

RESEARCH ARTICLE



Utilizing diverse cross-sectional assessment templates to instruct novice nurses in the neurology department about typical diseases

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ABSTRACT

Objective: The aim of this study is to explore the utilization of diverse cross-sectional assessment templates for typical diseases in educating novice nurses in neurology departments.

Methods: Between January and December 2019, all registered nurses who had worked for less than 10 years at our center, were enrolled in this retrospective study. They were divided into the observation (18 nurses) and control (17 nurses) groups. The control group received training on various cross-sectional assessments for typical diseases. A comparative analysis was conducted on clinical work ability, nursing quality, adverse events, and patient satisfaction between the two groups.

Results: A total of 35 nurses participated in this study. The work ability score for nurses in the observation group was 97.42 ± 2.02 points, demonstrating a significant increase compared to the control group (92.17 ± 1.72 points) ($p < 0.001$). Regarding the quality of care provided to critically ill patients, the observation group demonstrated a significantly higher score of 95.82 ± 1.31 points compared to the control group, which scored 87.70 ± 3.15 points ($p < 0.001$). The number of adverse events within one year after admission was notably lower in the observation group, with 8 cases, compared to 23 cases in the control group ($p = 0.006$). Additionally, nurses in the observation group achieved a higher patient satisfaction score compared to the control group (97.23 ± 1.78 vs. 92.19 ± 1.49 points, $p < 0.001$).

Conclusion: The utilization of diverse cross-sectional assessment templates and instructional videos for typical diseases in the training of novice nurses in the neurology department enhanced nursing quality, improved clinical practical abilities, and improved patient safety.

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Introduction

In today's rapidly developing medical environment, young nurses, as an important part of the nursing team, the current situation of their working ability has attracted much attention. They carry the responsibility of providing high-quality care services for their patients, but they also face many challenges. In real-world health-care settings, novice nurses frequently exhibit deficiencies in nursing competence and perceptions of patient safety [1,2]. These shortcomings have a notable impact on the overall quality of nursing work [3], particularly among those with less than 10 years of experience [4].

In China's Jiangsu Province, a cross-sectional assessment model has been developed. This model, centred around issues occurring at different time intervals or in

various stages, involves the analysis and discussion of real clinical cases at the patient's bedside, followed by subsequent assessments. The assessment process is closely integrated with practical clinical tasks, with a primary focus on addressing real challenges encountered in clinical work. This teaching approach involves discussions where students take the central role, and examiners provide guidance. The application of this hands-on training and assessment method proves beneficial for instilling strict adherence to standardized operating procedures among junior nurses. This method also aids in implementing core systems and enhancing overall critical thinking skills. Initiated in 2012, this approach has demonstrated effectiveness in improving the overall quality and clinical capabilities of nurses [5].

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The objective of this study is to assess the efficacy of the novel assessment model in the training of novice nurses within a specific centre.

Materials and methods

Participants

During the first and second half of 2019, all registered nurses with less than 10 years of experience working in the Neurology Department of Huai'an First Hospital, affiliated with Nanjing Medical University, were included in the study.

In accordance with the relevant guidelines from the Jiangsu Provincial Health and Family Planning Commission, specifically the 'Guiding Opinions on the Implementation of Hospital Nurse Post Management in Jiangsu Province,' all nurses were categorized into N0, N1, and N2 based on factors such as professional competence, educational background, years of experience, and technical proficiency. The classification further included N3 and N4 levels, representing five technical tiers. The specific designations were as follows: N0 level (assistant level), N1 level (basic level), N2 level (competent level), N3 level (backbone level), N4 level (expert level) [6]. This study was approved by the Ethics Committee of our hospital and verbal informed consent was taken from all participants.

Assessment method

Control group assessment

The evaluation of novice nurses followed a training and assessment model, wherein theory was taught first, followed by skill demonstration and a subsequent assessment. The theoretical assessment covered aspects like professional post responsibilities, processes, emergency plans, three categories of basic knowledge and skills, case nursing, nursing documentation writing standards, and routine nursing skills. Skill assessment encompassed various common basic and specialized procedures, including pupil observation, muscle strength assessment, rehabilitation training, and the use of ice blankets.

Observation group assessment

Set up a training and assessment team. A clinical assessment team was established within the department, consisting of one chief examiner (head nurse) and two deputy examiners (specialist nurses at the provincial and municipal levels). These selected examiners possessed robust professional expertise and the capability to manage situations comprehensively.

They underwent training in the assessment methodology to ensure consistent understanding and alignment of their approaches.

