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Research on the Construction and Application of a Homogeneous Training and Management Program for Nursing Interns in Primary-Level Hospitals

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Abstract: *Objective*: To construct a homogeneous training and management program for vocational nursing interns suitable for primary-level hospitals and explore its application effects in improving the quality of nursing intern training, providing practical evidence for the reform of nursing internship teaching in primary-level hospitals. *Methods*: Vocational nursing students who interned at Zhucheng People's Hospital from June 1, 2022, to May 30, 2024, were selected as the research subjects. They were divided into a control group and an experimental group using convenience sampling. The control group continued with the traditional one-on-one teaching model, while the experimental group implemented a homogeneous training and management program in addition to traditional teaching. The training effects of the two groups were compared using six indicators: theoretical assessment, skill operation, bedside comprehensive ability, nursing student satisfaction, teaching instructor satisfaction, and the occurrence of adverse events. Data were analyzed using SPSS 25.0. *Results*: The experimental group scored significantly higher than the control group in theoretical assessment, skill operation, and bedside comprehensive ability. Satisfaction among nursing students and teaching instructors in the experimental group was also significantly higher than that in the control group. Additionally, the incidence of adverse events in the experimental group was significantly lower than that in the control group, with all differences between the two groups being statistically significant ($p < 0.005$). *Conclusion*: Implementing a homogeneous training and management program for vocational nursing interns in primary-level hospitals can effectively improve nursing students' theoretical knowledge, operational skills, and clinical comprehensive abilities, enhance satisfaction among both students and instructors, and reduce the occurrence of nursing adverse events. It holds significant practical value for comprehensively improving the quality of nursing intern training and optimizing nursing internship teaching in primary-level hospitals.

Keywords: Homogeneous training; Primary-level hospitals; Nursing student management; Training and management program

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1. Introduction

Clinical nursing internships serve as a crucial link between theory and practice in the nursing education system and represent a core stage for nursing students (referred to as "nursing interns" in the text) to develop professional attitudes, enhance nursing skills, and adapt to occupational roles [1]. With the advancement of the "Healthy China 2030" strategy and the improvement of the primary-level medical service system, the demand for high-quality nursing personnel in primary-level hospitals has become increasingly urgent. However, several issues persist in the training of vocational nursing interns in primary-level hospitals: the traditional teaching model primarily relies on one-on-one experiential teaching, lacking unified teaching standards and management frameworks; teaching instructors are often clinical nurses who lack systematic nursing education concepts and teaching method training, resulting in significant differences in teaching quality across different departments and instructors; teaching evaluation methods are singular, mostly focusing on summative assessments while neglecting process management and bidirectional feedback [2]. These issues lead to uneven nursing levels among nursing interns, making it difficult to meet the homogeneous demands for nursing services in primary-level medical positions.

As an affiliated teaching hospital of Shandong Second Medical University and a regional medical center in Weifang, Zhucheng People's Hospital receives over 100 vocational nursing interns annually and has accumulated rich experience in nursing internship teaching. This study constructed a homogeneous training and management program based on the Delphi expert consultation method and verified its application effects through a controlled trial. It aims to address the pain points of "non-uniform standards, difficult quality control, and unbalanced effects" in nursing internship teaching in primary-level hospitals and provide a replicable and promotable practical model for nursing talent cultivation in primary-level hospitals.

2. Research subjects and methods

2.1. Research subjects

Higher vocational nursing students who completed internships at Zhucheng People's Hospital (a tertiary comprehensive hospital and regional medical center in Weifang City) from June 1, 2022, to May 30, 2024, were selected as the research subjects.

2.1.1. Inclusion criteria

(1) Full-time higher vocational nursing internship students;
(2) Internship duration ≥ 6 months;
(3) Voluntary participation in this study and signing of informed consent.

2.1.2. Exclusion criteria

(1) Those who terminated their internships for personal reasons during the internship period;
(2) Those with prior clinical nursing work experience;
(3) Those with cognitive impairments or communication deficits.

2.1.3. Study design

Based on preliminary experimental data and the sample size calculation formula $n1 = n2 = 2[(Z\alpha + Z\beta)/\delta]^2$ ($\alpha = 0.05$, $\beta = 0.2$, $\delta = 0.15$), it was determined that 82 participants were needed per group. Considering a 20% sample attri-

tion rate, the final sample size was set at 99 participants per group. Among them, the 2022 cohort of nursing students served as the control group (n = 99), aged 19–22 years, with an average age of (20.5 ± 1.2) years; the 2023 cohort of nursing students served as the experimental group (n = 99), aged 19–23 years, with an average age of (20.8 ± 1.1) years. There were no statistically significant differences in general information such as age, admission scores, and basic nursing course scores between the two groups of nursing students ($p > 0.05$), indicating comparability. This study complied with the ethical requirements of the Declaration of Helsinki and was approved by the Ethics Committee of Zhucheng People's Hospital (Ethics Approval Number: 2023-031).

