Original Article
Clinical value of a whole-course health education model in diabetes care management

Honglun Wu[1], Wenwei Xu[2], Haiyan Wang[1], Mingxia Yu[1], Li Wang[1]

[1]Department of Cardiology Unit 1, Huiqiao Medical Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong Province, China; [2]Department of Endocrinology, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong Province, China

Abstract: Objective: To analyze the clinical value of the whole-course health education model in diabetes care management. Methods: Diabetic patients (n=80) who were admitted to our hospital were selected for a retrospective study. They were divided into the observation group (whole-course health education model, n=40) and the control group (routine nursing model, n=40) depending on the different nursing models given during hypoglycemic treatment. Nursing compliance and incidence of adverse reactions between the two groups were compared. The effect of blood sugar control, quality of life after the intervention, and patient's satisfaction with nursing work were assessed. Results: The blood glucose level of the observation group after nursing was lower than that of the control group (P<0.05). The nursing compliance in the observation group (97.50%) was significantly better than that in the control group (80.00%) during the nursing process (P<0.05). The observation group had higher patient's satisfaction with nursing work (92.50% vs. 75.00%) and quality of life than the control group (both P<0.05). There was a lower incidence of adverse reactions in the observation group than the control group (2.50% vs. 15.00%, P<0.05). Conclusion: The whole-course health education model is effective in diabetes care management. It can help patients establish a healthy lifestyle, and control related indicators, and as such is worth promoting.

Keywords: Whole-course health education model, diabetes care management, clinical value

Introduction

With the changes of living standards and living environment in China, recent years have witnessed a peak in incidence of diabetes, a very common metabolic disease [1, 2]. Although diabetes itself does not directly affect the health of the human body, it is usually accompanied by multiple complications with disease duration, and in severe cases it directly affects human health [3, 4]. At this stage, clinical care in China cannot meet the needs of a growing number of diabetic patients, so in-depth research on a better nursing work is needed. As a novel nursing model in China, the whole-course health education model has gained a wider application recently due to its obvious advantages. It can significantly improve the physical and psychological conditions of patients to the greatest extent, thereby increasing the quality of rehabilitation [5, 6]. This article aimed to explore the clinical value of applying a whole-course health education model in the nursing management of diabetic patients, in order to provide a theoretical basis for improved clinical nursing.

Materials and methods

Patients

Diabetic patients (n=80) admitted to our hospital from May 2019 to May 2020 were selected for a retrospective study. They were divided into the observation group (whole-course health education model, n=40) and the control group (routine nursing model, n=40) depending on the different nursing models given during the hypoglycemic treatment.

Inclusion criteria: (1) Patients aged no less than 18 years and less than 70 years old; (2) Patients were diagnosed with type 2 diabetes bassed on the Standards of Medical Care in Diabetes

2010 by American Diabetes Association (ADA) [7].

Exclusion criteria: (1) Patients had acute complications of secondary diabetes, such as ketoacidosis, hyperosmolar coma, etc.; (2) Patients had various infections without control; (3) Patients were accompanied by various malignant tumors, with moderate to severe cardiovascular and cerebrovascular diseases, etc.; (4) Patients were participating in other research.

Patients in both groups received nursing care and intervention from admission to discharge. Relevant data was collected in June 2020. This study was approved by the Medical Ethics Committee of our hospital. Written informed consent form was obtained from all patients and their families.

Methods

Patients in both groups were given a strict diet and exercise guidance. They were treated with acarbose tablets (Bayer Healthcare Ltd., Germany) with an initial dosage of 50 mg for 3 times/d. The dosage was adjusted according to changes of blood glucose level, which can be increased to 100 mg/time.

Patients in the control group received routine care. A good rehabilitation environment was created. Patient's indicators were monitored closely, such as blood glucose, blood pressure, infection status, etc. Brochures were distributed to patients and psychological counseling was conducted regularly, to help patients reduce psychological barriers and negative emotions for this disease, and make patients more comfortable [8].

Patients in the observation group were given a whole-course health education model, and conditions were observed in real time.

Nursing staff actively and kindly communicated with patients in an easy way, then observed their symptoms, and actively got to know their feelings in the course of treatment. Thus, nursing staff became familiar with the patient's knowledge of diabetes and self-care skills, on this basis provide better care for patients.

On the basis of the previous steps, a preliminary nursing plan should be worked out. In the implementation process, nursing staff communicated with patients and their families in a timely manner, they revised and improved the nursing plan. Due to their own illness or family situations, many patients had a negative mood, in this case nursing staff communicated with patients more, to minimize their negative psychology of.

Nursing staff designed the diet reasonably according to the patient's treatment and their own actual conditions, strictly controlled the dietary indicators, and meanwhile helped them get good sleep. It encouraged that patients go to bed and get up early so that they can recover as soon as possible. In the process of communication, nursing staff actively asked for their feedback during the treatment, so as to find out any deficiencies, and better formulate and improve the relevant treatment plan. In addition, patients were informed of previous cases of successful treatment. Medical experts were also hired to carry out rehabilitation guidance. In order to ensure adequate nutrition and sleep for patients, their daily diet, work and rest were reasonably arranged, to help them control their blood glucose level and reduce complications [9].