Prepare assessment templates. The members of the clinical assessment team identified crucial aspects of typical diseases within the department that required the attention of nurses. These included conditions like transient ischemic attack, cerebral haemorrhage, cerebral infarction, Parkinson's disease, myasthenia gravis, Greenbury, and myelitis. Moreover, diverse cross-sectional scenarios were emphasized, encompassing activities like bedside shift, assistance with getting out of bed or transportation, discharge/admission care, vital signs/blood glucose measurement, ventilator usage, electrocardiographic monitoring, nasal feeding, gastrointestinal decompression, oral care, oxygen inhalation, fluid intake and output, cough management, turning of the patient, and health guidance. To aid in training, assessment templates and instructional videos were developed for a range of scenarios that the nurses may encounter and how to address them.

Organize training. The clinical assessment team provided training to the nurses in the observation group, starting with the examiner instructing the novice nurses in the department through PowerPoint presentations. Following the plan, the nurses underwent training using assessment templates covering typical diseases with varying degrees of criticality and different cross-sectional aspects, emphasizing key considerations in different scenarios. Subsequently, after collectively viewing instructional videos, the assistant examiner curated typical cases within the specialty to create diverse dynamic scenarios and cross-sections. Novice nurses in the department engaged in simulation exercises for each scenario until they achieved proficiency in handling them.

Assessment method. The assessment approach for practical cross-sections involved the utilization of on-site cases, real-time situations, and the implementation of nursing measures as evaluation scenarios. Every week, without advance notice, four or five nurses were randomly selected. The examiner checked the schedule on-site to understand the situation of the beds assigned to the assessed nurses. From each case, one patient was chosen, and the patient's condition was comprehended through medical records. Nurses were then randomly evaluated based on the assessment form. The nurses underwent a 30-minute observation period during which their work was discreetly assessed without causing any disruption. The evaluation focused on their performance and the delivery of patient care, aligning with the real-time circumstances of the patients. One or two nursing procedures were evaluated, and nurses were questioned about their

specialized knowledge related to the case. Following this, the nurses conducted a self-evaluation, and finally, the examiners provided on-site feedback.

Quality control. Two deputy examiners were tasked with assessing whether trained nurses executed real-world tasks with or without consulting the reference assessment template and video. Nurses who received scores exceeding 90 were eligible to take part in the selection process for departmental service stars and assume roles as team leaders with designated responsibilities.

Assessment method

Comparison of clinical practical work ability between the two groups of nurses

The department's clinical assessment team conducted random on-site evaluations for each practical cross-section using the 'Nurse Practice Ability Assessment' form developed by our hospital's Nursing Department. The team assessed trained nurses on their observation skills, emergency collaboration capabilities, and proficiency in relevant first-aid procedures when faced with changes in a patient's condition. Following the completion of standardized training for nurses in both groups, the department's clinical assessment team compiled statistics on the assessment results of the practical work abilities of nurses in the two groups. The average values were calculated and compared. Scores ranged from 0 to 100, with 90 or above considered excellent, 80–89 considered qualified, and below 80 considered unqualified.

Comparison of nursing quality in the first half and the second half of 2019

The nursing quality of care for critical patients was subject to monthly monitoring in both the first and second halves of 2019, utilizing the "Nursing Quality Scoring Standard for Critical Patients" established by the Nursing Department. The average nursing quality values for each half of the year were computed and subsequently compared, with a total score of 100 serving as the benchmark.

Occurrence of adverse events

Data on the number and nature of adverse events within the Neurology Department, along with the percentage of newly registered novice nurses were collected during the first and second half of 2019. Adverse nursing events encompassed occurrences during the nursing process that were unplanned, unforeseen, or generally undesirable. Examples included

falls, medication errors, missteps, aspiration or suffocation, burns, and other relevant incidents during the patient's hospital stay.

Patient satisfaction survey

A self-designed questionnaire, the 'Neurology Department Novice Nurses Assessment Model Satisfaction Questionnaire,' was created based on the 'Nursing Work Satisfaction Questionnaire (Inpatients)' [7]. This instrument aimed to assess the satisfaction of novice nurses with their training and assessment, as well as the satisfaction of inpatients and their families with the novice nurses. The questionnaire employed a 5-point Likert scale, where 5=very satisfied, 4=satisfied, 3=neutral, 2=dissatisfied, and 1=very dissatisfied [8]. The basic satisfaction rate was calculated as $(\text{very satisfied} + \text{satisfied}) / (\text{very satisfied} + \text{satisfied} + \text{neutral} + \text{dissatisfied} + \text{very dissatisfied}) \times 100$. A satisfaction rate of 90% or above indicated that patients and their families were content with the novice nurses. Questionnaires were deemed effective when there were no unanswered items. The survey scale exhibited a Cronbach's alpha coefficient of 0.823, and the expert content validity index was 0.872. Respondents included novice nurses, inpatients, and their families. The deputy examiner of the clinical assessment team distributed questionnaires at the end of each training cycle. A total of 35 questionnaires were distributed, with 18 collected from the control group and 17 from the observation group. Additionally, 240 patient and family satisfaction questionnaires were distributed, with 120 collected in both the control and observation groups, all of which were deemed effective.

