

Analysis of the Application Effect of Multi-Role Positioning Service Model in Hypertensive Patients in Health Examination Center

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Abstract: *Objective:* To study the application effect of the multi-role positioning service model in hypertensive patients in the health examination center. *Methods:* A total of 152 hypertensive patients admitted to the hospital's health examination center from January 2024 to January 2025 were selected as the subjects. They were randomly divided into two groups using a random number table method. The control group (76 cases) received conventional physical examination service mode, while the observation group (76 cases) adopted the multi-role positioning service model. The nurse proficiency and physical examination quality were compared between the two groups. *Results:* The nurse proficiency scores in the observation group were higher than those in the control group ($P < 0.05$). The physical examination quality scores in the observation group were higher than those in the control group ($P < 0.05$). *Conclusion:* The adoption of the multi-role positioning service model for hypertensive patients in the health examination center can improve nurse proficiency and physical examination quality.

Keywords: Hypertension; Health examination center; Conventional physical examination service mode; Multi-role positioning service model

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1. Introduction

Residents in China face issues such as high life stress, inadequate physical activity, and unhealthy diets, leading to a continuous increase in the incidence of chronic diseases like hypertension^[1]. Long-term hypertension elevates the risk of cardiovascular and cerebrovascular accidents, posing a threat to life safety^[2]. Regular outpatient follow-up or health checkups can assess hypertension status, provide timely individualized guidance to patients, and enable early detection and effective treatment of cardiovascular and cerebrovascular accidents^[3]. As health awareness among Chinese residents grows, the number of hypertensive patients undergoing regular health checkups increases. To assist hypertensive patients in completing health checkups smoothly and efficiently, it is crucial to provide excellent service. The multi-role positioning service model, a novel service approach based

on multi-role positioning theory, can enhance the overall proficiency of nurses conducting health checkups and improve the quality of health services. This study analyzed the effectiveness of the multi-role positioning service model in health checkups among 152 hypertensive patients.

2. Materials

2.1. General information

The sample size was estimated using the formula $n_1 = n_2 = 2[(u\alpha + u\beta)/(\delta/\sigma)]^2 + 0.25u\alpha^2$, where n represents the sample presentation mode, and n_1 and n_2 denote the sample sizes of the observation group and control group, respectively. The initial calculated sample size was $n_1 = n_2 = 60$ cases, meaning at least 120 patients were required for the study. However, to account for potential sample loss during the research period, the sample size was increased to 76 cases per group, resulting in a total sample size of 152 cases. From January 2024 to January 2025, a total of 152 hypertensive patients were admitted to the hospital's health examination center. All participants were randomly assigned using a random number table method, with 76 cases in the control group and 76 cases in the observation group. In the control group: 45 males and 31 females; age range 32–62 years (mean 47.31 ± 5.06 years); disease duration 1–7 years (mean 4.25 ± 1.06 years); 34 cases with junior high school education or below, and 42 cases with education beyond junior high school. In the observation group: 41 males and 35 females; age range 34–61 years (mean 47.89 ± 5.25 years); disease duration 1–8 years (mean 4.66 ± 1.21 years); 31 cases with junior high school education or below, and 45 cases with education beyond junior high school. No significant differences were observed between the groups in baseline characteristics ($P > 0.05$).

2.1.1. Inclusion criteria

- (1) Meeting the diagnostic criteria outlined in the National Guidelines for Primary Hypertension Prevention and Management (2020 Edition).
- (2) Possessing independent communication and writing abilities.
- (3) Having stable vital signs and being able to cooperate with health examinations and related surveys.
- (4) Providing informed consent for the study.

2.1.2. Exclusion criteria

- (1) Presence of major organ dysfunction.
- (2) Suffering from infectious diseases.
- (3) Having psychiatric disorders.
- (4) Experiencing auditory or visual impairments.

3. Methods

The control group received the conventional health examination service model: Upon entering the health examination center, participants were provided with a physical examination form and informed about the requirements, purposes, and precautions of the examination. After completing all examination items, they were notified about the time, location, and method for obtaining their examination reports.

The observation group received a multi-role positioning service model, which included the following aspects:

(1) Training

Nurses in the health examination center underwent training focused on the principles, procedures, and precautions of multi-role positioning services. This training aimed to enhance their knowledge and service capabilities, enabling them to adapt to various roles and provide high-quality services to examinees.

(2) Service provider

Upon arrival, examinees were warmly received and offered proactive assistance, such as retrieving examination forms and logging information. Nurses maintained patience and a smiling demeanor throughout, demonstrating respect for the examinees. They presented themselves with a polite, dignified, and neat appearance to uphold the image of the department and hospital. A clean, comfortable, and safe examination environment was maintained, with clear and standardized signs placed in all corridors to guide examinees through each step. The waiting area was equipped with an adequate number of chairs, bottled drinking water, free paper cups, health examination booklets, and educational materials on common chronic diseases, allowing examinees to wait comfortably, hydrate, and read. Additionally, wheelchairs and stretchers were provided in visible locations for free use by those with mobility difficulties or physical weakness.

