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Analysis of the Application Effect of Family Collaborative Care Model on Elderly Patients with Type 2 Diabetes Mellitus and the Situation of Self-Care Ability

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Abstract: *Objective:* To study the application effect of the family collaborative care model on elderly patients with type 2 diabetes mellitus and its influence on self-care ability. *Methods:* The elderly type 2 diabetes mellitus patients (400 cases) treated in our hospital between March 2020 and July 2023 were divided into two groups by randomized grouping method; the control group received the conventional nursing program, while the observation group received the family collaborative nursing model. Blood glucose level, self-care ability, and quality of life were compared between the groups. *Results:* The blood glucose level of the observation group was lower than that of the control group ($P < 0.05$). The self-care ability and quality of life scores of the observation group were higher than those of the control group ($P < 0.05$). *Conclusion:* The family collaborative care model for elderly patients with type 2 diabetes mellitus can promote their self-care ability, improve the effect of glycemic control, and improve their quality of life, and is suitable for further promotion and application.

Keywords: Elderly; Type 2 diabetes mellitus; Family collaborative care model; Self-care ability; Quality of life.

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1. Introduction

Type 2 diabetes mellitus is one of the more common chronic diseases in clinical practice, and with the aging of the population, the prevalence of the disease among the elderly is gradually increasing. The elderly population is characterized by physiological aging and decreased immune function, which may affect the development and treatment of diabetes mellitus [1]. For this reason, in clinical care, it is necessary to assess and monitor elderly patients with type 2 diabetes mellitus in a more meticulous manner and to detect and deal with changes in the condition promptly. Clinical studies [2] have shown that family support and participation play an important role in the treatment and management of type 2 diabetes in the elderly. The family collaborative care model is an effective way of care, through the cooperation of family members and caregivers, to jointly provide a full range

of care services for elderly patients with type 2 diabetes mellitus, thereby obtaining a more ideal therapeutic effect [3]. This paper discusses the application effect of the family collaborative care model on elderly patients with type 2 diabetes mellitus, thereby providing a reference for clinical practice.

2. Materials and methods

2.1. General information

Among the elderly type 2 diabetic patients admitted to the Affiliated Hospital of Chifeng College, 400 cases were recruited and randomly grouped into a control group (200 cases) and an observation group (200 cases) by using the randomized numerical table method. In the control group, there were 109 males and 91 females, with a mean age of 67.85 ± 3.36 years. The mean duration of the disease was 9.07 ± 1.32 years. In the observation group, there were 113 males and 87 females, with a mean age of 67.98 ± 3.44 years. The mean duration of the disease was 9.25 ± 1.48 years. The general information data of both groups were comparable ($P > 0.05$).

Inclusion criteria: (1) Normal coagulation function; (2) Aged > 60 years old; (3) Disease duration of 6 months or more; (4) Diagnosis through clinical examination; (4) Normal communication ability and cognitive function, and can cooperate actively with nursing activities; (5) Literacy level in elementary school or above.

Exclusion criteria: (1) Patients with serious complications; (2) Patients with serious abnormalities of important organ functions; (3) Patients with malignant tumors; (4) Patients with serious infectious diseases.

2.2. Methods

2.2.1. Control group

The control group implements the routine nursing program, which introduces in detail to the patients the relevant factors affecting the occurrence and development of the disease; completes the work of dietary education, exercise training education, foot care, etc.; introduces in detail to the patients the methods of self-monitoring and recording of blood glucose for the adjustment of medication program as a reference; regularly organizes diabetes health knowledge seminars, training, etc., which provides the patients with the experience of learning and exchanging; Regular telephone follow-up activities are carried out, and family members are instructed to supervise and guide patients' medication.

2.2.2. Observation group

The observation group applies the family collaborative nursing model, which mainly contains the following contents:

(1) According to the cultural level, comprehension ability, and cognitive level of the patients and their family members, the nursing staff introduces in detail the method, significance, and purpose of the family collaborative nursing model, thereby allowing them to have an in-depth understanding of the importance of the nursing model, actively guide the patients and their family members to participate in the nursing activities and formulate feasible and personalized nursing programs. The important role of family members in the process of disease treatment should be recognized, and encourage them to continue to provide help and support for the patient; in addition, family members need to assist the patient in regular follow-ups, communicate with healthcare personnel, timely understanding of the changes in the condition, and work together to formulate the next step in the treatment plan.

(2) Evaluate the patient's psychological state, choose the communication method according to the patient's age and cultural level, communicate with the patient sincerely, improve the patient's sense of trust, understand and respect the patient, give him/her support and encouragement, alleviate the

negative emotions, and build up confidence in the treatment. Regularly organize patient associations, accompanied by family members to participate in the activities, invite patients with ideal blood glucose control, good quality of life, and emotional state to teach patients the experience of disease treatment, and use the role of role models to improve patients' self-confidence.

2.3. Observation indexes

(1) Changes in blood glucose levels: Measurement of the fasting and postprandial 2 h blood glucose of the patients before the nursing care and 6 months after the nursing care, respectively.

