

Application Value of Personalized Contract Service Package in Community Health Management Service for Diabetic Patients

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Abstract

Objective: To analyze the effect of personalized contract service package in community health management service for diabetic patients. **Methods:** 60 cases of community diabetes patients were divided into control group and experimental group by random number table method. The former group was given symptomatic treatment and routine management, and the experimental group was given personalized contract service package based on medical and preventive integration mode. The blood glucose level and self-management ability of the two groups were compared before and after management. **Results:** Before management, there was no difference in blood glucose level and self-management ability between the two groups ($P > 0.05$). The fasting blood glucose level (7.21 ± 0.76) mmol/L and 2 h postprandial blood glucose level (8.86 ± 0.84) mmol/L in the experimental group were lower than those in the control group (8.35 ± 0.45) mmol/L and (10.84 ± 1.05) mmol/L. The score of ESCA (135.48 ± 6.54) was higher than that of control group (116.54 ± 7.54), and $P < 0.05$. **Conclusion:** For community diabetic patients, the implementation of personalized contract service package under the mode of medical and preventive integration in health management services is helpful to improve patients' self-management ability and obtain satisfactory blood sugar control effect.

Keywords

Community Diabetes Mellitus, Fusion of Medicine and Prevention, Personalized Contract Service Package, Health Management Service

1. Introduction

Diabetes is a chronic non-communicable disease that poses a serious threat to hu-

man health, following cardiovascular and cerebrovascular diseases and cancer. It is estimated that by 2040, the number of people with diabetes worldwide will reach 415 million, imposing a substantial economic burden [1]. Among all cases of diabetes, 90% are type 2 diabetes mellitus (T2DM), which is characterized by persistent hyperglycemia. If blood glucose levels are not effectively controlled over time, it can lead to a range of complications that endanger patients' health and significantly reduce their quality of life.

Diabetes management requires lifelong medication, along with scientific dietary management, appropriate physical activity, blood glucose monitoring, and other supportive measures. However, due to a lack of awareness and poor self-care capabilities among patients, blood glucose control is often suboptimal.

To better address the management needs of diabetic patients in the community, a new model of community-based service—contracted community services—has emerged. This model uses the community as a platform and emphasizes a patient-centered approach. It provides targeted, comprehensive, and evidence-based health management services tailored to the actual conditions of diabetic patients, with the goal of controlling disease progression and improving patients' quality of life [2].

Based on this model, a personalized contracted service package was developed. This is an integrated service plan designed according to the specific needs and clinical features of individual patients. The aim of such packages is to deliver holistic, continuous care through personalized management strategies, helping to effectively control the disease, improve quality of life, and reduce healthcare costs.

This article analyzes the application value of personalized contracted service packages in the health management of community-based patients with diabetes, as detailed below:

2. Materials and Methods

2.1. General Information

A retrospective review was conducted on clinical data of diabetic patients who visited the outpatient clinic in our community from January 2018 to December 2020. With full respect for patient consent and willingness, 20 patients who had signed a personalized contracted service package were selected as the experimental group, and another 20 patients who had not signed such a package were selected as the control group.

In the experimental group, there were 8 male and 12 female patients, with ages ranging from 45 to 78 years and an average age of (56.54 ± 4.36) years. The duration of illness ranged from 2 to 12 years, with an average disease duration of (3.68 ± 1.25) years.

In the control group, there were 10 male and 10 female patients, with ages ranging from 42 to 75 years and an average age of (56.51 ± 4.32) years. The duration of illness ranged from 2 to 13 years, with an average of (3.61 ± 1.21) years.

Statistical software was used to perform a chi-square test on the general char-

acteristics of the patients. The resulting P-value was greater than 0.05, indicating no statistically significant differences between the two groups, thus confirming their comparability.

Inclusion Criteria:

All patients were diagnosed with diabetes in accordance with the relevant criteria outlined in the Guidelines for the Prevention and Treatment of Type 2 Diabetes in China (2020) issued by the Diabetes Society of the Chinese Medical Association [3]. All selected patients were permanent residents of the community, and both the patients and their families were fully informed of the study and voluntarily agreed to participate.

Exclusion Criteria:

Patients were excluded if they had severe diabetic complications, mental disorders, language or communication barriers, other major diseases, or malignant tumors.

2.2. Methods

After being diagnosed with diabetes, patients in the control group received symptomatic treatment provided by specialist outpatient physicians based on their blood glucose levels and the presence of any complications. In addition, interventions such as health education and follow-up were provided to promote blood glucose monitoring, medication adherence, proper diet, and healthy exercise.

