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Build A Pharmaceutical Service Model for Hypertensive Patients Based on the Specialized Medical Alliance of Pharmacy

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A**bstract:** *Objective:* To explore the effect of the pharmacy service model for hypertensive patients based on the construction of pharmacy specialty medical alliances in improving blood pressure control rate, medication compliance, and drug safety, and to provide a feasible path for the construction of the chronic disease pharmacy service system at the primary level. *Methods:* A randomized controlled trial was conducted. A total of 100 patients from Baimaguan Town Health Center in Luojiang District, Deyang City and the cooperative units of the medical alliance were selected from July 2025 to January 2026 and randomly divided into an intervention group and a control group, with 50 cases in each group. The control group was managed by a regular family doctor, while the intervention group, on this basis, adopted the pharmacy specialty medical alliance service model, where clinical pharmacists from tertiary hospitals guided primary pharmacists to complete individualized prescription review, medication compliance assessment, adverse reaction monitoring, and electronic drug record follow-up. The intervention lasted for 6 months to observe blood pressure control rate, MMAS-8 medication compliance, incidence of adverse reactions, and satisfaction with pharmaceutical care. *Results:* After the intervention, systolic blood pressure (131.5 ± 7.4 mmHg) and diastolic blood pressure (82.3 ± 5.6 mmHg) in the intervention group were significantly lower than those in the control group (137.2 ± 8.1 mmHg, 86.1 ± 6.2 mmHg) ($P < 0.01$); The rates of reaching the target blood pressure were 86.0% and 64.0% respectively ($\chi^2 = 6.93$, $P = 0.008$). The MMAS-8 score of the intervention group was 7.2 ± 0.6, compared with 6.3 ± 0.8 of the control group ($t = 5.96$, $P < 0.001$), and the incidence of adverse reactions was 6.0% less than 16.0% of the control group ($\chi^2 = 4.02$, $P = 0.045$). The satisfaction score for pharmaceutical care was 93.4 ± 5.2 points, which was higher than 85.6 ± 6.3 points in the control group ($t = 6.42$, $P < 0.001$). *Conclusion:* The pharmacy service model for hypertensive patients in the pharmacy specialty medical alliance can significantly improve blood pressure control rate, medication compliance, reduce the incidence of adverse drug reactions, and increase patient satisfaction. This model optimizes the collaboration mechanism between physicians and pharmacists and has significant promotion value for promoting rational drug use at the grassroots level and building a sustainable chronic disease pharmacy service system.

Keywords: Pharmacy specialty medical alliance; Hypertension; Pharmaceutical care; Medication compliance

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1. Introduction

Hypertension is one of the most significant chronic non-communicable diseases threatening human health, with a high incidence rate, high disability rate and many complications. According to the "China Cardiovascular Health and Disease Report 2021", the prevalence of hypertension among people aged 18 and above in China has reached 27.5%, with a total of more than 245 million patients, but the treatment control rate remains very low. The long-term control of hypertension requires not only reasonable drug treatment regimens, but also good medication compliance of patients and the quality of pharmacy services in primary medical institutions. The hierarchical medical system in China is becoming increasingly sophisticated, and the long-term management of patients with chronic diseases in primary medical institutions is getting heavier and heavier, but there are still obvious deficiencies in pharmaceutical care. Most primary pharmacists' work is mainly about distributing drugs, lacking monitoring and follow-up of the drug treatment process, and lacking the ability to educate patients on medication and assess adverse reactions, thus failing to fully play the role that pharmacists should play in disease management.

With the construction of medical consortia, the sinking of high-quality medical resources is an important way to improve the capacity of pharmacy services at the grassroots level. Pharmacy specialty medical alliances, led by clinical pharmacists in tertiary hospitals and linked by technical guidance, training and teaching, and information sharing, form a network of pharmacy services that are linked up and down, enabling grassroots pharmacists to carry out drug therapy management (MTM) services with professional support and improve the level of rational drug use and patient medication safety. Foreign studies have shown that pharmacists' involvement in drug management for hypertensive patients can significantly increase the rate of achieving blood pressure targets, improve patient compliance, and reduce the rate of adverse drug events. Some large hospitals in China have attempted to set up pharmacy clinics or Internet pharmacy services, but overall, they are still concentrated in tertiary hospitals in cities, and there is a lack of replicable service models in grassroots areas.