(3) Executor

Nurses proactively inquired about examinees' information and patiently explained the requirements, procedures, and precautions for each examination item based on the selected package. They listened attentively to questions and provided detailed answers. Using the computer system, nurses monitored the waiting status of each department and guided examinees to complete each item efficiently. They also helped plan examination routes for those with time constraints. Examinees were informed about the methods and timing for obtaining their reports, with options for electronic or paper versions. A green channel was established to facilitate appointments, specialist consultations, and hospitalization services for those requiring immediate medical attention or further examination.

(4) Demonstrator

After accompanying examinees through all items or upon issuing reports, nurses actively assisted in interpreting the results and conducting comprehensive health assessments. Special attention was given to individuals with suspected conditions, followed by gentle and patient targeted education, encouraging further examination until diagnosis and treatment. For results indicating slightly abnormal values without confirmed disease but suggesting high risk of chronic conditions, targeted explanations were provided along with corresponding preventive measures. Examinees were urged to correct unhealthy habits and adopt healthier lifestyles.

(5) Manager

With the aid of computer systems, nurses strictly monitored foot traffic in the health examination center across different time slots and tracked waiting times for each examination item. They proactively updated examinees on current conditions, adjusted examination sequences appropriately, or deployed nurses to disperse crowds, preventing congestion in specific areas. After completing examinations, with the examinees' consent, personal health records were created to document each result in detail, assisting physicians in comprehensive health evaluations and guiding patients in daily life and medication management, especially for those with chronic conditions like hypertension.

(6) Counselor

For examinees showing significant anxiety or depression during the examination, nurses communicated with

them promptly, preferably in a private room to protect their privacy. They encouraged open expression of concerns, alleviating psychological burdens induced by chronic diseases like hypertension, helping maintain a positive mindset to complete examinations optimistically, and thoughtfully follow medical advice.

(7) Tracker

For those who established health records or were diagnosed with chronic diseases such as hypertension, nurses accurately communicated results and explained the necessity of continuous and effective management. Follow-up sessions were scheduled to track symptoms, signs, and recent re-examination results. Professional guidance and assistance were provided based on the examinees' needs.

3.1. Observation indicators

- (1) Nursing competency: Evaluated using a self-developed Comprehensive Nursing Competency Assessment Questionnaire designed by the Health Examination Center. The questionnaire demonstrated high reliability (Cronbach's $\alpha = 0.884$) and validity (content validity index = 0.897). It assessed six dimensions: professional ethics, service attitude, communication skills, organizational ability, appearance and demeanor, and humanistic literacy. Each item was scored on a scale of 0–10, with higher scores indicating better performance in the respective dimension.
- (2) Physical examination quality: Evaluated using a self-developed Physical Examination Quality Assessment Questionnaire designed by the Health Examination Center. The questionnaire showed high reliability (Cronbach's $\alpha = 0.891$) and validity (content validity index = 0.902). It evaluated five aspects: examination environment, examination duration, examination process, examination guidance, and privacy protection. Each item was scored on a scale of 0–20, with higher scores indicating better quality in the respective aspect.

3.2. Statistical methods

Data analysis was performed using SPSS 27.0. Categorical data were expressed as percentages (%) and compared using the χ^2 test. Continuous data that followed a normal distribution were presented as $\bar{x} \pm s$ and compared using the t-test (or F-test for ANOVA). A p -value < 0.05 was considered statistically significant.

4. Results

4.1. Comparison of nursing competency scores between the two groups

As shown in **Table 1**, the nursing competency scores of the observation group were significantly higher than those of the control group ($P < 0.05$).

Table 1. Comparison of nursing competency scores between the two groups ($\bar{x} \pm s$, points)

Group	n	Professional ethics	Service attitude	Communication skills	Organizational skills	Appearance and demeanor	Humanistic quality
Observation	76	9.35 $\pm$ 0.56	9.45 $\pm$ 0.53	9.40 $\pm$ 0.57	9.38 $\pm$ 0.59	9.43 $\pm$ 0.57	9.31 $\pm$ 0.59
Control	76	8.62 $\pm$ 0.47	8.78 $\pm$ 0.45	8.82 $\pm$ 0.49	8.69 $\pm$ 0.52	8.80 $\pm$ 0.53	8.72 $\pm$ 0.52
t-value		8.705	8.401	6.727	7.649	7.056	6.540
p-value		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

4.2. Comparison of physical examination quality scores between the two groups

As shown in **Table 2**, the observation group had significantly higher physical examination quality scores than the control group ($P < 0.05$).