2.2. Control group: Traditional teaching mode

The control group adopted the conventional nursing internship teaching mode used in primary hospitals, with the following specific content:

(1) Selection of teaching instructors

Nurses with at least 5 years of work experience in the department, holding the title of nurse practitioner or above, and possessing rich clinical experience were selected as teaching instructors, without specialized teaching ability training.

(2) Implementation of teaching plans

Teaching was conducted in stages according to the outline-based teaching plan formulated by the hospital's nursing department: Week 1, familiarization with the ward environment, departmental workflow, fire safety knowledge, and PDA usage; Weeks 2–4, mastery of nursing care for common diseases and pharmacological actions of commonly used drugs, with the learning of one specialized operation per week.

(3) Teaching methods

"One-on-one" paired teaching was adopted, with teaching conducted through oral explanations, operational demonstrations, and nursing students following along to learn, without standardized teaching materials or simulation training.

(4) Assessment and evaluation

At the end of the internship rotation, teaching instructors formulated their own examination questions, with the assessment content including department-related theoretical knowledge and one operational skill, without unified assessment standards or quality monitoring.

2.3. Experimental group: Homogenized training management program

On the basis of the control group, the experimental group implemented a homogenized training management program constructed using the Delphi expert consultation method, covering five dimensions: "organizational structure-teaching system-faculty management-teaching implementation-quality evaluation", with the following specific content:

2.3.1. Construction of a homogenized training management organizational structure

Relying on the hospital's teaching management committee, a four-level management system of "Science and Education Department-Nursing Teaching and Research Office-Teaching Team Leader-Teaching Instructor" was established:

(1) Decision-making level (science and education department)

Responsible for formulating overall training objectives, approving teaching funds, interfacing with uni-

versity teaching needs, and linking teaching quality control results with departmental comprehensive objective assessments.

(2) Coordination level (nursing teaching and research office)

Organizing experts to formulate homogenized training programs, compile unified teaching materials, and conduct faculty training and teaching supervision.

(3) Implementation level (teaching team leader)

Each clinical department appointed one teaching team leader (holding the title of associate senior or above) responsible for formulating specific departmental teaching plans, coordinating teaching tasks, and organizing departmental teaching seminars.

(4) Execution level (teaching instructors)

After selection and training, they were qualified to assume their positions and were responsible for daily teaching implementation, process evaluation, and feedback on nursing students.

2.3.2. Formulation of standardized teaching systems and content

Through two rounds of Delphi expert consultations (selecting 15 experts, including 3 nursing education experts, 4 nursing department directors from tertiary hospitals, 5 head nurses from primary hospitals, and 3 teachers from higher vocational nursing colleges, with an expert authority coefficient Cr = 0.89), the following core systems and content were determined:

(1) Teaching system specifications

Including the "Administrative Measures for Teaching Nursing Internship Students", "Detailed Rules for the Selection and Assessment of Nursing Teaching Instructors", and "Regulations on the Rotation Management of Nursing Internship Students", clarifying the responsibilities of personnel at all levels and teaching quality standards.

(2) Curriculum system setup

Based on the teaching syllabus for higher vocational nursing programs and combined with the clinical needs of primary hospitals, a curriculum system of "basic module + specialized module + humanities module" was constructed: the basic module (accounting for 40%) included nursing safety, communication skills, and commonly used operational norms; the specialized module (accounting for 50%) covered nursing care for common diseases in departments such as internal medicine, surgery, obstetrics and gynecology, and pediatrics; the humanities module (accounting for 10%) included occupational etiquette, doctor-patient communication, and primary health policies.

(3) Unified teaching resources

The Nursing Teaching and Research Office compiled the "Teaching Manual for Nursing Internship Students in the Hospital", produced standardized operational videos, and established a theoretical question bank containing 1,000 questions, categorized into easy, medium, and difficult levels, with a difficulty coefficient ranging from 0.3 to 0.8.