It is of great practical significance to explore the application value of this model in the management of hypertensive patients by taking both policy guidance and clinical demand into account to create a pharmacy specialty medical alliance model with clinical pharmacists in tertiary hospitals as the core, family pharmacists at the grassroots level as the main body, and patients as the center. Based on the framework of the medical alliance, this study integrates the professional intervention of pharmacists and information-based follow-up methods, and uses a randomized controlled study design method to compare the effects of the above model on various aspects such as blood pressure control rate, medication compliance, and drug safety in hypertensive patients, thereby providing practical and theoretical support for optimizing the construction of the chronic disease pharmacy service system at the grassroots level.

2. Data and methods

2.1. General information

One hundred patients with hypertension who visited the Baimaguan Town Health Center and the cooperative hospitals of the medical alliance in Luojiang District, Deyang City from July 2025 to January 2026 were selected as the research subjects. Inclusion criteria: (1) According to the diagnostic criteria of the "Chinese Guidelines for the Prevention and Treatment of Hypertension", they met the criteria for essential hypertension; (2) Age 18–80 years old; (3) Conscious and able to cooperate in completing the questionnaire survey; (4) Sign the informed consent form. Exclusion criteria: (1) Secondary hypertension; (2) Combined with severe heart, liver or kidney insufficiency; (3) Have mental illness or cognitive impairment. Patients were randomly divided into an intervention group and a control group, with 50 cases in each group, using a random number table. There was no statistically significant difference in general conditions such as gender, age and disease duration between the two groups ($P > 0.05$).

2.2. Methods

2.2.1. Control group

Health management was carried out by the family doctor team following the routine management process. It involves monthly phone or outpatient follow-ups, blood pressure measurement and recording, lifestyle interventions (salt restriction, weight control, exercise, etc.), and routine medication guidance. The doctor adjusts the antihypertensive medication plan based on the patient's blood pressure control situation, and the pharmacist dispenses the medication and provides some simple medication consultation. This is a common model for managing chronic hypertension at the primary care level.

2.2.2. Intervention group

On the basis of the routine management of the control group, a pharmaceutical service model based on the pharmaceutical specialty medical alliance was carried out. The model is based on the tripartite collaboration of "clinical pharmacists in tertiary hospitals - family pharmacists at the grassroots level - patients" to establish a multi-level pharmacy service network.

(1) Guidance by clinical pharmacists from tertiary hospitals: Clinical pharmacists from tertiary hospitals, led by the medical alliance, design individualized medication plans for patients through online meetings or on-site guidance every month, including drug types, dosages, combination therapy and interaction evaluation. Pharmacists conduct case analyses, prescription review training, and medication risk warnings for grassroots pharmacists to ensure the scientific and standardized nature of pharmaceutical intervention.

(2) Implementation by primary pharmacists: Primary family pharmacists, after receiving guidance from their superior pharmacists, are responsible for the implementation of specific pharmaceutical interventions, including first-use education, compliance assessment, adverse drug reaction monitoring, and continuous follow-up. The follow-up will be conducted through a combination of phone calls, WeChat calls and in-person follow-up visits, no less than once a month. Each follow-up visit records changes in blood pressure, medication use, and reports of adverse reactions.

(3) Information sharing and collaboration mechanism: Create an electronic medical record system using the information platform of the medical alliance to enable real-time sharing of patient prescriptions, blood pressure monitoring records, and medication adjustment plans. Clinicians, pharmacists and patients can all view medication records and intervention results, thereby enhancing the continuity and transparency of management.

(4) A three-stage intervention process, where clinical pharmacists educate patients on drug use during the admission stage to understand their previous medication history, comorbidities, and possible drug interactions; During hospitalization, pharmacists participate in ward rounds, observe the drug treatment process of patients, and review prescriptions in a timely manner to identify medication problems; During the discharge and home follow-up stages, primary care pharmacists continue to manage, providing discharge guidance, home follow-up, and medication re-evaluation. Using an online platform to record patients' blood pressure data and feed it back to senior pharmacists for continuous pharmaceutical care.

(5) Establishment of health records for family pharmacists: Establish electronic follow-up records for each intervention group of patients, including blood pressure measurements, medication regimen adjustments, compliance scores, adverse reactions, etc. The contents of the records are updated monthly for regular review and evaluation by senior pharmacists.

The entire intervention cycle lasts for six months. The research team held regular case discussion sessions to summarize and analyze each patient's case to ensure the quality and consistency of the intervention.

