

# Effect of Different Education Modes on Disease Recognition and Compliance in Patients with Type 2 Diabetes

Lei Ma<sup>1,2</sup>, Shujin Wang<sup>2</sup>, Lihong Fan<sup>1</sup>, Xiaoyang Liu<sup>1</sup>, Tiao Bai<sup>1</sup>, Xiaojing Hu<sup>1</sup>, Hongyan Tian<sup>1\*</sup>

<sup>1</sup>Peripheral Blood Vessels, the First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, 710061, China

<sup>2</sup>Ninth Hospital of Xi'an, Xi'an, 710054, China

**Abstract: Objective.** To explore the impact of different educational models on disease recognition and compliance in patients with type 2 diabetes. **Methods.** For 100 patients with type 2 diabetes who were filed at the Changyanbao Community Health Service Center and the Electronic City Community Health Service Center from January 2017 to January 2018, the patients with diabetes were divided into 50 patients in the patient education group (group I) and 50 patients in the comprehensive education group (group II) according to the order of establishment. Observe the effects of different educational models on disease recognition and compliance in patients with type 2 diabetes. **Results.** After the relevant education, the effects of disease recognition and compliance were significantly higher in both groups ( $P < 0.05$ ), but the disease recognition and compliance of the patients in group II were significantly better than patients in group I ( $P < 0.05$ ). **Conclusion.** Through a variety of diabetes education models, and the network medical platform, patients can effectively improve disease awareness and compliance, thereby further control blood sugar, and improve patient quality of life.

**Keywords:** Diabetes, Education, Disease awareness, Compliance

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**\*Corresponding author:** Hongyan Tian, tianhhyxg@163.com

## 1 Introduction

History of diabetes characterized by chronic hyperglycemia is a lifelong metabolic disease. With the aging of China's population, the number of people with diabetes in China has grown rapidly<sup>[1]</sup>. According to the 2013 survey of disease, the prevalence of diabetes in China aged 18 and above was 10.4%, the pre-diabetes prevalence was estimated to be 35.7%, the patient's diabetes awareness rate was only 36.5%, and the treatment rate was 32.2%. Among the patients treated, the compliance rate was only 49.2%<sup>[2]</sup>. Studies have shown that about 30% to 40% of patients will have at least one complication after 10 years of diabetes onset, and once the complications are developed, it is difficult to be reversed by drug treatment, so the prevention and treatment of diabetes is a long-term and continuous process. Some patients gradually relax in long-term treatment, and do not follow the doctor's advice. Diabetic patients with poor compliance, management confusion, lack of follow-up, lack of information, resulting in poor glycemic control, and poor prognosis<sup>[3, 4]</sup>. Studies have shown that diabetes education can effectively improve the cognitive level and compliance of patients with diabetes-related treatment, improve blood sugar control and prognosis of patients. Diabetes health education plays an important role, at the same time, the government can save medical expenses<sup>[5]</sup>. Therefore, in this study, we conducted a study on 100 patients with type 2 diabetes who were filed at the Changyan Community Health Service Center, the

Electronic City Community Health Service Center, and the Zhangba Community Health Service Center from January 2017 to January 2018 to explore the changes in disease recognition and compliance in patients with type 2 diabetes under different educational models. The results are reported below.

## 2 Data and methods

### 2.1 General information

A study was conducted on 100 patients with type 2 diabetes who were filed in the Changyan Community Health Service Center and the Electronic City Community Health Service Center from January 2017 to January 2018. Diabetes patients were divided into 50 patients in the patient education group (group I) and 50 patients in the comprehensive education group (group II) according to the order of establishment. Inclusion criteria: 1) comply with the diagnostic and classification criteria established by WHO in 1999<sup>[6]</sup>; 2) is the resident population of the community that is registered and living in the community; 3) has basic literacy skills which can be independent or with the help to complete the questionnaire survey; 4) have not received any form of diabetes-related knowledge education, no serious

