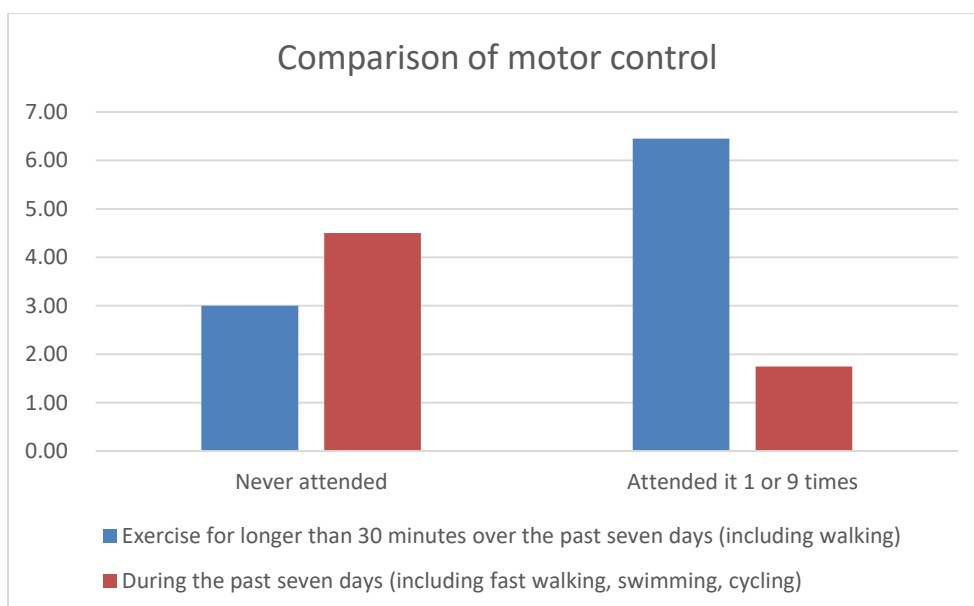


Fig. 3. Comparison of motor control

3.4 Comparison of Glycemic Control between the Two Groups

For 1. In the past seven days, the number of days of blood glucose monitoring was conducted. 2. In the past seven days, the number of blood glucose monitoring days suitable for their own condition was completed, and they all showed significant differences. The number of days of glucose monitoring in the experimental group and the number of days of completing glucose monitoring suitable for their own condition were higher than those in the control

group. Possible problems were analyzed in the control group: ① Patients have not yet understood the importance of blood glucose monitoring; ② Patients do not specify the number of blood glucose monitoring suitable for their own condition.

3.5 Foot Management and Control Comparison

For patients participating in group education, samples carefully checked their feet for problems. In the past seven days, the inspection

