Nursing Practice Combined with Scene Simulation Teaching Mode in Standardized Training and Teaching for Newly Recruited Nurses in Post Anesthesia Care Unit

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Abstract

Background: To explore the application of nursing practice combined with scene simulation teaching mode in standardized training and teaching for newly recruited nurses in Post Anesthesia Care Unit (PACU) and its impact on their emergency response ability and competence.

Methods: From Jan 2019 to Jan 2020, a total of 120 PACU nurses with professional qualification certificates in West China Hospital Sichuan University, Chengdu, China were enrolled and randomized into group A (n=60) and group B (n=60). Conventional standardized PACU training and teaching was applied in group B, and nursing practice combined with scene simulation teaching mode was applied in group A. After training for 12 weeks, the examination scores, competence and emergency response ability in the two groups were compared.

Results: After training, the scores of theoretical examination, comprehensive scene simulation and nursing document in group A were conspicuously higher than those in group B ($P<0.001$). After training, the competence and emergency response ability in group A were significantly higher than those in group B ($P<0.001$).

Conclusion: With a better training effect, nursing practice combined with scene simulation teaching mode can enhance the emergency response ability and competence for nurses in PACU, which should be promoted in practice.

Keywords: Nursing practice; Scene simulation teaching mode; Post anesthesia care unit (PACU)

Introduction

Post Anesthesia Care Unit (PACU) is an indispensable transfer station to observe the postoperative state of patients and help them to become awakened. Nurses in PACU are mainly in charge of the postoperative patients whose physical and mental functions are different from other patients. Therefore, quality nursing service is required, and only the nurses who passed strict training will be qualified for clinical nursing (1-3). At present, it has been a consensus in Chinese medicine to carry out specialized training for nurses, but the optimal training effect is difficult to achieve through conventional training on the grounds that the nursing mechanism of PACU is different from that of general wards (4-7). Because there are many uncertainties in PACU,

nurses ought to be equipped with professional capability and operational skills. In this way, the training should focus on cultivating nurses' competence and emergency response ability. By the competence is meant the required knowledge, professional skills and personal comprehensive quality. Therefore, high-quality nursing service can only be provided by those who are of great competence (8-11). In practice, there are already standardized training modes focusing on competence improvement. However, in a large extent, theoretical training alone can hardly tap nurses' capability and make them more experienced with development potential. Therefore, this study implemented standardized training mode that combined nursing practice with scene simulation, aiming to explore the practical training effect of this teaching mode on nurses in PACU.

Materials and Methods

General data
Overall of 120 PACU nurses (Jan 2019-Jan 2020) with professional qualification certificates in West China Hospital Sichuan University were enrolled as the research objects. All nurses received junior college education or undergraduate education on anesthesia nursing, and obtained corresponding academic qualifications. They were randomized into group A (n=60) and group B (n=60). In group A, the ratio of male to female nurses was 2/58, and the average age of nurses was (24.65±1.21) yr old, including 42 nurses with junior college degree and 18 nurses with university degree. In group B, the ratio of male to female nurses was 3/57, and the average age of nurses was (24.98 ± 1.20) yr old, including 44 nurses with junior college degree and 16 nurses with university degree. There was no significant difference in the general data of nurses between the two groups ($P>0.05$)

The study was approved by the Hospital Ethics Committee and signed written informed consents were obtained from the subjects.

Methods

Both groups received standardized training for 12 weeks. The nurses in group B received standardized PACU training and teaching. The specific steps were as follows. 1) The training and management group made the corresponding training plan and implementation program. Anesthesiologists and senior nurses with more than 5 yr of experience acted as the instructors, giving collective training and one-to-one instruction to nurses under the supervision of the head nurse. 2) The training and management group had a good grasp of *Outline of Nurse Training in the Area of Specialist Nursing* (12) and formulated teaching materials according to the characteristics of anesthesia resuscitation nursing in our hospital. The teaching materials included the relevant theories and monitoring technology of anesthesia and resuscitation, PACU management, PACU emergency treatment regulations, pain management of patients in PACU, and interpersonal communication. 3) The instructors' collated relevant teaching list, distributed it to the nurses, and imparted the theoretical knowledge with the aid of multimedia and other teaching tools. Combined with operational demonstration, nursing technology teaching improved nursing level more quickly.