liver, and kidney damage; 5) patients and their families informed consent and volunteered to participate. Exclusion criteria: 1) have language communication disorder, cognitive impairment, and mental disorders; 2) unable to take care of themselves dependently; 3) have malignant tumors, severe organ dysfunction; 4) diagnosed with severe acute and chronic complications of diabetes; 5) engaged in medical-related occupations. The clinical data of the two groups showed no significant difference in age, gender, body mass index (BMI), length of disease, fasting blood glucose (FBG), postprandial blood glucose (2hPPG), glycosylated hemoglobin (HbA1C), and others ( $P>0.05$ ), (Table 1). Doctors enrolled in compliance with standards: doctors and caregivers with informed consent and voluntary participation. Exclusion criteria: those who were absent from work for  $\geq 2$  weeks during the intervention period. Finally, 16 community medical staff were enrolled, including 5 males and 11 females; aged ( $39.48\pm 7.46$ ) years old; working years ( $16.25\pm 6.86$ ) years; 2 secondary school graduates, 2 college graduates, 12 bachelor degree or above; 10 junior titles, 5 intermediate titles, and 1 deputy senior title. All participants in the study gave informed consent and signed informed consent.

**Table 1.** Comparison of general data of 2 groups of patients.

Group	Gender (Male/Female, case)	Age (Years old)	Disease duration (Year)	BMI (kg/m <sup>2</sup> )	FPG (mmol/L)	2hPPG (mmol/L)	HbA1C (%)
Group I	27/23	61.42±15.55	8.70±6.37	23.86±3.07	8.11±2.33	15.41±6.55	8.12±2.18
Group II	24/26	59.64±14.06	7.88±6.16	23.27±2.87	8.12±2.56	15.94±7.36	8.63±2.51
t/x <sup>2</sup>	0.360	0.169	0.037	2.550	0.800	2.576	2.116
P	0.689	0.682	0.848	0.114	0.373	0.112	0.149

### 2.2 Research method

Two groups were educated in different ways, namely the patient education group, and the comprehensive education group for patient education and medical staff education.

#### 2.2.1 Patient education group

The patient education group used a combination of “intensive lectures” and “family visit education” to conduct patient health education. Intensive lectures were conducted by hospital experts using the PPT to centralize the enrolled patients in the community health center meeting room for 60 minutes. After the lecture, the experts interacted with 60 patients with uremia and answered questions. It was held once a month, each

time around a theme, and continued for 12 months. Family visit education was conducted by hospital experts or community medical staff on knowledge and daily life guidance for diabetic patients, once every 3 months.

#### 2.2.2 Comprehensive education group

The comprehensive education group combined the patient education and medical staff education. In addition to having a patient-focused lecture once a month, and conducting a home visit to the patient every 3 months, the community medical staff education was also carried out, and the combination of “centralized training” and “network platform remote training” was adopted. The centralized teaching was conducted by

hospital-related experts using PPT in the conference room of the First Affiliated Hospital of Xi'an Jiaotong University. The content included the latest guidelines, medical treatment norms, rational use of medicines, etc. After the lecture, the experts and community medical staff conducted interactive discussions and answered questions. The training was held once every 3 months. The remote training of the network platform was based on the established medical information computer network in the Yanta District Medical Association centered on the First Affiliated Hospital of Xi'an Jiaotong University, and the standardized management system of chronic disease network with independent intellectual property rights to conduct one-to-one remote training and clinical guidance for medical staff in community health centers. In principle, it is once a month, but it can be connected in real-time according to the actual situation.

### 2.3 Evaluation index

1) Diabetes awareness of patients: 100 patients with diabetes were evaluated for the first time on diabetes health knowledge by anonymous method, and then received a second evaluation after receiving a multi-form of health education. The self-designed "Diabetes Health Knowledge Level Questionnaire" was used to investigate the basic knowledge of diabetes, diet control, exercise therapy, medication precautions, and first-aid knowledge. There were 20 multiple-choice questions, with a score of 100 points, scores. The higher the score, the better the knowledge of diabetes. 2) Diabetes-related knowledge level of medical staff: 16 community medical staff were evaluated before the intervention, 3 months, 6 months, 12 months after the start of the intervention. They were assessed using a self-designed "Patient Knowledge and Management Level Assessment Questionnaire for Primary Care Workers. The questionnaire was divided into two types of questions: choose single choice questions and multiple-choice questions. A total of 30 questions, with a score of 100 points. The higher the score, the higher the theoretical level of diabetes and the level of diabetes management. 3) The patient's medication rate: evaluate

the patient's medication rate before and after the 12 months intervention, the higher the medication rate, the better the compliance of the medication following the doctor's advice on time and volume of medication.