For patients in the experimental group, a personalized contracted service package was implemented after outpatient diagnosis of diabetes. The implementation steps were as follows:

2.2.1. Formation of the Personalized Contracted Service Team

The personalized contracted service team consisted of one general practitioner and two diabetes specialist nurses. After the team was established, its members underwent systematic training. The training covered topics such as diabetes screening, prevention, commonly used community-based management skills, screening and management of diabetic complications, dietary and exercise management for diabetes, as well as case-based teaching rounds or clinical case interpretation.

Upon completion of the training, participants were required to pass a corresponding assessment before being officially allowed to join the team and participate in patient care.

2.2.2. Collecting Patient Information and Signing the Personalized Contracted Service Package

Information on diabetic patients was collected through the outpatient HIS (Hospital Information System) of the medical alliance hospitals. This system also supports services such as coordinated care, tiered diagnosis and treatment, teleconsultation, and centralized laboratory testing.

For patients in the community who were diagnosed with diabetes, the personalized contracted service package was signed strictly on a voluntary basis. The service package included two components:

Comprehensive Health Management Package, which covers: liver and kidney function monitoring, lipid panel (four items), fasting blood glucose, 2-hour postprandial blood glucose, fasting C-peptide, glycosylated hemoglobin, electrolytes, complete blood count, urine microalbumin-to-creatinine ratio, fundus photography, peripheral neuropathy screening, and 12-lead electrocardiogram.

Disease-Specific Management Package, which includes screening for complications such as diabetic retinopathy, diabetic nephropathy, peripheral neuropathy, and diabetic foot.

2.2.3. Standardized Treatment Based on Individual Condition

The general practitioner in the personalized contracted service team conducted a comprehensive assessment of each patient's condition and the underlying causes of their diabetes. Based on this evaluation, a scientifically sound medication plan was developed. Patients were instructed on the importance of strict adherence to prescribed medications and were reminded to regularly monitor their blood glucose levels. The medication regimen was adjusted as needed in response to changes in blood glucose levels.

2.2.4. Systematic Health Education

The personalized contracted service team provided systematic health education through three main approaches:

1) Free Clinics: Endocrinology expert teams were invited to regularly conduct large-scale free clinic activities, offering free blood glucose monitoring and answering patient questions. Community diabetic patients were encouraged to participate in these educational events.

2) Diabetes Self-Management Group Activities: Diabetic patients within the community were grouped into small teams and invited to attend regular group sessions. These activities focused on learning about diabetes-related self-management knowledge and sharing personal experiences in managing and controlling diabetes.

3) Distribution of Self-Management Handbooks: Each patient received a copy of the Diabetes Self-Management Handbook developed by the center. The handbook recorded the patient's basic information and was distributed one per person. It included an overview of diabetes, diagnostic criteria, high-risk populations, common complications and their harms, self-management techniques, dietary therapy, and exercise therapy. Patients were advised to carry the handbook at all times. After each free blood glucose check, they were asked to record their blood glucose values and monitoring time in the designated log section.

The two groups of patients were managed using different methods for a duration of three months.

2.3. Observation Indicators

1) Comparison of Blood Glucose Levels Before and After Management:

Blood glucose levels were monitored before and after the management period, including fasting plasma glucose (FPG) levels and 2-hour postprandial glucose

(2hPG) levels. Measurements were taken before the intervention and at the two-month follow-up using the same electronic glucometer. Each indicator was tested three times, and the average of the three measurements was used as the final result.

2) Comparison of Patients' Self-Management Ability Before and After Management:

Evaluation was conducted using the Chinese version of the Exercise of Self-Care Agency Scale (ESCA), which includes four dimensions: sense of self-care responsibility, self-concept, health knowledge, and self-care skills. The scale contains a total of 43 items, with each item scored from 0 to 4, resulting in a maximum score of 172. Higher scores indicate stronger self-care ability in patients [3].

2.4. Statistical Methods

First, relevant clinical cases of elderly patients were collected using Excel to establish a database. A double-entry method was used for data input, followed by verification to ensure accuracy. Measurement data were expressed as mean \pm standard deviation ($\bar{x} \pm s$), while categorical data were represented as frequencies (n) or percentages (%). For measurement data that conformed to a normal distribution before and after the intervention, the t-test was used; for data that did not conform to a normal distribution, the rank-sum test was applied. The chi-square (χ^2) test was used for categorical data. A P-value less than 0.05 was considered statistically significant.

3. Results

3.1. Comparison of Blood Glucose Levels before and after Management between the Two Groups

Before management, there were no significant differences in fasting blood glucose (FPG) and 2-hour postprandial blood glucose (2hPG) between the two groups ($P > 0.05$). After management, the fasting blood glucose levels in both groups were lower than before, and the differences were statistically significant ($P < 0.05$). Moreover, the experimental group had lower fasting and 2-hour postprandial blood glucose levels compared to the control group, with statistically significant differences ($P < 0.05$). Details are shown in **Table 1**.