On the basis of group B, group A received nursing practice combined with scene simulation teaching, and the specific steps were as follows. 1) The instructors adopted the problem-oriented way to conduct the training that combined with theory and practice, developing nurses' clinical thinking ability through case teaching. At the same time, they taught according to the actual characteristics of patients in PACU of our hospital, so that the nurses made clear about the key points during observation and wrote their nursing records in detail. 2) Under the guidance of the instructors, the nurses operated in line with the corresponding standards, including identifying instruments in PACU, detecting patients' vital signs, establishing venous access for patients, and indwelling urinary catheters, etc. This was to improve nurses' professional skills and competence. 3) Based on common PACU situation, simulation training was conducted with a given scene, in which nurses played a variety of roles such as pa-

tients, family members, nurses and doctors to demonstrate the standardized nursing process and improve their emergency response ability and communication ability. After simulation, nurses discussed on the problems, made analysis, and refined the cases to improve their understanding. After the discussion, nurses consolidated the learned knowledge in practice. 4) After daily training, nurses and instructors made mutual quality assessment. The problems were reflected and reviewed by the instructors, which in turn improved the nurses' ability to discover and deal with the problems. Finally, the quality of PACU nursing management can be enhanced by nurses themselves.

Observation criteria

1) Examination scores. The scores included examination of theory, comprehensive scene simulation and nursing document. The theoretical examination was objective questions related to general nursing knowledge in PACU, *Nursing Ethics*, *Nursing Humanities*, *Fundamental Nursing*, etc. (13-15), with a total score of 100. The comprehensive scene simulation was conceived and performed by nurses, and scored by instructors, with a total score of 100. The nursing document examination was based on *Nursing Medical Record Writing Standard* with a total score of 100. Better performance delivered higher scores.

2) Competence. Based on the core competence raised by Wyk R V et al (16), the benchmark competence and discriminative competence of nurses were assessed in the following aspects. ① Personal quality score (nurses' appearance and service attitude, 40 points) ② Clinical nursing ability score (nurses' ability to master rules and regulations, and whether they could formulate personalized nursing plans, timely track patients' condition, correctly give patients medication guidance, health guidance and self-care guidance, master various nursing measures, and be able to find potential problems during nursing, 65 points) ③ Interpersonal communication ability score (nurses' communication ability, and wheth-

er they could clearly introduce the condition to patients, communicate effectively with appropriate skills, and cooperate with colleagues, 25 points) ④ Critical thinking score (whether nurses could have rational analysis ability, scientifically analyze patients' nursing data, and give corresponding answers, 25 points) ⑤ Self-development ability score (nurses' planning of personal career, whether they could seize learning opportunities and enhance personal comprehensive quality, 30 points). The competence was composed of nurse's evaluation (50%) and instructor's evaluation (50%).

3) Emergency response ability. It included central venous pressure measurement, ECG use, venipuncture, tracheal intubation, drainage tube nursing and defibrillation under the emergency simulation situation, with a total score of 100, and consisted of emergency knowledge (40%), emergency skills (40%) and comprehensive emergency ability (20%).

Statistical processing

The data were processed by SPSS 20.0 (IBM Corp., Armonk, NY, USA), and graphed by GraphPad Prism7 (GraphPad Software, San Diego, USA). Including enumeration data and measurement data, the study used X^2 test and *t* test. The differences were statistically significant at $P<0.05$.

Results

After training, the scores of theoretical examination, comprehensive scene simulation examination and nursing document examination in group A were obviously higher than those in group B ($P<0.001$) (Fig. 1).