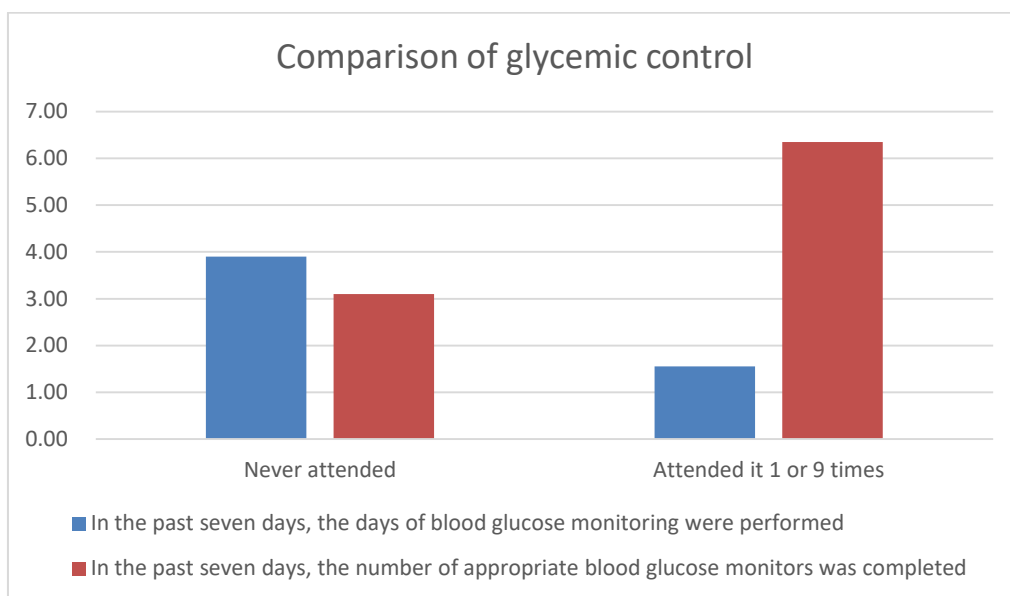


Fig. 4. Comparison of glycemic control

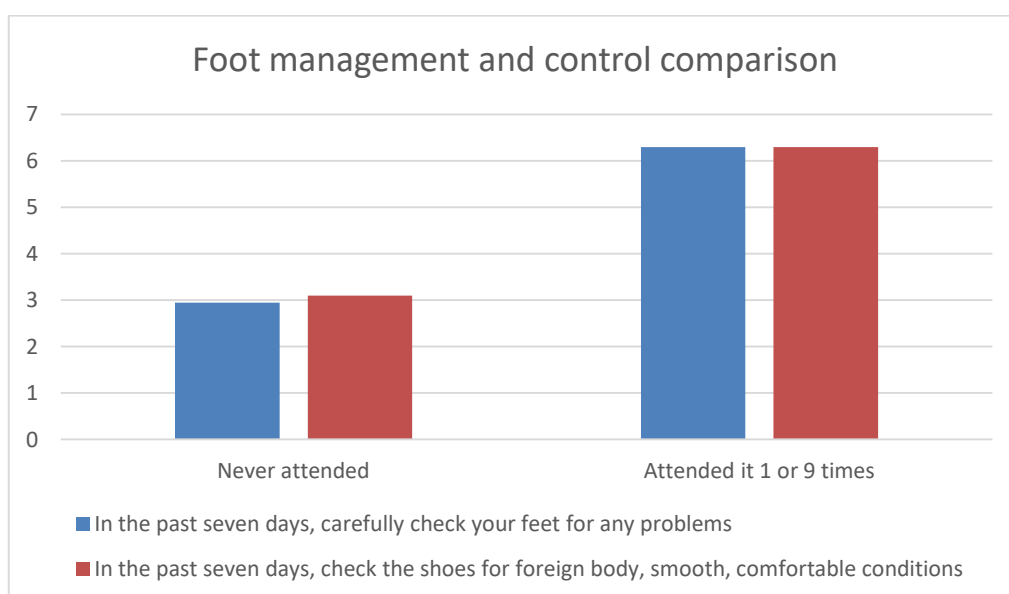


Fig. 5. Foot management and control comparison

of the shoes for foreign bodies, smooth, comfortable days, all showed significant differences. Foot management in the control group lagged far behind the management of the experimental group, and the negligence of foot management might have many potential risk factors of diabetic foot.

3.6 Medication Adherence Comparison

The number of days with correct medication or insulin injections in the past seven days showed significant differences (see Table 1). Patients in the control group had much fewer days of regular medication or insulin injections than those in the experimental group. Poor medication adherence was not conducive to blood glucose control.

4. DISCUSSION

Diabetes is a common and frequently-occurring disease in China, especially [12] in middle-aged and elderly patients. Its onset is closely related to the poor living habits of patients, which seriously affects the quality of their life. At present, there is no clinical cure for diabetes. Patients need lifelong hypoglycemic drugs or insulin injections to control blood glucose and prevent other complications [13]. As one of the emerging health education models, the diabetes group health education model mainly focuses on the needs of patients, and the professional knowledge and information are provided by diabetes nurse.

At present, the medical service in China is developing continuously, and group education is also being valued by people. This study demonstrates the influence of organized group education on patients' self-behavior. In the process of diabetes treatment, medical staff should pay more attention to diabetes health education, patiently and carefully teach patients' knowledge about their own diseases, guide patients to develop healthy living habits and schedules, and improve the efficiency of group

education. Group education can be explained [14] in detail to patients through PPT teaching, group discussion, practical operation and experience exchange, etc.

After this small-scale research and investigation, it could be determined that through diabetes group education, patients could be promoted to correct poor living habits, which was of great importance for disease control. Patients who received group health education were more likely to adhere to diet, exercise, psychology, medication, and self-therapy than those who did not receive group education. Improving treatment compliance is a prerequisite for improving glycemic control, preventing or delaying the onset of diabetic complications [15].

For patients who have not yet received group education, their knowledge on all aspects was lower than that of those who have received group education. Healthcare workers should actively conduct health education for such patients.