After patients were discharged from the hospital, a WeChat patient group about functional recovery was established. Patients set up a self-health management team, communicated with each other and discussed their recovery. Medical staff carried out offline peer education and special lectures via WeChat, in which they explained to patients about treatment and medical information, systematically answered patients' questions, encouraged patients to exercise, helped patients control relevant biological indicators, and reduce complications.

Outcome

Before and after nursing, venous blood (3 mL) was drawn from patient to test their fasting blood glucose and 2 h postprandial blood glucose, in both groups in the morning. A Hitachi 7600-020 automatic biochemical analyzer (Hitachi, Japan) was adopted. The kit used was purchased from Shanghai Zhicheng Biotechnology Co., Ltd.

A self-designed compliance evaluation scale survey was adopted. The Cronbach's alpha coefficient was 0.93, Spearman-Brown formula coefficient was 0.85. This survey recorded 5

Table 1. Comparison of the general data ($\bar{x} \pm sd$)

Group	Gender (male/female)	Age (year)	Course of disease (year)	BMI (kg/m^2)	Complication	
					Yes	No
Control group (n=40)	21/19	65.6±6.2	10.8±6.5	18.69±1.38	23	17
Observation group (n=40)	22/18	65.5±6.3	10.5±6.7	18.74±1.36	28	12
X^2	0.152	0.570	0.337	1.002	1.352	
P	0.878	0.596	0.735	0.846	0.245	

Note: BMI: body mass index.

Table 2. Comparison of the blood glucose ($\bar{x} \pm sd$)

Group	Fasting blood glucose (mmol/L)		2 h postprandial blood glucose (mmol/L)	
	Before nursing	After nursing	Before nursing	After nursing
Observation group (n=40)	10.35±2.48	6.81±0.64**	15.42±4.15	9.34±1.22**
Control group (n=40)	10.34±2.51	8.47±1.39**	15.39±4.13	12.52±2.32**
t	0.018	6.861	0.032	7.673
P	0.493	<0.001	0.487	<0.001

Note: Compared with before nursing in the same group, **P<0.01.

aspects of patients' diet, exercise, medication, blood glucose monitoring and compliance with 12 questions, with one point for each question. One point indicated no compliance; 2-3 points showed general compliance; 4 points revealed complete compliance. Higher scores represented better compliance. Overall compliance = (complete compliance + general compliance) number of cases/total number of cases × 100%.

Patient's quality of life at discharge was recorded, including their mental function, physiological function, social relationship and treatment situation. Higher scores indicated better quality of life [10]. The satisfaction survey questionnaires were distributed to patients before discharge. The Cronbach's alpha coefficient was 0.91. To investigate the satisfaction of nursing work, the full score of the questionnaire was 10 points. The scores equal to and more than 9 points indicated very satisfied, 7-8 points revealed satisfied and less than 7 points meant not satisfied. Nursing satisfaction rate = (very satisfied + satisfied) number of cases/total number of cases × 100%.

The adverse reactions during nursing care in the two groups were recorded, including nausea, constipation and gastrointestinal discomfort. The incidence of adverse reactions = number of adverse reactions/total number of cases × 100%.

Statistical analysis

SPSS 22.0 statistical software was used for statistical processing. Measurement data passing the normality test were expressed as mean ± standard deviation ($\bar{x} \pm sd$). Independent t-test was used for comparison between groups, and paired t-test for comparison within groups. Count data were expressed as case/percentage (n, %) and test by Chi-square test. P<0.05 was considered statistically significant.

Results

Comparison of general data

Table 1 shows no differences in gender, age, course of disease and BMI in the both groups.

Comparison of fasting blood glucose

Before nursing, no difference was found in fasting blood glucose between the both groups (P>0.05). After nursing, the blood glucose level of the observation group decreased more than that of the control group (P<0.05). See **Table 2**.

Comparison of nursing compliance

The observation group had better obvious nursing compliance than the control group (97.50% vs. 80.00%, P<0.05). See **Table 3**.

Table 3. Comparison of the nursing compliance (n, %)

Group	Complete compliance	General compliance	No compliance	Overall compliance
Observation group (n=40)	20 (50.00)	19 (47.50)	1 (2.50)	39 (97.50)
Control group (n=40)	15 (37.50)	17 (42.50)	8 (20.00)	32 (80.00)
X^2				6.135
P				0.013

Table 4. Comparison of nursing satisfaction (n, %)

Group	Very satisfied	Satisfied	Not satisfied	Overall satisfaction
Observation group (n=40)	14 (35.00)	23 (57.50)	3 (7.50)	37 (92.50)
Control group (n=40)	11 (27.50)	19 (47.50)	10 (25.00)	30 (75.00)
X^2				6.593
P				0.023

Comparison of nursing satisfaction

The observation group had significantly higher nursing satisfaction than the control group (92.50% vs. 75.00%, P<0.05). See **Table 4**.