(2) Self-care ability of the patients before the nursing care and after 6 months of nursing care: Using self-care ability scale (ESCA) evaluation, involving the dimension of self-care ability, self-care concept dimension, health cognitive level dimension and self-care sense of responsibility dimension, covering 43 items with a range of scores 0–4 points for each item. Higher scores indicated greater improvement.

(3) Quality of life before the implementation of nursing care and six months after the intervention: Using the Comprehensive Quality of Life Assessment Scale (GQOLI-74), including the dimension of health status, physical functioning, social functioning, and mental health, with a total score of one hundred points. Higher scores indicated greater improvement.

2.4. Statistical processing

Data analysis was performed using the SPSS 23.0. Measurement data were expressed as mean ± standard deviation (SD) and analyzed using *t*-tests while counting data were expressed as [*n* (%)] and analyzed using the chi-squared test. A *P* value of less than 0.05 indicated a statistically significant difference.

3. Results

3.1. Comparison of blood glucose levels between groups

As shown in **Table 1**, there were insignificant differences in the fasting blood glucose levels and 2 h postprandial blood glucose levels of both groups ($P > 0.05$). However, after 6 months of care, the fasting blood glucose level and 2 h postprandial blood glucose level of the observation group are significantly lower than the control group ($P < 0.05$).

Table 1. Comparison of changes in blood glucose levels in two groups of elderly patients with type 2 diabetes (n = 200; mean ± SD; mmol/L)

Group	Fasting blood glucose		2 h postprandial blood glucose	
	Pre-nursing	Aftercare	Pre-nursing	Aftercare
Control group	8.35 ± 1.09	6.98 ± 0.73	13.48 ± 1.13	8.37 ± 1.13
Observation group	8.48 ± 1.17	4.12 ± 0.65	13.51 ± 1.29	5.06 ± 0.75
t	1.150	41.380	0.247	34.515
P	0.251	0.001	0.805	0.001

3.2. Comparison of self-care ability between groups

Table 2 shows that the scoring values of the dimensions of ESCA between the groups before nursing had insignificant differences ($P > 0.05$). After nursing, the observation group had significantly higher scoring values as compared to the control group ($P < 0.05$).

Table 2. Comparison of changes in the self-care ability of elderly type 2 diabetic patients in two groups (n = 200; mean ± SD; points)

Group	Self-care competency scores		Self-care concept score		Health awareness level score		Self-care responsibility score	
	Pre-nursing	Aftercare	Pre-nursing	Aftercare	Pre-nursing	Aftercare	Pre-nursing	Aftercare
Control group	93.43 ± 5.15	98.57 ± 8.76	21.46 ± 2.29	23.09 ± 2.32	31.07 ± 3.14	33.69 ± 4.46	17.25 ± 3.34	20.53 ± 4.06
Observation group	93.11 ± 5.02	105.21 ± 9.98	21.13 ± 2.41	26.98 ± 3.67	31.15 ± 3.28	45.91 ± 5.03	17.18 ± 3.09	27.31 ± 4.59
t	0.629	7.071	1.404	12.671	0.249	25.707	0.218	15.647
P	0.530	0.001	0.161	0.001	0.803	0.001	0.828	0.001

3.3. Comparison of quality of life between groups

As shown in **Table 3**, the GQOLI-74 scores of both groups were similar ($P < 0.05$), but the scores of the observation group were significantly higher than those of the control group after nursing ($P < 0.05$).

Table 3. Comparison of the changes in the quality of life of elderly patients with type 2 diabetes mellitus in the two groups (n = 200; mean ± SD; points)

Group	Health status score		Physical functioning score		Social functioning scores		Mental health scores	
	Pre-nursing	Aftercare	Pre-nursing	Aftercare	Pre-nursing	Aftercare	Pre-nursing	Aftercare
Control group	16.35 ± 1.76	18.12 ± 2.24	16.19 ± 1.58	17.43 ± 2.06	9.12 ± 1.26	11.39 ± 1.58	10.06 ± 1.25	12.31 ± 1.63
Observation group	16.18 ± 1.03	25.63 ± 3.59	16.01 ± 1.15	23.89 ± 2.24	9.01 ± 1.13	13.06 ± 1.71	10.01 ± 1.13	14.85 ± 1.79
t	1.179	25.099	1.303	30.020	0.919	10.144	0.420	14.838
P	0.239	0.001	0.194	0.001	0.359	0.001	0.675	0.001

4. Discussion

Elderly type 2 diabetes is a common clinical chronic disease, which can have a serious impact on patients' quality of life and health status [4]. In the treatment and management of type 2 diabetes mellitus in the elderly, the support and participation of family members play a crucial role. Since patients need to take medication for a long time, monitor blood glucose regularly, and control their diets, the participation of family members can improve their treatment adherence, and through supervision by family members, it can ensure that patients take medication on time, have regular follow-ups, and help them to establish a regular lifestyle and effectively control the development of the disease [5]. In addition, the understanding and support of family members can help patients to better face the disease and enhance their confidence in treatment [6].