In addition, there are still many advantages and disadvantages of diabetes group education. Advantages: ① knowledge: group education can systematically improve patients' understanding of their diseases, help to enhance patients' life enthusiasm and their behavior control; ② interest: group education can be conducted in various ways to avoid the boredom of traditional health education books; ③ integrate medical resources: group education can better save health resources and reduce labor loss; ④ sense of belonging: patients with similar medical conditions are taught in groups and group members share and communicate with each other, which can increase patients' sense of belonging. Disadvantages: group health education for social phobia people in an unfamiliar group may lead to anxiety and other emotions. Group education is a small group activity, which is not conducive to the prevention of current COVID-19 epidemic, and there are potential risk factors.

Table 1. Medication adherence comparison

	Number of times to attend the group education		<i>t</i>	<i>p</i>
	control group	experimental group		
The number of days of correct medication or insulin injections in the past seven days?	4.15±2.11	6.65±0.67	5.05	<0.01

5. CONCLUSION

In today's era, it is very common for all kinds of teaching to carry out group teaching, and its teaching effect has been affirmed in clinical practice. Diabetes group education is based on this approach. The number of diabetes patients in China is increasing day by day, and the incidence of complications of patients is also increasing year by year. It is urgent to strengthen the health education for diabetic patients. As an emerging education method, effect evaluation of diabetes group health education is still unknown. According to the results of this study, the use of group education can improve the knowledge level and self-management ability of diabetic patients.

The health education group is conducive to improving the self-behavior management ability of diabetes patients, thereby controlling blood glucose levels, reducing the occurrence of complications, and helping to improve the quality of life of patients.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Yuan Hongdi, Xu Yulan, Yuan Aiqin, Diabetes Education Group Establishment and Effect Discussion [J]. Chinese Journal of Nursing. 2009,44 (01):67-68.
2. Chen Xingqiong, Hu Fengqiong, Huang Lchan, Self-management Group: The influence of Health Education Model on the Quality of Life of Elderly Patients with Type 2 Diabetes in the Community [J]. Clinical Medical Engineering. 2020;27(03):369-370.
3. Tian Hua, Research Progress in Self-management Behavior of Community Patients with Type 2 Diabetes, [J] Journal of Community Medicine. 2016;22(14).
4. Association Diabetes Branch. Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes (2017 edition) Chinese Journal of Practical Internal Medicine. 2018;38(4).l
5. Zhu Yinyan, Zhu Yingwei, Research Status of Diabetes Health Education, [J] China Health Education. December 2006;22(12).
6. Analysis of the Linear Pattern of Chess Structure by Chen Guanmin, Zhang Juying, Ni Zongyou and Risk Factors for Type 1 Diabetes [J]. China's Health Statistics. 1998;15(2):153-157
7. Lu Zaiying, Zhong Nanshan, Internal Medicine [M]. Version 7. Beijing: People's Health Press. 2010;778- 780.
8. Gao Chenchen and Health Information Behavior of Diabetic Patients: A Rooted Theoretical Study [D] Shanghai. The Second Military Medical University; 2017.
9. Lin Zhihua, Wu Qingxiu, Wu Sumei, Application of Diabetes Health Education Group in Clinical Nursing of Diabetes Patients, [J] Chinese and Foreign Medical Research. 2017;15(11). DOI: 10.14033/j.cnki.cfmr. 2017.11.044
10. Yang Liqin, Gong Yan, Zhang Xia, Status and Progress of Health Education for Diabetes Patients in China, [J] Qilu Nursing Journal. February 2015;21:3. DOI: 10.3969/j.issn.1006-7256.2015.03.021
11. Feng Suwen, Chunyan Zhao, Xu Fanglei, Research Progress in the Evaluation Indicators of Exercise Management in Diabetes Patients, [J], Chinese Journal of Nursing. 2021;56(11).
12. Wang Lin, The Effect of Forming Diabetes Nursing Group in Specialized Health Education Among Diabetes Patients [J]. Practical Electronic Journal of Gynecologic Endocrinology, 2020,7(07):153+157. DOI: 10.16484/j.cnki.issn2095-8803.2020.07.099
13. Wang Yanhua. The Role of Diabetes Care Groups in Clinical Care of Diabetic tics [J]. Medical Aesthetics (journal). 2015;3:351-351,352.
14. Li Xinxin, Liu Caifeng. Effects of Small-group Health Education Implementation in the Care of Elderly Patients with Diabetes [J]. Chinese Practical Medicine. 2015; 10(02):221-222.

- DOI: 10.14163/j.cnki.11-5547/r. 2015.02. 161 Effect on the Quality of Life of Diabetes Patients. Qilu Journal of Nursing. 2007; 13(17).
15. Liu Xia, Liu Shengfang, Liu Huiying, Nursing Intervention Evaluation of the

© 2022 Zhang et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/90258>