2.3. Observation indicators

(1) Blood pressure control rate: Measured with a standard sphygmomanometer, with the patient sitting still for 5 minutes before measurement. Take the average of three consecutive measurements. The standard for blood pressure control is a systolic pressure of less than 140 mmHg and a diastolic pressure of less than 90 mmHg. Calculate the proportion of patients reaching the target and evaluate the impact of the pharmacy service model on

blood pressure control.

(2) Medication Adherence: Using the verified eight-item concise Medication Adherence Scale (Morisky Medication Adherence Scale-8, MMAS-8). The scale has 8 items and is out of 8 points. A score of ≥ 6 indicates good compliance, and a score of < 6 indicates poor compliance. The questionnaire was filled out by trained pharmacists through face-to-face or telephone interviews during follow-up to assess the patient's adherence to antihypertensive medication.

(3) Incidence of adverse drug reactions: The pharmacist made the judgment in accordance with the "Chinese Specifications for Monitoring, Reporting and Evaluation of Adverse Drug Reactions (2020 Edition)". Record the adverse events that occurred in patients during the study period, including dizziness, fatigue, lower extremity edema, gastrointestinal discomfort, etc., and classify them into three categories: probable, very likely, and determined relevant, and calculate the incidence of adverse reactions.

(4) Satisfaction with pharmaceutical care: Use a self-made questionnaire on satisfaction with pharmaceutical Care, which includes five aspects: the attitude of pharmacist communication, the professionalism of medication guidance, the timeliness of follow-up, the practicality of health education, and overall satisfaction, each worth 20 points, out of 100 points. The higher the score, the higher the satisfaction. The questionnaire was filled out by the patients themselves after the intervention, and then collected by a third-party researcher.

2.4. Statistical processing

Data analysis was performed using SPSS 23.0 software. Measurement data were expressed as mean ± standard deviation (SD), and the t-test was used for comparison between groups; Count data were expressed as rates (%), and the χ^2 test was used for comparison between groups. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of general information and blood pressure changes between the two groups of patients

There were no statistically significant differences ($P > 0.05$) between the two groups of patients in terms of gender, age, disease duration and baseline blood pressure, and they were comparable. After 6 months of intervention, blood pressure levels in both groups decreased significantly from baseline, with the intervention group having a more significant decrease. Both systolic and diastolic blood pressures in the intervention group were significantly lower than those in the control group ($P < 0.01$) (**Table 1**).

Table 1. General information of the two groups and comparison of blood pressure before and after intervention (mean ± SD)

Indicators	Gender (male/female)	Age (years)	Disease duration/year	Systolic blood pressure before intervention	Post-intervention systolic blood pressure	Diastolic blood pressure before intervention	Post-intervention diastolic blood pressure
Intervention group ($n = 50$)	28/22	59.3 ± 8.2	6.4 ± 3.7	152.7 ± 9.8	131.5 ± 7.4	94.2 ± 6.7	82.3 ± 5.6
Control group ($n = 50$)	26/24	58.7 ± 9.1	6.2 ± 3.5	153.4 ± 10.1	137.2 ± 8.1	95.1 ± 7.2	86.1 ± 6.2
t/χ^2 values	0.16	0.33	0.28	0.35	3.82	0.62	3.06
P value	0.691	0.742	0.781	0.725	< 0.001	0.537	0.003

3.2. Comparison of blood pressure control rate and medication adherence

At the end of the intervention, the rate of reaching the target blood pressure in the intervention group was 86.0%, significantly higher than 64.0% in the control group ($\chi^2 = 6.93$, $P = 0.008$). The MMAS-8 score showed that the compliance score of the intervention group was 7.2 ± 0.6, higher than 6.3 ± 0.8 of the control group ($t = 5.96$, $P < 0.001$); The proportion of those with good compliance was also significantly higher than that of the control group ($\chi^2 = 7.07$, $P = 0.008$) (**Table 2**).

Table 2. Comparison of blood pressure control rate and medication compliance between the two groups

Indicators	Number of cases with blood pressure reaching the target [n (%)]	MMAS-8 score (mean ± SD)	Good compliance [n (%)]
Intervention group ($n = 50$)	43 (86.0)	7.2 ± 0.6	44 (88.0
Control group ($n = 50$)	32 (64.0)	6.3 ± 0.8	33 (66.0)
t/χ^2 values	6.93	5.96	7.07
P value	0.008	< 0.001	0.008

3.3. Comparison of adverse drug reactions with satisfaction with pharmaceutical care

During the study period, the incidence of adverse drug reactions in the intervention group was 6.0%, lower than 16.0% in the control group ($\chi^2 = 4.02$, $P = 0.045$). At the end of the intervention, the score of satisfaction with pharmaceutical care in the intervention group was 93.4 ± 5.2, while that in the control group was 85.6 ± 6.3, and the difference was statistically significant ($t = 6.42$, $P < 0.001$). The comprehensive analysis results indicated that the pharmacy specialist medical alliance service model significantly improved the blood pressure control rate, medication compliance and satisfaction of patients, while reducing the occurrence of adverse drug reactions (**Table 3**).