Table 2. Physical examination quality scores of the two groups (Mean $\pm$ SD, Points)

Group	n	Examination environment	Examination time	Examination process	Examination guidance	Privacy protection
Observation	76	18.76 $\pm$ 1.16	18.91 $\pm$ 1.07	18.59 $\pm$ 1.25	18.65 $\pm$ 1.29	18.80 $\pm$ 1.16
Control	76	17.02 $\pm$ 1.05	17.45 $\pm$ 1.00	17.00 $\pm$ 1.13	17.09 $\pm$ 1.13	17.00 $\pm$ 1.05
t-value		9.695	8.691	8.226	7.930	10.029
p-value		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

5. Discussion

Health examination is a simple, affordable, and easily manageable healthcare approach. Through various examination items, it allows for a comprehensive analysis of an individual's physical functions and assessment of their health status ^[4]. Regular health examinations help individuals track changes in their health status and detect diseases at an early stage, particularly chronic conditions ^[5]. Early identification and timely intervention can facilitate prompt control of health issues, reduce the risk of severe complications resulting from disease progression, and ultimately promote overall well-being ^[6]. With the rapid development of the socioeconomy, public awareness of the importance of health examinations has increased. Consequently, health examination centers are experiencing growing patient volumes, and examinees now have higher expectations for service quality ^[7]. It is essential for health examination centers to actively analyze the needs of examinees, promptly address their reasonable demands, and continuously improve the quality of examination services.

In this study, both the nursing competency scores and physical examination quality scores of the observation group were higher than those of the control group ($P < 0.05$), indicating that the multi-role positioning service model is more advantageous compared to the conventional physical examination service model. The reason for this may be that hypertension is a chronic disease that cannot be cured, making regular health examinations crucial for patients' condition control and prognosis improvement ^[8]. The service model of health examinations directly affects the experience of hypertensive patients, necessitating the exploration of a more ideal service model. The conventional physical examination service model fails to meet the diverse needs of different examinees and lacks initiative in service provision ^[9, 10]. The multi-role positioning service model addresses issues such as substandard examination quality and poor patient experience by focusing on improving nurses' comprehensive competency and professional skills. Through personnel training, this approach enhances various abilities of nurses, helps them understand the responsibilities of different roles, and transforms their service mindset ^[11]. It encourages nurses to shift from passive to active service, providing continuous and personalized care to examinees. This model helps examinees gain a comprehensive understanding of the health examination process, enabling them to complete various examination items quickly, efficiently, and accurately, thereby improving their overall experience and the quality of the examination.

6. Conclusion

In conclusion, the implementation of the multi-role positioning service model in health examinations for hypertensive patients can enhance nursing competency and service quality. However, this study has certain limitations, such as a limited number of evaluation indicators, the absence of metrics like examination duration and patient satisfaction, and a lack of comprehensive analysis regarding the overall impact of different service models on examination outcomes. Future clinical studies should include larger sample sizes and more in-depth investigations.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Pan J, Lei SL, Yang LP, 2024, The Impact of Psychological Nursing on the Mental Health Status of First-Onset Hypertension Patients Undergoing Physical Examination. *Journal of International Psychiatry*, 51(5): 1635–1638.
- [2] Liu XY, Wang Y, Zou Y, 2024, Application and Effect Evaluation of a Health Management Model Based on Personalized Services in Physical Examination Centers. *Hebei Medical Journal*, 46(13): 2024–2026.
- [3] Lan YY, Huang DQ, Li XZ, et al., 2024, Application and Effect Evaluation of an Active Health Information Platform in the Whole-Process Management of Elderly-Friendly Physical Examination Services. *Guangxi Medical Journal*, 46(6): 941–944.
- [4] Jiang LM, Wang L, Zhou J, et al., 2022, The Impact of a Regional Supervision Model on the Quality of Health Management Center Examinations and Services. *Hebei Medical Journal*, 44(15): 2330–2332.
- [5] National Center for Cardiovascular Diseases, National Primary Public Health Service Project Primary Hypertension Management Office, National Expert Committee on Primary Hypertension Management, 2021, National Guidelines for Primary Hypertension Prevention and Management (2020 Edition). *Chinese Circulation Journal*, 36(3): 209–220.
- [6] Zhao Y, Liu QN, Sun CH, 2022, Application of Nurse-Patient Communication Skill Model Nursing in Health Examinations. *Journal of Qilu Nursing*, 28(14): 101–103.
- [7] Li GH, Yao C, Zhou YJ, 2022, Application of Health Management and Nursing Based on Maslow's Hierarchy of Needs Theory in Physical Examination Centers. *Hainan Medical Journal*, 33(8): 1086–1088.
- [8] Yu GF, Wang H, Shen KR, 2022, Application of a Refined Health Examination Management Model in Physical Examinations. *Chinese Journal of Medicine*, 57(2): 198–201.
- [9] Jiao YX, Lin XL, Huang QF, et al., 2022, Application Value of a Critical Value Reporting System and Closed-Loop Whole-Process Management Based on an Information Platform in Health Examination Centers. *Hebei Medical Journal*, 44(22): 3409–3412.
- [10] Lyu RD, Wang XJ, Yang MY, et al., 2023, Impact of a WeChat Mini-Program-Based Health Tracking Nursing Platform on Self-Care Ability and Blood Glucose Levels in T1DM Patients Undergoing Physical Examination. *Journal of Qilu Nursing*, 29(1): 13–16.
- [11] Wei L, Wang WH, Zhang JF, 2022, Application of Healthy Lifestyle Education in Physical Examinations for High-Risk Hypertensive Populations. *Journal of Qilu Nursing*, 28(15): 78–81.

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