The competence of nurses in group A after training was significantly higher than that in group B ($P<0.001$) (Fig. 2). The emergency response ability in group A after training was significantly higher than that in group B ($P<0.001$) (Table 1).
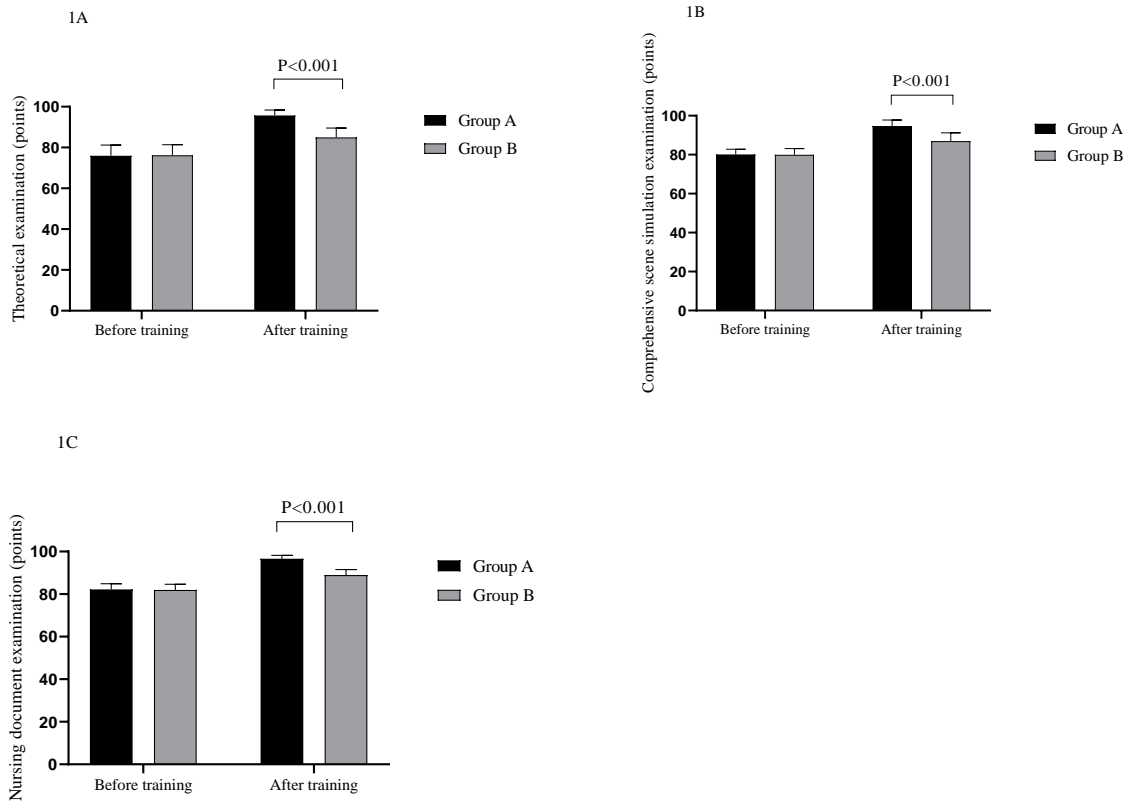
1A

1B

1C

Fig. 1: Comparison of examination scores ($\overline{x}\pm s$, points**)**
Note: (1A) the scores of the theoretical examination; (1B) the scores of the comprehensive scene simulation examination; (1C) the scores of the nursing document examination

Table 1: comparison of emergency response ability ($\overline{x}\pm s$, points)

