Original Research Article

Open Access

Omniscient Pte.Ltd.

Application of Sequential Management by Specialist Nurse Outpatient Clinics in Elderly Diabetic Patients

Chen Zheng*, Hong-Xia Ji

Sheyang County Hospital of Traditional Chinese Medicine, Yancheng, Jiangsu, 224300, China

***Correspondence to:** Chen Zheng, Sheyang County Hospital of Traditional Chinese Medicine, Yancheng, Jiangsu, 224300, China, E-mail: zhengchen0518@163.com

Abstract: Objective: To explore the effect of sequential management by specialist nurse outpatient clinics in elderly patients with type 2 diabetes. **Methods:** A total of 160 elderly type 2 diabetes patients managed in the diabetes specialist outpatient department of Sheyang County Hospital from January to December 2024 were included. Patients were randomly assigned into an observation group and a control group using a random number table. The control group received routine nursing care, while the observation group received sequential management led by specialist nurses on top of standard care. Fasting blood glucose, glycated hemoglobin (HbA1c), and self-management ability scores were compared between the two groups after 6 months. **Results:** The observation group showed significantly better fasting blood glucose levels and self-management ability scores compared to the control group ($P < 0.05$). **Conclusion:** Sequential management provided by specialist nurse outpatient clinics can effectively improve blood glucose control and enhance self-management ability in elderly patients with type 2 diabetes, and is worthy of clinical promotion.

Keywords: Specialist nurse outpatient clinic; sequential management; elderly diabetes; blood glucose control; self-management

Introduction

With the increasing aging of the population, individuals aged 65 and above now account for 14.2% of China's total population [1]. According to the latest survey by the Chinese Center for Disease Control and Prevention, the prevalence of diabetes mellitus (DM) among the elderly in China has reached 22.86% [2]. This study applies sequential management by specialist nurse outpatient clinics to elderly patients with type 2 diabetes mellitus (T2DM), aiming to explore its impact on blood glucose control and self-management ability, and to provide a reference for optimizing diabetes management strategies in the elderly.

1. Materials and Methods

1.1 Study Participants

A total of 160 elderly patients with type 2 diabetes mellitus (T2DM) treated at the specialist nurse diabetes outpatient clinic of Sheyang County Traditional Chinese Medicine Hospital from January to December 2024 were enrolled. Patients were randomly divided into an observation group and a control group, with 80

© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

cases in each group, using a random number table.

Inclusion criteria:

① Meeting the 1999 WHO diagnostic criteria for diabetes [3], with a confirmed diagnosis of T2DM;

② Glycated hemoglobin (HbA1c) ⩾ 7.0%;

③ Clear consciousness and ability to complete questionnaires and interventions;

④ Informed consent and voluntary participation in the study.

Exclusion criteria [4]:

① Severe dysfunction of major organs such as heart, liver, or kidneys;

② Presence of malignancy, mental illness, or cognitive impairment;

③ Acute diabetic complications (e.g., ketoacidosis, hyperosmolar coma) within the past three months;

④ Participation in other similar intervention studies.

1.2 General Information

There was no statistically significant difference in baseline characteristics between the two groups ($P > 0.05$), indicating comparability. See **Table 1** for details.

Table 1. Comparison of Baseline Data Between Two Groups [n ($\bar{x} \pm s$)]

Item		Observation Group	Control Group	*P*
Gender	Male	45	43	0.765
	Female	35	37	
Age (years)	—	68.5 ± 5.3	69.1 ± 5.6	0.521
Disease Duration	—	7.2 ± 2.1	7.5 ± 2.3	0.347
Education Level	Primary or below	23	26	0.892
	Junior high	32	33	
	High school +	20	21	
Comorbidities	Hypertension	42	40	0.813
	Coronary disease	18	20	
	Diabetic nephropathy	9	7	
	Others	11	12	

1.3 Methods

1.3.1 Control Group

The control group received routine nursing care in the specialist diabetes clinic, including:

① One-time health education: Distribution of DM prevention manuals and basic instruction on diet, exercise, and medication;

② Regular follow-up: Telephone follow-ups every 3 months to monitor blood glucose control and medication adherence;

③ Blood glucose monitoring guidance: Instruction on self-monitoring of blood glucose, with a recommendation to measure fasting and 2-hour postprandial glucose 2–4 times per week.

1.3.2 Observation Group

On the basis of routine care, the observation group received sequential management by specialist nurses in the outpatient clinic. The intervention was conducted by diabetes specialist nurses over a 6-month period, divided into three stages:

(1) Specialist Nurse Training

Participating specialist nurses were required to complete 30 hours of training, which included:

① Theories and procedures of sequential management;

② Screening and nursing of complications in elderly patients with diabetes;

③ Communication skills and behavioral intervention methods.