Table 1. Comparison of blood glucose levels before and after management between the two groups ($\bar{x} \pm s$).

Group	Fasting Plasma Glucose (mmol/L)		t	P	2-Hour Postprandial Blood Glucose (mmol/L)		t	P
	Before	After			Before	After		
Control Group	10.23 \pm 1.61	8.35 \pm 0.45	6.160	<0.05	13.16 \pm 1.61	10.84 \pm 1.05	6.611	<0.05
Experimental Group	10.26 \pm 1.63	7.21 \pm 0.76	10.722	<0.05	13.13 \pm 1.65	8.86 \pm 0.84	12.632	<0.05
t	0.072	7.070	/	/	0.071	8.065	/	/
P	>0.05	<0.05	/	/	>0.05	<0.05	/	/

3.2. Comparison of Self-Management Ability between the Two Groups before and after Management

Before management, there was no significant difference in ESCA scores between the two groups ($P > 0.05$). However, after management, both groups showed an increase in ESCA scores compared to before, with statistically significant differences ($P < 0.05$). Moreover, the ESCA scores in the experimental group were significantly higher than those in the control group ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of ESCA scores between the two groups before and after management ($\bar{x} \pm s$).

Group	n	Before	After	t	P
Experimental Group	20	112.42 ± 7.33	135.48 ± 6.54	12.857	<0.05
Control Group	20	112.36 ± 7.28	116.54 ± 7.54	3.041	<0.05
t	/	0.032	10.393	/	/
P	/	>0.05	<0.05	/	/

4. Discussion

Diabetes is one of the three major chronic diseases in China. Its main clinical manifestation is abnormally elevated blood glucose levels. Both international and domestic medical organizations classify diabetes as a lifelong condition that cannot be cured. Clinically, the primary goal of diabetes treatment is to control blood sugar, and the recommended strategy is the “five-horse carriage”, which includes medication, health education, dietary control, scientific exercise, and blood glucose monitoring. This underscores the importance of effective management during a diabetic patient’s course of medication.

However, under traditional management models, patients often lack proper knowledge of their disease and possess limited self-care capabilities during home management, which severely affects their blood glucose control outcomes. To address these issues, a new community-based service model has emerged—the personalized contract service. This model relies on the existing community healthcare network, aiming to make full use of current resources to meet the health needs of community residents and promote faster recovery for patients [4].

The implementation of personalized contract service packages in medical care primarily includes the following core elements: regular health assessments and monitoring, development of individualized treatment plans, and professional medical consultations and guidance. These elements demonstrate effectiveness through several aspects:

Regular health assessments and monitoring help detect changes in the patient’s condition in a timely manner and provide a basis for physicians to adjust treatment strategies.

Individualized treatment plans take into account factors such as the patient’s age, gender, disease severity, and comorbidities, thereby increasing the precision and efficacy of treatment.

Professional medical consultation and guidance assist patients in better under-

standing and adhering to treatment protocols, which improves treatment compliance.

In addition, in terms of preventive care, the personalized service package emphasizes health education, lifestyle counseling, and psychological support:

Health education enhances patients' understanding of diabetes and their self-management ability, encouraging active involvement in disease prevention and control.

Lifestyle counseling assists patients in developing healthy habits, such as balanced diets and appropriate physical activity, which contribute to improved blood sugar control.

Psychological support alleviates anxiety and stress, improves quality of life, and contributes to better long-term disease management.

In summary, the personalized contract service package plays an important role in the comprehensive management of diabetes, demonstrating significant potential in both clinical treatment and preventive care.

In this study, the effectiveness of implementing a personalized contract service package under the integrated medical-prevention model in diabetes management was analyzed. The results showed that, compared to patients under conventional health management, those who received the personalized service package had significantly lower fasting blood glucose levels (7.21 ± 0.76) mmol/L vs. (8.35 ± 0.45) mmol/L, and 2-hour postprandial blood glucose levels (8.86 ± 0.84) mmol/L vs. (10.84 ± 1.05) mmol/L. Moreover, their ESCA scores (135.48 ± 6.54) were higher than those in the control group (116.54 ± 7.54), with $P < 0.05$ in all cases. These findings confirm that the personalized contract service package can significantly improve blood glucose control and enhance patients' self-care abilities.

The reason for this is that the personalized service package promotes a combination of disease treatment and prevention. A professional team composed of physicians and nurses provides targeted treatment while also implementing comprehensive management strategies. Through various health education methods, patients gain a thorough understanding of diabetes and develop proper habits regarding diet, medication adherence, and exercise. This multidisciplinary approach produces a synergistic effect, ultimately improving blood sugar control outcomes and enhancing patients' ability to manage their condition independently [5].

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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