| Group	Group A (n=60)	Group B (n=60)	t	P
Central venous pressure measurement				
Pre-training	80.65±2.65	80.69±2.57	0.084	0.933
Post-training	93.68±1.65	86.69±2.56	17.777	<0.001
ECG use				
Pre-training	76.65±4.32	77.98±4.21	1.708	0.090
Post-training	92.68±3.65	84.98±3.98	11.045	<0.001
Venipuncture				
Pre-training	70.65±3.68	70.96±3.98	0.443	0.659
Post-training	92.68±3.65	83.68±3.14	14.479	<0.001
Tracheal intubation				
Pre-training	74.65±2.65	75.11±2.68	0.945	0.346
Post-training	92.65±1.68	85.65±2.60	17.516	<0.001
Drainage tube nursing				
Pre-training	74.98±3.54	75.64±3.12	1.083	0.281
Post-training	90.68±3.14	84.69±3.68	9.591	<0.001
Defibrillation				
Pre-training	78.98±3.54	79.10±2.65	0.210	0.834
Post-training	93.16±2.15	85.54±2.41	18.276	<0.001
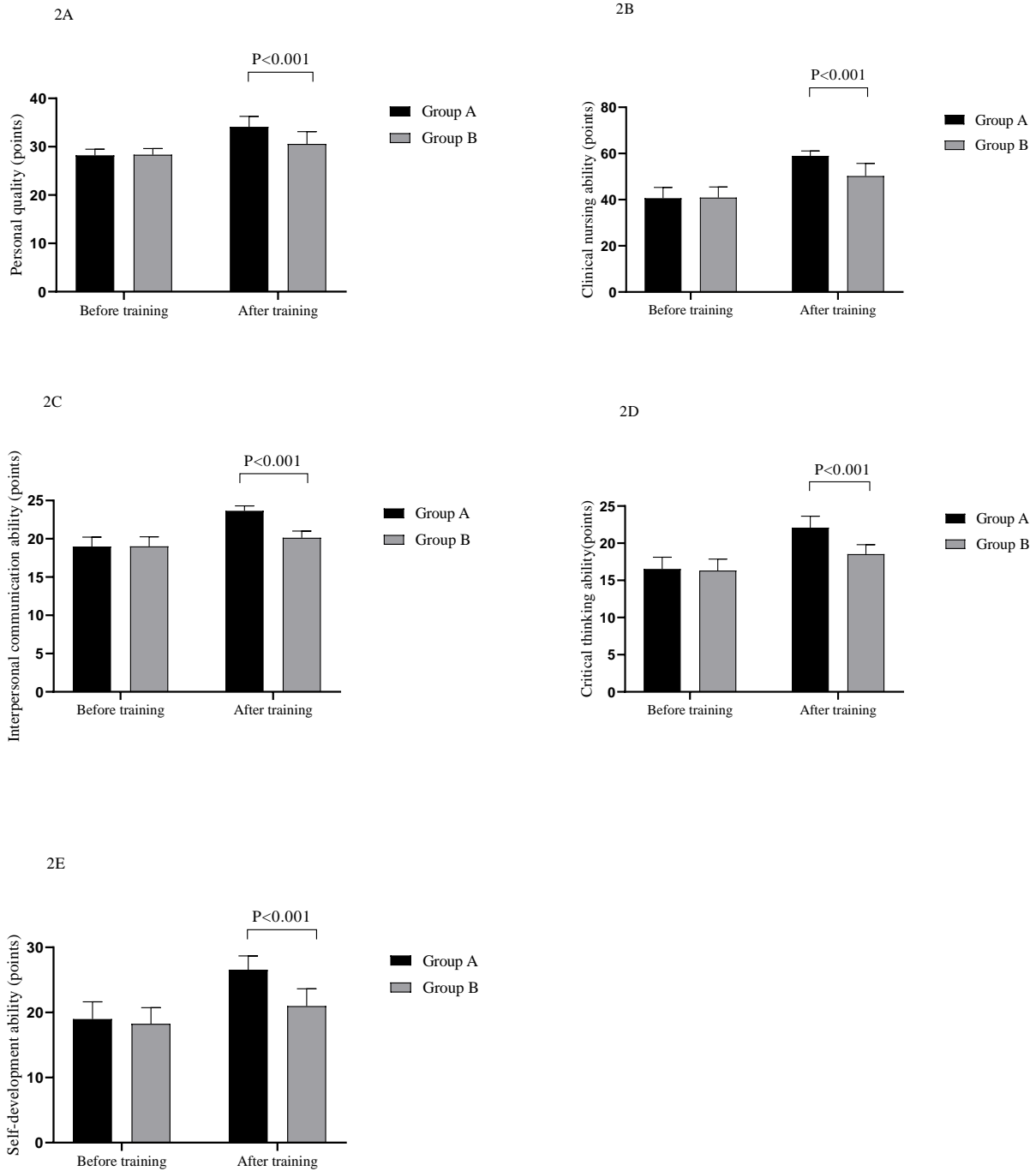
Fig. 2: Comparison of nurses' competence ($\overline{x}\pm s$, points)
Note: (2A) The scores of the personal quality; (2B) the scores of the clinical nursing ability; (2C) the scores of the interpersonal communication ability; (2D) the scores of the critical thinking ability; (2E) the scores of the self-development ability