Nurses could participate in the study only after passing both theoretical and practical assessments (full score: 100; passing score: 80).

(2) Initial Evaluation and Record Establishment (Week 1)

Specialist nurses conducted a comprehensive assessment through face-to-face interviews, physical examinations, and laboratory tests. Evaluation contents included:

① Blood glucose levels: fasting blood glucose (FBG), 2-hour postprandial blood glucose, and HbA1c;

② DM knowledge: assessed using a diabetes knowledge questionnaire (total score: 100);

③ Self-management behaviors: including dietary control, exercise adherence, and medication compliance;

④ Presence of comorbidities and complications: A personal health record was established, including basic information, assessment results, and intervention plans. Patients were also invited to join a WeChat group for DM management.

(3) Phased Interventions

① Acute Phase (Weeks 1–8):

For patients with poor blood glucose control (FBG > 7.0 mmol/L), enhanced interventions were implemented. Nurses conducted weekly outpatient follow-ups, adjusted glucose-lowering plans (in collaboration with physicians), and provided guidance on insulin injection techniques and blood glucose monitoring (four times daily: fasting and 2 hours post three meals). WeChat group content was delivered twice a week, including dietary case studies and exercise videos (e.g., tai chi, walking). Online group discussions were held biweekly to answer patients' questions.

② Stabilization Phase (Weeks 9–16):

Once FBG was controlled below 7.0 mmol/L, patients entered the stabilization phase. Outpatient follow-ups were held every two weeks, and glucose monitoring frequency was gradually reduced (three times per week). Specialist nurses developed personalized meal plans based on dietary preferences, emphasizing the use of food exchange units. Family involvement was encouraged to improve exercise adherence (at least 150 minutes of moderate-intensity activity per week).

1.3.3 Observation Indicators

(1) Blood Glucose Control Indicators:

FBG and HbA1c levels were measured before and after the 6-month intervention. FBG was quantified using the glucose oxidase method, and HbA1c was measured by high-performance liquid chromatography.

(2) Diabetes Self-Management Behavior Ability:

Assessed using the Summary of Diabetes Self-Care Activities (SDSCA) scale, which includes six domains: dietary intervention, exercise planning, blood glucose monitoring, medication adherence, foot care, and emergency response to blood glucose fluctuations. The scale contains 24 items, each scored from 0 to 7 based on frequency of execution, with a theoretical maximum score of 168. A higher score indicates better self-management. The scale has a Cronbach's α of 0.86, demonstrating good reliability and validity.

1.4 Statistical Methods

Double data entry and consistency verification were performed using EpiData 3.1 software. Data analysis was conducted with SPSS 25.0. Measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$). Paired t-tests were used for within-group comparisons before and after intervention, and independent t-tests for between-group comparisons. Categorical data were expressed as n (%) and compared using the chi-square test (χ^2). A significance level of $P < 0.05$ was considered statistically significant.

2. Results

2.1 Comparison of Blood Glucose Control Indicators Before and After Intervention Between the Two Groups

There were no statistically significant differences in FPG and HbA1c levels between the two groups before the intervention. After six months of intervention, both FPG and HbA1c levels decreased in both groups, with the observation group showing a more significant reduction compared to the control group ($P < 0.05$). For detailed results, see **Table 2**.

Table 2. Comparison of Blood Glucose Control Indicators Before and After Intervention Between the Two Groups ($\bar{x} \pm s$)

Group	*n*	Fasting Blood Glucose (mmol/L)		Glycated Hemoglobin (%)	
		Before Intervention	After Intervention	Before Intervention	After Intervention
Observation	80	8.56 ± 1.02	5.82±0.76	8.72±0.75	6.35±0.52
Control	80	8.61 ± 1.05	7.15±0.92	8.68±0.78	7.58±0.67
t value		1.244	7.057	1.022	5.247
P value		> 0.05	< 0.05	> 0.05	< 0.05

2.2 Comparison of Self-Management Ability Scores Before and After Intervention Between the Two Groups

There was no statistically significant difference in SDSCA scores between the two groups before the intervention. After six months of intervention, the SDSCA scores increased in both groups, but the

improvement in the observation group was significantly greater than that in the control group ($P < 0.05$). Details are shown in Table 3.