Statistical analysis

The data underwent statistical analysis using SPSS 20.0 software. Normally distributed measurement data were presented as mean \pm standard deviation (SD), and comparisons were assessed using Student's t-test. Categorical data were expressed as n (%), and differences between the two groups were evaluated using chi-squared analysis or Fisher's exact test. The level of statistical significance was defined as $p < 0.05$.

Results

A total of 35 registered nurses participated in the study, all of whom were female. Among them, 15 were classified as N1 nurses, 14 as N2 nurses, and 6 as N3 nurses. The average age was 20.1 ± 0.9 years, ranging from 20 to 30 years. Ten nurses held college

Table 1. Baseline characteristics of two groups.

Variables	Observation group (18)	Control group (17)	X ² /t	P
Age (years)	26.42 ± 2.02	27.17 ± 1.72	1.179	0.247
Sex			0.002	0.967
Female	17 (94.4%)	16 (94.1%)		
Male	1 (5.6%)	1 (5.9%)		
Education			0.305	0.581
Senior college	10 (55.6%)	11 (64.7%)		
Undergraduate	8 (44.4%)	6 (35.3%)		
Year of working			0.062	0.803
1–5 years	12 (66.7%)	12 (70.6%)		
5–10 years	6 (33.3%)	5 (29.4%)		
Nurses' work ability score	97.42 ± 2.02	92.17 ± 1.72	15.28	<0.001
Nursing ability score for critical patients	95.82 ± 1.31	87.70 ± 3.15	18.44	<0.001

Table 2. Comparison of results between two groups.

Variables	Observation group	Control group	F/t	P-value
Nurses' work ability score	97.42 ± 2.02	92.17 ± 1.72	15.28	<0.001
Nursing ability score for critical patients	95.82 ± 1.31	87.70 ± 3.15	18.44	<0.001
Nursing adverse events	8	23	7.46	0.006
Patient satisfaction score	97.23 ± 1.78	92.19 ± 1.49	23.30	<0.001

degrees, while 8 were undergraduates. There were no statistically significant differences in sex, age, educational background, or years of work experience between the two groups ($p > 0.05$), indicating comparability (Table 1).

The work ability score for nurses in the observation group was 97.42 ± 2.02 points, significantly surpassing the score in the control group (92.17 ± 1.72 points), with a statistically significant difference ($p < 0.001$). In terms of nursing quality of care for critical patients, the observation group scored 95.82 ± 1.31 points, which was notably higher than the score in the control group (87.70 ± 3.15 points), and the difference was statistically significant ($p < 0.001$). The observation group experienced significantly fewer adverse events within one year after admission, with 8 cases, compared to the control group with 23 cases ($p = 0.006$). Additionally, the satisfaction score of patients and their families with nurses in the observation group was 97.23 ± 1.78 points, exceeding the score in the control group (92.19 ± 1.49 points), and the difference was statistically significant ($p < 0.001$) (Table 2).

Discussion

Numerous studies have suggested that experienced nurses exhibit superior nursing abilities and enhanced perceptions of patient safety [4]. Nevertheless, at our center, nurses with less than 10 years of experience

constituted 67% of the total nursing staff. In the past, our department employed a theory-first-then-skills training model for novice nurses. However, it was observed during training that even those deemed qualified or excellent were unable to efficiently apply their acquired knowledge and skills to make prompt decisions and accurate judgments in emergency situations. Additionally, they tended to become anxious and rushed, often resulting in dissatisfaction and complaints from patients' families. Considering the prevailing nursing challenges in our department, this new training model was developed to expedite the mastery of specialized work characteristics by novice nurses, yielding satisfactory results.

The novel training model addressed the shortcomings associated with the previous approach of separating training from clinical practice in assessment training. This method, known as 'replacing examination with practice,' involves conducting assessments by posing questions during actual clinical processes, thereby enhancing nurses' skills in identifying, contemplating, and resolving problems [9]. The assessment also incorporated evaluations of nursing quality and patient satisfaction, contributing to the rigorous standardization of diverse operating procedures and the provision of humanistic care [9].

The implementation of this assessment procedure notably enhanced the practical clinical capabilities of nurses. Given the substantial workload in clinical nursing [10], many novice nurses tend to prioritize completing tasks, treatments, and nursing procedures over patient care and holistic health focus. This tendency neglects the application of nursing procedures for comprehensive patient care, impacting the quality of nursing work [5]. Hence, reinforcing the training and assessment of novice nurses and improving their proficiency in handling various emergency events are crucial [11]. In this assessment model, nurses underwent systematic training through on-site exercises, covering aspects like condition observation, emergency treatment, and the nurse's emergency response skills.