Discussion

At present, conventional nursing teaching mode in China is theory-oriented, but the actual nursing work is practice-oriented, which is in need of continuous exercise for improvement and consolidation. Therefore, theoretical teaching alone may lead to the disconnection between nursing knowledge and clinical practice, so that nurses fail to be qualified for their work (17). PACU, with a lot of uncertainties, is a vital transfer station for patients from the operating room to the ward. Moreover, the physical and mental state of patients after surgery is different from that of ordinary people, thus patients are in need of special nursing and communication (18, 19). Therefore, it is indispensable for nurses to be equipped with competence and emergency response ability. They are expected to enhance their independent nursing ability through combining study of theory and practice, and improve nursing quality in PACU.

In this study, nursing practice combined with scene simulation teaching mode was used in PACU nurses training, aiming to explore whether the training method can improve their competence and emergency response ability in PACU. Competence-oriented standardized training is prevalent in practice. By competence is meant the qualification of nurses, that is, whether the nurses meet the requirements for work. Only those who are competent for the work can provide quality service and conform to clinical nursing requirements (20). However, this training mode alone can hardly enable the nurses to deal with the cases, and some nurses still fail to fully apply the theory in clinical nursing (21,22). In order to improve this training mode, scene simulation teaching was added in this paper, so that the nurses were fully and deeply immersed into all kinds of roles involved in PACU nursing. Meanwhile, their understanding of nursing process, communication ability and discriminative competence were greatly enhanced. Therefore, after training, the scores of personal quality and interpersonal communication ability in group A were remarkably higher than those in group B (*P*<0.001). After the scene simulation practice, the nurses were required to deeply analyze the cases issued by the instructors and put forward questions independently. Then the instructors gave corresponding answers. Finally, the nurses applied the knowledge they learned into practice. This was to clarify the teaching objectives, standardize the teaching mode of combining theory with practice, and cultivate nurses' self-learning ability and practical ability. Therefore, after training, the clinical nursing ability, critical thinking ability and self-development ability of group A were remarkably higher than those of group B (*P*<0.001), that is, the competence of group A was greatly improved.

Combining nursing practice with scene simulation teaching mode in practice can also enhance the safety awareness during nursing, cultivate nurses' good nursing habits, and reduce the possibility of risk events in PACU (23). This standardized training mode has successfully combined with multidisciplinary such as sociology, ethics, communication and psychology, which equips nurses with professional skills and enhance their comprehensive ability (24). Meanwhile, emergency response ability is enhanced and nurses are more qualified for clinical nursing. The emergency response ability of PACU is in line with the items involved in clinical practice, such as central venous pressure measurement, drainage tube nursing, tracheal intubation, defibrillation, and venipuncture. After systematic training, the nurses in both groups enhanced their theoretical scores, but the nurses in group A had better emergency response ability through more nursing practice, which indicates that the experience accumulated in practice can help nurses to consolidate their professional skills faster. This is concordant with a research (250, in which the authors gave specialized emergency training, namely scene stimulation practice, to the nurses in gastroenterology department. After half a year's training, the ability of femoral venipuncture, specialized physical examination and external application of mirabilite were conspicuously better than those before training (25), which indicates

that nursing practice is the most important way to enhance the emergency response ability.

Conclusion

With a better training effect, nursing practice combined with scene simulation teaching mode can enhance the emergency response ability and competence in PACU, which should be promoted in practice.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interest.

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