### 2.4 Statistical method

Statistical analysis of all data from this clinical study was performed using SPSS 21.0 statistical software. Measurement data were expressed as mean±standard deviation ( $\bar{x}\pm s$ ), using t-test, count data expressed as a percentage(%), using  $\chi^2$  test.  $P<0.05$  was considered statistically significant.

## 3 Result

### 3.1 Comparison of knowledge of diabetes theory before and after medical staff intervention

Community medical staff used the self-designed "Patient Knowledge and Management Level Assessment Questionnaire for Primary Care Workers" to evaluate community medical staff. The scores of 16 community medical staff questionnaires were  $42.41\pm 9.41$ , after 12 months of a total of 4 intensive lectures and more than 12 online platforms remote training, questionnaire evaluation was carried out again, the score was  $80.76\pm 7.30$  which was significantly higher than before the intervention ( $P<0.05$ ). The theoretical level of diabetes diagnosis and treatment, rational drug use, and system management have been significantly improved.

### 3.2 Comparison of questionnaire scores and medication rates before and after intervention in group and group II

The results are shown in Table 2. After the patients in group I was educated, the questionnaire scores and medication rates were significantly higher than before the intervention ( $P<0.05$ ). Group II patient education combined with medical staff education had a positive effect on disease awareness and compliance in diabetic patients. The questionnaire score and medication rate were significantly higher than before the intervention ( $P<0.05$ ).

**Table 2.** Comparison of questionnaire scores and medication rates before and after the intervention.

	Group I		Group II	
	Questionnaire score (score)	Medication rate [case (%)]	Questionnaire score (score)	Medication rate [case (%)]
Before intervention	46.54±14.17	13(26%)	44.58±15.87	25(50%)
After intervention	61.48±7.86	26(52%)	75.80±11.907	37(74%)
$t/\chi^2$	34.602	7.104	6.285	6.112
P	0.000	0.008	0.481	0.013

### 3.3 Effect of patient education group and comprehensive education group on blood glucose-related indicators

After the relevant education, the scores and medication rates of the two groups were significantly higher than

before the intervention, but the improvement of the comprehensive education group was significantly better than the patient education group ( $P < 0.05$ ) (Table 3).

## 4 Discussion

**Table 3.** Comparison of questionnaire scores and medication rates between the patient education group and the comprehensive education group.

	Questionnaire score (score)	Medication rate [case (%)]
Group I	61.48±7.86	26(52%)
Group II	75.80±11.907	37(74%)
$t/\chi^2$	12.872	5.191
P	0.001	0.023

The occurrence and development of diabetes are closely related to many reasons such as people's lifestyle and diet structure. The control of blood glucose mainly depends on the patient's active medication, lifestyle intervention, blood glucose monitoring, follow-up examination, etc. In order to achieve these, it is highly depending on the patient's awareness of diabetes and compliance with doctors' orders. Diabetes knowledge is the basis for effective self-management of patients and can only be self-managed by understanding disease-related knowledge<sup>[7]</sup>. Health education can promote changes in behaviors that are beneficial to health<sup>[8]</sup>. Therefore, with the help of the network information platform, the diabetes education model that combined multiple educational modes has a better effect in the follow-up of diabetes, which can effectively improve the recognition and compliance of diabetes patients with diabetes, improve the patient's glycemic control rate, delay the occurrence of complications, and improve the patient's life treatment. It is worthy of promotion and application.

**Shaanxi Science and Technology Benefit People Project:** Based on the network platform, standardized management and comprehensive prevention and treatment of chronic diseases such as hypertension and diabetes in the medical association, project number:

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