The family collaborative care model is an important way of care, through the cooperation and coordination between family members and caregivers, to provide comprehensive care services for patients. This nursing model is important in the treatment and management of various diseases [7]. For elderly patients with type 2 diabetes mellitus, the family collaborative care model can realize the effective connection between the family and the medical institution, promote information sharing and communication, and improve the quality of care, and the family can provide timely feedback on the patient's condition changes and needs, and work

with healthcare personnel to develop personalized care plans [8]. Additionally, the family can participate in the patient's health education activities together with the caregivers to learn diabetes knowledge. Moreover, family members can participate in health education activities with nursing staff, learn diabetes knowledge and nursing skills, and improve their knowledge of the disease and their ability to cope with it, which is of great significance to the further improvement of the patient's condition control [9].

In this study, the blood glucose levels of patients in the observation group were significantly lower than those of the control group, and the quality of life and self-care ability scores were significantly higher than those of the control group. It is suggested that the application of the family collaborative care model can promote the improvement of the self-care ability of elderly patients with type 2 diabetes mellitus, regulate the blood glucose level of the body, and minimize the impact of the disease on their daily lives. Family members, as the closest people around the patients, can supervise and remind the patients to take medication on time, monitor blood glucose regularly, and follow the doctor's instructions. Furthermore, family members' care and concern can help patients establish regular medication habits and effectively control blood glucose levels [10]. Family members participate in the health education activities of the patients together with the nursing staff to learn the knowledge of diabetes and self-management skills, which can help the patients understand the characteristics of the disease and treatment requirements, and improve self-management capabilities and treatment requirements, improve self-management ability, and then better control the disease [11]. In addition, the companionship and support of family members can give patients more emotional care and comfort, reduce their psychological pressure, help patients better cope with the disease through emotional support, enhance confidence in treatment, improve the enthusiasm for self-care and self-care ability, and improve the condition and quality of life [12].

In conclusion, the application of the family collaborative care model in elderly patients with type 2 diabetes mellitus is of great significance, which can improve the treatment effect and quality of life, and is a nursing model worth promoting and applying.

Disclosure statement

The author declares no conflict of interest.

References

[1] He X, Niu M, Liu G, et al., 2022, Needs and Influencing Factors of Home Care for Elderly Type 2 Diabetes Mellitus Patients in the Community. Chinese Journal of Gerontology, 42(24): 6125–6130.

[2] Zhou X, Xu W, Cao C, 2022, Effect of Holistic Bedtime Diet Planning Care on Nocturnal Blood Glucose and Sleep Quality in Elderly Patients with Type 2 Diabetes Mellitus. China Medicine Herald, 19(31): 182–185.

[3] Dai Q, Wang J, 2021, Impact of Refined Specialized Nursing Care on Disease Regression in Elderly Patients with Type 2 Diabetes Mellitus Combined with Pulmonary Infection. Practical Geriatrics, 35(12): 1318–1321.

[4] Li Q, Ba S, Zhang M, et al., 2023, Effects of Integrated Extended Care Model on Glycemic Control, Self-Management Ability and Quality of Life of Elderly Patients with Type 2 Diabetes Mellitus. Qilu Nursing Journal, 29(19): 59–61.

[5] Qian Y, Peng W, Xu X, 2023, Effects of Homogenized Medical Association Care Model on Blood Glucose, Self-Management Ability, and Quality of Life of Elderly Patients with Type 2 Diabetes Mellitus. General Practice Nursing, 21(26): 3677–3680.

[6] Yin Z, Xue S, 2023, Effect of Timing Theory Intervention Combined with Home Care on Behavioral Habit Control in Elderly Patients with Type 2 Diabetes Mellitus Combined with Hypertension. International Journal of Nursing,

42(17): 3250–3254.

[7] Wang H, Ru J, Li H, 2023, Application Effect of Precision Nursing Combined with Standardized Health Education Intervention in Elderly Type 2 Diabetes Mellitus Care and Its Impact on Improving Patients' Blood Glucose Level and Quality of Life. Diabetes Mellitus New World, 26(21): 140–143.

[8] Wang X, Fu H, Li Y, et al., 2023, Intervention Effects of Health-Based Individualized Care on Standardization and Effectiveness of Management of Elderly Patients with Type 2 Diabetes Mellitus. International Journal of Nursing, 42(2): 310–315.

[9] Jiang W, Yao L, Zheng J, et al., 2023, Application of Nursing Intervention Based on Systematization Concept in Elderly Patients with Type 2 Diabetes Mellitus. Chinese Journal of Modern Nursing, 29(2): 253–256.

[10] Luo G, Li Y, Mong L, et al., 2021, Effects of Regular Nursing Clinic Follow-Up on Compliance Behavior and Quality of Life of Elderly Patients with Type 2 Diabetes Mellitus. Qilu Nursing Journal, 27(5): 51–54.

[11] Li L, Du G, 2021, Analysis of Clinical Effects of Evidence-Based Nursing in Elderly Type 2 Diabetes Mellitus. China Health Nutrition, 31(28): 117.

[12] Gao J, 2021, Effects of Evidence-Based Nursing on Self-Care Ability and Negative Emotions of Elderly Type 2 Diabetes Mellitus Patients. China Nation Health Medicine, 33(2): 168–170.