Table 3. Comparison of adverse drug reactions and satisfaction with pharmaceutical care between the two groups of patients

Indicators	Number of adverse reactions [n (%)]	Satisfaction with pharmaceutical care (points, mean ± SD)
Intervention group ($n = 50$)	3 (6.0)	93.4±5.2
Control group ($n = 50$)	8 (16.0	85.6±6.3
t/χ^2 values	4.02	6.42
P value	0.045	< 0.001

4. Discussion

The results of this study show that the model of pharmacy care for hypertensive patients based on pharmacy specialty medical alliances is superior to the conventional management model in several core indicators. The control rate of blood pressure in the intervention group was significantly improved, medication compliance was significantly enhanced, the incidence of adverse reactions was significantly reduced, and the satisfaction with pharmaceutical care was significantly increased, indicating that this model can effectively promote the blood pressure management level and rational drug use behavior of patients.

The main reason for the difference was the full play of the role of pharmacists. Traditional chronic disease management at the grassroots level is dominated by doctors, with pharmacists only playing the role of dispensing drugs and providing passive consultations, lacking systematic pharmaceutical care. The pharmacy specialist medical alliance

model established in this study enables clinical pharmacists in tertiary hospitals to provide full technical support to primary pharmacists, allowing pharmacists to participate in the management of the entire process, including prescription review, medication guidance, compliance evaluation, adverse reaction monitoring, etc., greatly enhancing the professionalism and continuity of pharmacy services. Clinical pharmacists improve patients' medication use through individualized medication regimens, making patients' medication use more scientific and the dosage more reasonable, thereby reducing adverse events.

In addition, the application of information technology is also a reason for the success of the model. The real-time sharing of medication data through the electronic medical record system of the medical alliance has broken down the information barriers between grassroots and higher-level hospitals, allowing patients to receive continuous and traceable pharmaceutical intervention. Pharmacists can adjust treatment plans in a timely manner based on the results of dynamic monitoring to improve the accuracy of medication use. Under the regular follow-up and health education of pharmacists, patients' understanding of the disease and medication knowledge is significantly enhanced, and compliance is significantly improved.

The significance of the study lies not only in testing the utility of the model but more importantly, in providing a replicable and scalable path for chronic disease drug treatment services at the grassroots level. With the collaboration of multi-level pharmacists and the interconnection of information, an overall improvement in the quality of pharmaceutical care can be achieved under the condition of limited resources. However, this study has limitations such as a small sample size, short intervention time, and implementation in a single region. In the future, multi-center studies on a larger scale and for a longer period can be conducted to verify the long-term effects and cost-effectiveness of this model.

5. Conclusion

To sum up, the pharmacy service model based on the pharmacy specialty medical alliance can improve the blood pressure control rate of hypertensive patients, improve the medication compliance of hypertensive patients, improve the satisfaction rate of hypertensive patients with pharmacy services, promote the transformation of primary pharmacy services from "drug-centered" to "patient-centered", and has important practical significance for improving the chronic disease pharmacy service system in China.

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Disclosure statement

The author declares no conflict of interest.

References

[1] Ma LY, Wang ZW, Fan J, et al., 2022, China Cardiovascular Health and Disease Report 2021 on the Prevalence and Prevention and Treatment of Hypertension in China. Chinese General Practice, 25(30): 3715–3720.

[2] Hu WS, Zhang N, Feng GS, 2020, Research on the Evaluation of Community Medical Services by Patients with Chronic Diseases under the Medical Alliance Platform and Its Impact on the Choice of Medical Institutions. Chinese General Practice, 23(16): 1982–1988.

[3] Song W, Ge JJ, Shu Q, et al., 2021, American Health Insurance and Drug Therapy Management Services. Medical Review, 40(3): 336–339.

[4] Li HX, Cai J, Wu QH, et al., 2021, Evaluation of the Human Effects of Drug Therapy Management Services in Elderly Patients with Chronic Diseases. Chinese Journal of Modern Applied Pharmacy, 38(8): 1002–1007.