Comparison of prognostic quality of life scores

After nursing, quality of life scores improved after nursing, but the quality of life scores of the observation group after nursing were better than those of the control group (P<0.05). See **Table 5**.

Comparison of the incidence of adverse reactions

In the control group, there were 2 cases of nausea, 2 cases of constipation, and 2 cases of gastrointestinal discomfort. The incidence of adverse reactions was 15.00%. In the observation group, only 1 patient had mild nausea. The incidence of adverse reactions was 2.50%, which was significantly lower than that of the control group (X^2=4.891, P=0.027). See **Figure 1**.

Discussion

At present, there are an increasing number of diabetic patients in China, and the methods of clinical care fail to meet their demand [11-13]. Development of complications will affect diabetic patients' mental health and quality of life. In recent years, the whole-course health education model has been widely used, which has a certain clinical effect and significantly improves the physical condition of patients [10, 14, 15]. From the above analysis, it is necessary to change the current way of care in order to restore the health of diabetic patients.

Previous studies have pointed out, blood glucose levels were controlled by strengthening diet intervention and thus hypoglycemia can be avoided. In this study, blood glucose outcomes of the observation group were better than that of the control group, suggesting reasonable nursing work is of great significance to the patients, which was consistent with the existing research results [16]. Currently, a large number of clinical trials and survey data have shown that most patients have poor understanding and mastery of rehabilitation knowledge of this common disease, which caused patients to experience negative emotions [17]. Studies have found that the use of whole-course health education and nursing interventions during the treatment of patients can ensure that the patients more actively cooperate with the treatment and promote recovery [18]. In this study, the compliance and satisfaction of the observation group were significantly better than those of the control group, which suggested the use of whole-course health education and nursing intervention for diabetic patients can provide improved implementation of nursing services. In addition, in order to enable patients to better understand diabetes recovery knowledge and skills, an education base was established to improve the self-health management awareness of patients. Non-pharmaceutical guidance was the main patient support, in order to know patient's condition in real time. Electronic health files were created, which were not only convenient for later data analysis, but also provided a guarantee for the implementation of patient management work [19]. In the whole-course health education model, every diabetic patient and family members did their best to master the relevant knowledge of diabetes, to improve the family's ability for

Table 5. Comparison of prognostic quality of life scores ($\bar{x} \pm sd$)

Item	Observation group (n=40)		Control group (n=40)	
	Before nursing	After nursing	Before nursing	After nursing
Mental function	46.87±6.85	52.63±8.56**,##	46.52±7.02	49.99±8.45**
Physiological function	22.56±4.59	30.47±6.56**,#	22.75±4.69	25.89±5.03**
Social relationship	15.11±2.58	19.87±3.65**,#	14.23±3.66	16.21±2.87**
Treatment situation	11.08±3.21	16.99±3.78**,#	11.15±1.26	13.17±1.23**

Note: Compared with before nursing in the same group, **$P<0.01$. Compared with the control group in the same period, #$P<0.05$, ##$P<0.01$.
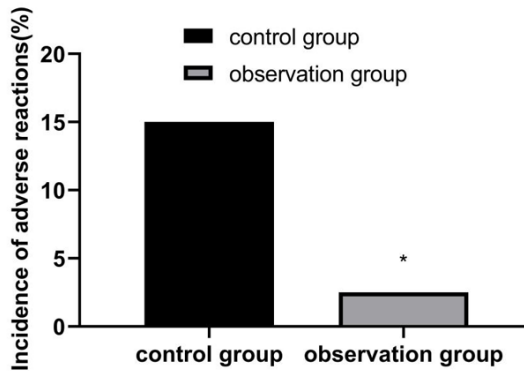

Figure 1. Comparison of the incidence of adverse reactions. Compared with the control group, *$P<0.05$.

care and management, effectively reduce the adverse reactions such as hypoglycemia, and improve their satisfaction with the overall nursing process degrees [20]. Through this study, it was found that the use of the whole-course health education model can significantly improve the patient's quality of life a as well as some of patients' emotions during treatment. Due a lack of self-care ability, diabetes patients did not complete psychological reconstruction, and some adverse reactions occurred during treatment. In this study, the number of adverse reactions in the observation group was significantly less than that in the control group, which was basically consistent with the existing research [21].

However, this study only investigated part of this content, and the scope involved is limited. The discussion on the application value of individualized nutrition care is still not known in-depth and further research will be made in future applications.

In summary, the whole-course health education model has obvious effects in the care and management of diabetic patients. It can also help patients establish a healthy lifestyle, allow medical staff to guide patients to take medicines in a scientific, help patients control their blood glucose levels, effectively improve the life prognosis of patients and reduce adverse reactions. Therefore, the whole-course health education model is worthy of application and promotion in the care and management of diabetic patients.

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Disclosure of conflict of interest

None.

Address correspondence to: Li Wang, Department of Cardiology Unit 1, Huiqiao Medical Center, Nanfang Hospital, Southern Medical University, No. 1838 North Guangzhou Avenue, Baiyun District, Guangzhou 510515, Guangdong Province, China. Tel: +86-020-62787513; Fax: +86-020-62787513; E-mail: wangli06ny@163.com

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