This model serves as a training approach to enhance the thinking abilities of novice nurses. The reality-based case analysis method effectively enhances the clinical practice abilities of junior nurses, fostering their awareness and skills in autonomous learning—a recognition acknowledged by junior nurses [12]. The training, conducted in the form of case discussions, deepens nurses' comprehension, making it easier for them to assimilate and master clinical work, as well as guide clinical nursing practices. Specialized training, in the form of case discussions combined with practical clinical work, was employed to address specific targeted issues within the assessment process [3].

The utilization of assessment templates and videos for typical diseases in the training of novice nurses has led to a notable reduction in the incidence of adverse nursing events. A prior study revealed that 57.4% of nurses who made nursing errors had less than three years of experience. This finding suggests that novice nurses, due to their limited clinical experience and lack of familiarity with specific diseases in new departments, are more susceptible to a higher occurrence of nursing errors [13]. The assessment process, conducted without prior notification to the trainee nurses and involving random selection, underscored the importance for nurses to possess robust practical skills and the capability to handle emergencies effectively.

The implementation of this assessment method can enhance patient satisfaction. In this training model, nurses are required to engage in more extensive learning, critical thinking, and the integration of theory with clinical practice, leading to heightened awareness and focus on patients. Systematic assessments and targeted physical examinations are utilized to identify nursing issues in patients, followed by the implementation of tailored nursing interventions. Consequently, the quality of patient care has seen significant improvement, resulting in increased levels of patient satisfaction [3].

By implementing a scientifically sound evaluation template, it effectively guides junior nurses during on-the-job training, facilitating the identification of issues and areas for improvement. This approach provides a basis for subsequent training enhancements. Simulating real clinical scenarios allows nurses to grasp the presentation and assessment methods of common diseases across various stages, enhancing their observational and diagnostic skills. This method not only boosts clinical reasoning, adaptability, standardized procedures, communication, and empathy but also equips nurses to better navigate the complexities and diversity of clinical work. In contrast to traditional theoretical instruction, it emphasizes practical proficiency and precision, fostering

hands-on capabilities. Incorporating diverse disease stage assessment templates into the curriculum ensures a more clinical focus, improving both relevance and effectiveness. Through simulated assessments and case studies, nurses learn in realistic environments, enhancing engagement and learning outcomes, while fostering independent thinking and problem-solving skills. Regular training and evaluations based on these templates enable hospital management to promptly assess nursing competence and training efficacy, informing data-driven management decisions. Additionally, these templates standardize research methodologies in nursing care, promoting rigorous and scientific research. In summary, the application of different disease stage assessment templates in nurse education offers multifaceted benefits. By leveraging their full potential, nurses' professional competencies and holistic development can be continually enhanced, ultimately contributing to higher-quality, safer patient care.

The current study has certain limitations. Firstly, the retrospective nature of the study introduced an inherent bias. Secondly, the study had a small sample size and was conducted in a single center, limiting its generalizability and requiring cautious interpretation. Future research endeavors should consider larger sample sizes or meta-analyses to enhance the robustness of findings.

In summary, the utilization of diverse cross-sectional assessment templates and instructional videos for typical diseases in the training of novice nurses in the neurology department resulted in enhanced nursing quality, improved clinical practical abilities, and improved patient safety.

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Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki (as was revised in 2013). The study was approved by Ethics Committee of the Huai'an Tumor Hospital (Approval date: 2018.12.7, Approval number: N/A. Huai'an Cancer Hospital did not have an ethics number before 2019) and verbal informed consent was taken from all participants. Oral informed consent can more directly convey the specific content and characteristics of the training method, which is convenient for nurses to choose the most suitable training method according to their actual situation. During the verbal consent process, researchers can have in-depth communication and communication with nurses to understand their needs and expectations, so as to adjust and optimize the training plan and ensure the maximum training effect. At the time of submitting the research proposal, the researchers

had explained the reasons and necessity for oral consent to the Ethics Committee of the Huai'an Tumor Hospital. In the review process, the Ethics Committee made a comprehensive assessment of the rationality of the research program, the protection of nurses' rights and interests, and the feasibility of oral consent, and finally approved the oral informed consent. The researchers recorded verbal informed consent by using a SONY recording pen.

Authors contribution statement

QMW and DPS conceived the idea and conceptualized the study. SJZ and DPS collected the data and analysed the data. SJZ and QMW drafted the manuscript and reviewed the manuscript. All authors read and approved the final draft.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data used to support the findings of this study are available from the corresponding author upon request.

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