2.3.3. Implementation of professional faculty management

(1) Faculty selection

A four-dimensional selection standard of "education + title + clinical experience + teaching ability" was formulated, requiring teaching instructors to have a junior college degree or above, hold the title of charge

nurse or above, possess at least 5 years of clinical experience, and pass teaching trial lectures and communication ability assessments.

(2) Faculty training

A "online + offline" combined training mode was adopted, with online training relying on the "hospital's internal training platform" to offer courses such as nursing education theory, PBL teaching method, and the application of standardized patients (cumulative 24 class hours); offline, teaching seminars were organized quarterly, inviting university experts for on-site guidance, with assessments conducted after training, and those who failed were suspended from teaching duties.

(3) Faculty incentives

Teaching work was incorporated into the departmental performance and individual title promotion assessment systems, with "Outstanding Teaching Instructors" selected annually and awarded bonuses and honorary certificates.

2.3.4. Innovative teaching implementation methods

(1) Standardized patient (SP) teaching

Nurses from our hospital, after systematic training, acted as SPs to simulate various common clinical scenarios, focusing on assessing the practical abilities of nursing students in communication, emergency response, and humanistic care.

(2) Diversified teaching strategies

Based on the actual characteristics of primary hospitals, problem-based learning (PBL), action teaching methods, and integrated theoretical and practical teaching were widely adopted, gradually replacing the traditional teaching mode dominated by one-way cramming.

(3) Improved internship rotation mechanism

Personalized rotation plans were formulated based on the learning situation of each nursing student, with a general rotation period of 4 weeks in each department. Before rotation, induction training was arranged; during rotation, the teaching team leader organized a mini-lecture once a week; after rotation, an out-of-department assessment was conducted, forming a closed-loop management.

2.3.5. Improvement of the teaching quality evaluation system

(1) Process evaluation

The Science and Education Department conducted monthly teaching quality control, checking teaching records and the implementation of teaching plans; the departmental teaching team leader conducted weekly self-quality control, recording the learning progress and issues of nursing students.

(2) Bidirectional evaluation

After the internship, nursing students anonymously evaluated the teaching attitude, teaching methods, and teaching effects of teaching instructors; teaching instructors evaluated the learning attitude, operational ability, and professional qualities of nursing students.

(3) Functional department evaluation

The Nursing Department jointly conducted nursing safety inspections with the Quality Control Department every quarter, counting the number of adverse events involving nursing students; the Science and Education Department conducted comprehensive evaluations of teaching departments every six months,

with the results incorporated into departmental performance.

2.4. Evaluation indicators

2.4.1. Comprehensive ability indicators of nursing students

(1) Theoretical assessment scores

The Science and Education Department randomly selected questions from the question bank to form examination papers, with discipline and safety knowledge accounting for 20 points and professional knowledge accounting for 80 points, with assessments conducted once before and once after the internship.

(2) Skill operation scores

Based on the "Hospital Nursing Skill Assessment Standards", 10 core techniques were determined, and the average score of the assessment items was taken.

(3) Bedside comprehensive ability score

According to the hospital's N0-level nurse bedside comprehensive ability assessment standards, scores were given by teaching instructors from four dimensions, condition observation, nursing plan formulation, operation execution, and communication and coordination, at the end of the nursing students' rotation in each department, with the average score of all departments taken.

2.4.2. Satisfaction indicators

(1) Nursing student satisfaction

A self-designed "Nursing Internship Student Satisfaction Questionnaire" was used, including 7 items on internship teaching, 3 items on teaching management, and 2 items on teaching instructors, totaling 3 dimensions and 12 items, with a Likert 5-point scoring system (1 = very dissatisfied, 5 = very satisfied), with a total score ranging from 12 to 60, and a score ≥ 48 indicating satisfaction. The questionnaire had a Cronbach's α coefficient of 0.85 and a content validity index (CVI) of 0.89, indicating good reliability and validity.

(2) Teaching instructor evaluation

The "Teaching Instructor Evaluation Questionnaire" was used, including 6 aspects, namely nursing students' work ability, labor discipline, service attitude, occupational etiquette, teamwork, and medical safety, totaling 19 items, with a Likert 5-point scoring system, with a total score ranging from 19 to 95, and a score ≥ 76 indicating satisfaction. The questionnaire had a Cronbach's α coefficient of 0.87 and a CVI of 0.91, indicating good reliability and validity.

2.4.3. Adverse event indicators

The nursing adverse events involving nursing students during the internship period were counted and jointly confirmed by the hospital's Quality Control Department and Nursing Department to ensure data accuracy.