Table 3. Comparison of Self-Management Ability ($\bar{x} \pm s$, scores)

Group	*n*	Before Intervention	After Intervention
Observation	80	52.17 ± 5.32	82.36 ± 6.45
Control	80	51.89 ± 5.46	65.24 ± 5.87
t value		1.241	5.685
P value		> 0.05	< 0.05

3. Discussion

Elderly T2DM, as a progressive metabolic disease, requires a management approach that simultaneously addresses blood glucose control, complication prevention, and improvement of quality of life [5]. Due to age-related physiological decline, elderly patients often experience polypharmacy, cognitive impairment, and reduced self-care ability, which result in large fluctuations in blood glucose and poor treatment adherence[6]. The conventional outpatient management model has significant limitations: fragmented interventions, where single-session health education is insufficient for long-term memory formation; lack of personalization, with plans not adjusted according to disease progression; and inadequate continuity, where patients are prone to losing medical supervision after discharge. These issues lead to weak self-management abilities in elderly patients [7].

The results of this study showed that after the intervention, the observation group had significantly lower FPG and HbA1c levels and significantly higher SDSCA scores compared to the control group ($P < 0.05$), indicating that sequential management in specialist nurse-led outpatient clinics has a significant effect in elderly diabetes management. The advantages are reflected in the following aspects:

① Precision of staged interventions. Sequential management divides patients' glycemic control into three stages: acute phase, stabilization phase, and maintenance phase, each with clear goals. In the acute phase, frequent follow-ups are used to rapidly reduce blood glucose; in the stabilization phase, behavioral interventions are reinforced to consolidate the effect; and in the maintenance phase, a long-term support system is established to prevent relapse[8]. This stepwise strategy aligns with the progression pattern of chronic diseases and avoids the blind application of a one-size-fits-all approach. For example, the requirement for daily blood glucose monitoring during the acute phase allows timely detection of fluctuations and adjustment of treatment plans, while in the stabilization phase, the frequency of monitoring is gradually reduced, which not only lightens the patient's burden but also ensures the quality of management.

② Professional value of specialist nurses. Specialist nurses possess solid knowledge of diabetes and rich clinical experience, enabling them to perform full-process management from assessment and intervention to follow-up [9]. In this study, specialist nurses provided professional services such as personalized diet planning and insulin injection guidance, compensating for the shortcomings of conventional care, which tends to emphasize theory over practice. Furthermore, frequent interactions between specialist nurses and patients (e.g., Q&A in WeChat groups, offline lectures) enhanced patient trust in healthcare providers and improved cooperation.

③ Coordination of multidimensional interventions. Sequential management integrates various aspects such as diet, exercise, medication, and monitoring into a unified intervention, forming a closed loop of "knowledge transfer–behavior training–social support" [10].

In conclusion, sequential management in specialist nurse-led outpatient clinics, through staged and precise interventions, professional guidance by specialist nurses, and multidimensional coordinated interventions, can effectively improve glycemic control and self-management ability in elderly T2DM patients. It is a management model worthy of clinical promotion.

References

[1] Chen H, Yang Z, Sun H, et al. Cloud-based regional collaborative management for diabetic foot patients by specialist nurses based on the

"Internet+" model. Journal of Nursing Science. 2025;40(10):1–5.

[2] Ming Y, Xiao S. Practice and reflections on diabetes management by primary nurses within a disease-specific nursing alliance model. Journal of Taizhou Vocational and Technical College. 2025;25(03):82–85.

[3] Butler S. Type 2 diabetes and the role of nurses in its management. Nursing Standard (Royal College of Nursing (Great Britain): 1987). 2025.

[4] He B, Kong Z, Zhou L, et al. Application of a family doctor contract service model led by specialist nurses in the management of community diabetes patients. Science Consultation. 2024;(19):140–143.

[5] Shozuhara T ,Suzuki M .Comparison of Nurse Practitioner and Physician Management of Diabetes in Japan[J].The Journal for Nurse Practitioners,2024,20(8):105130-105130.

[6] Cheng N, Zhou X, Guo S, et al. Research progress on the application of nurse prescribing rights in diabetes management. Nursing Research. 2024;38(12):2173–2177.

[7] Sun R, Chen S, Wu Y, et al. A qualitative study on stakeholder perspectives regarding the role expectations of practice nurses in diabetes management. Journal of Nursing Science. 2024;39(11):73–77.

[8] Zhang Y. Evaluation of the effectiveness of WeChat follow-up by community nurses on the self-management ability of patients with type 2 diabetes. Shanghai Medical & Pharmaceutical Journal. 2024;45(08):55–58.

[9] Wang K, Weng G, Sun X. Application of the MMC management model led by specialist nurses in improving self-management among patients with type 2 diabetes. Diabetes New World. 2024;27(02):176–179.

[10] Cao F, Zhang L, Zhang Y, et al. Training outcomes of diabetes liaison nurses under a hospital-wide blood glucose management model. General Practice Nursing. 2024;22(01):147–151.