2.5. Statistical methods

SPSS 25.0 statistical software was used for data processing. Measurement data were expressed as ($\overline{x} \pm s$), with independent sample *t*-tests used for comparisons between groups and paired *t*-tests used for comparisons within groups before and after; enumeration data were expressed as [n (%)], with χ^2 tests used for comparisons. A *p*-value < 0.05 was considered statistically significant.

3. Research results

3.1. Comparison of comprehensive ability indicators between the two groups of nursing students before and after the internship

Before the internship, there were no statistically significant differences in the theoretical assessment scores, skill operation scores, and bedside comprehensive ability scores between the two groups of nursing students ($p > 0.05$). After the internship, all indicators in both groups showed significant improvements compared to those before the internship ($p < 0.05$), and the extent of improvement in the experimental group was significantly greater than that in the control group ($p < 0.05$). Specific data are shown in **Table 1**.

Table 1. Comparison of comprehensive ability indicators between the two groups of nursing students before and after the internship ($\overline{x} \pm s$, points)

Indicator	Group	Before internship	After internship	*t*-value (within group)	*p*-value (within group)
Theoretical assessment score	Control group (n = 99)	68.23 ± 5.67	81.56 ± 6.23	15.32	< 0.001
	Experimental group (n = 99)	67.89 ± 5.81	89.23 ± 5.12	25.64	< 0.001
Skill performance score	Control group (n = 99)	65.34 ± 6.12	82.34 ± 5.68	18.75	< 0.001
	Experimental group (n = 99)	64.98 ± 6.35	90.15 ± 4.87	28.91	< 0.001
Bedside comprehensive ability score	Control group (n = 99)	62.15 ± 6.89	80.21 ± 6.15	17.46	< 0.001
	Experimental group (n = 99)	61.87 ± 7.02	88.67 ± 5.34	26.78	< 0.001

3.2. Comparison of satisfaction levels between the two groups of nursing students and their teaching instructors

After the internship, the satisfaction levels of nursing students and teaching instructors in the experimental group were significantly higher than those in the control group, with statistically significant differences ($p < 0.05$). Specific data are shown in **Table 2**.

Table 2. Comparison of satisfaction levels between the two groups of nursing students and their teaching instructors [n (%)]

Indicator	Group	Satisfied	Dissatisfied	Overall satisfaction rate (%)	χ^2 value	*p* value
Nursing students' satisfaction	Control group (n = 99)	72	27	72.53	14.56	< 0.001
	Experimental group (n = 99)	89	10	89.36		
Clinical instructors' satisfaction	Control group (n = 99)	75	24	75.18	16.89	< 0.001
	Experimental group (n = 99)	91	8	91.24		

3.3. Comparison of the number of adverse events between the two groups of nursing students

During the internship, a total of 12 adverse events (12.12%) occurred in the control group, including 4 cases of infusion errors, 3 cases of specimen collection errors, 2 cases of patient falls, and 3 cases of other incidents. In the experimental group, a total of 3 adverse events (3.03%) occurred, including 1 case of infusion error, 1 case of specimen collection error, and 1 case of other incidents. The incidence of adverse events in the experimental group

was significantly lower than that in the control group ($\chi^2 = 6.78$, $p = 0.009$).

4. Discussion

4.1. The effect of the homogeneous training management program on enhancing the comprehensive abilities of nursing students

The results of this study showed that the experimental group scored significantly higher than the control group in theoretical assessments, skill operation scores, and bedside comprehensive ability scores after the internship, indicating that the homogeneous training management program can effectively enhance the clinical comprehensive abilities of vocational nursing interns. By constructing a "standardized-specialized-diversified" trinity teaching system and formulating unified curriculum and assessment standards through Delphi expert correspondence, the program has changed the situation of scattered content and inconsistent standards in traditional teaching, helping nursing students systematically master nursing knowledge and skills that meet the needs of primary healthcare [3]. In terms of faculty development, by strictly screening teaching instructors and organizing systematic training, the program has significantly enhanced teachers' teaching abilities and promoted the transformation of teaching methods from relying on experience to scientific standardization [4]. In terms of teaching methods, the introduction of SP simulation teaching and PBL teaching methods enables nursing students to exercise clinical thinking and operational skills in simulated scenarios, effectively overcoming the practical difficulties of a limited variety of common diseases and limited emergency opportunities in primary hospitals, thereby effectively improving their bedside comprehensive response abilities [5].

4.2. The effect of the homogeneous training management program on improving teaching satisfaction

The satisfaction of nursing students and teaching instructors in the experimental group was significantly higher than that in the control group, which was closely related to the program's emphasis on meeting "bidirectional needs". For nursing students, unified teaching resources, personalized rotation plans, and process feedback allowed them to clearly grasp learning objectives and progress, reducing the sense of confusion caused by inconsistent teaching standards. For teaching instructors, a comprehensive incentive mechanism and teaching support reduced the difficulty and pressure of teaching work, while the selection of "outstanding teaching instructors" enhanced their sense of professional achievement [6]. In addition, the establishment of a bidirectional evaluation mechanism allowed nursing students to participate in teaching quality feedback, making teaching improvements more aligned with nursing students' needs and forming a virtuous cycle of "teaching-feedback-optimization" [7].

4.3. The value of the homogeneous training management program in preventing and controlling adverse events

The significantly lower incidence of adverse events in the experimental group compared to the control group reflects the program's advantages in nursing safety management. On the one hand, the program incorporates nursing safety knowledge into the focus of theoretical assessments and strengthens nursing students' safety awareness through case analysis and scenario simulation. On the other hand, the construction of a four-level management system enables full-process monitoring of teaching quality, with regular quality control by the Science and Education Department and the Nursing Department to promptly identify and correct problems in nursing students'

operations, preventing adverse events [8]. At the same time, the professional training of teaching instructors has also improved their ability to guide and supervise nursing students' operations, reducing safety hazards caused by teaching negligence [9].

4.4. Research limitations and prospects

This study is a single-center study with samples all from Zhucheng People's Hospital, which may have geographical limitations. The research period was relatively long (2 years), during which it may have been affected by factors such as policy changes and faculty turnover. Future research can expand the sample size and conduct multi-center-controlled trials to further verify the program's universality. At the same time, artificial intelligence technology can be integrated to optimize teaching methods and enhance the intelligent level of homogeneous training [10]. In addition, the "hospital-university" collaborative education mechanism can be explored to align the homogeneous training program with the curriculum system of vocational nursing colleges, achieving full-process training from "pre-internship-internship-post-internship" and delivering higher-quality nursing talents to primary hospitals.

5. Conclusion

The homogeneous training management program for vocational nursing interns constructed in this study effectively enhances the clinical comprehensive abilities and teaching satisfaction of both parties in primary hospitals by establishing a standardized organizational structure, a professional faculty team, diversified teaching methods, and a full-process quality evaluation system, and reduces the incidence of nursing adverse events. The program fully considers the clinical characteristics and teaching needs of primary hospitals, has strong practical operability and promotion value, and can provide a reference for the reform of nursing internship teaching in primary hospitals, contributing to the construction of a primary nursing talent team under the "Healthy China" strategy.

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Disclosure statement

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References

[1] Chinese Nursing Association, 2021, Outline of Development Plan for China's Nursing Profession (2021–2025). Chin J Nurs, 56(3): 321–326.

[2] Li H, Shen N, He Z, 2020, Construction of Evaluation Index System for Quality of Clinical Internships for Undergraduate Nursing Students. Chin J Nurs, 55(6): 889–894.

[3] Zhou Q, Li L, Zhao L, 2020, Advances in Application of Standardized Patients in Clinical Nursing Teaching. Chin J

Nurs, 55(4): 617–621.

[4] Jiang Y, Cao H, Peng X, 2018, Construction and Practice of Training System for Teaching Abilities of Clinical Nursing Teachers. Chin J Nurs, 53(12): 1489–1493.

[5] Lin C, 2006, Review of Research on Psychology of Thinking. J Beijing Norm Univ Soc Sci, 2006(5): 35–42.

[6] Wang H, Sun H, Zhou L, 2019, Construction and Application of Evaluation System for Quality of Clinical Nursing Teaching. Chin J Nurs, 54(2): 256–260.

[7] Liu Z, Zhou L, Li H, 2020, Research Progress in Evaluation of Quality of Clinical Nursing Teaching. Chin J Nurs Educ, 17(3): 279–283.

[8] Wu X, Sun H, Cao J, 2016, Construction and Application of Sensitivity Indicators for Nursing Quality. Chin J Nurs, 51(3): 257–260.

[9] Li B, Zhang J, Huang J, 2018, Analysis of Causes of Nursing Adverse Events and Improvement Measures. Chin J Nurs, 53(9): 1097–1101.

[10] Wang Y, Li H, Shen N, 2022, Current Status and Prospects of Artificial Intelligence in Nursing Education. Chin J Nurs, 57(1): 110–115.