

# Analysis of the Effectiveness and Teaching Satisfaction of Diversified Teaching Methods in Clinical Instruction for Operating Room Nursing Interns

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**Abstract:** *Objective:* To analyze the advantages of diversified teaching methods in the clinical instruction of operating room nursing interns. *Methods:* Twenty-one nursing interns who underwent internships in the operating room from March 2023 to March 2024 were selected as the control group and received conventional teaching methods. Another twenty-one nursing interns who underwent internships in the operating room from April 2024 to April 2025 were selected as the experimental group and received diversified teaching methods. The teaching effects of the two groups were compared. *Results:* The experimental group scored higher than the control group in assessments, teaching satisfaction, and teaching quality evaluations, as well as in post-instruction professional identity scores ( $p < 0.05$ ). *Conclusion:* Diversified teaching methods can enhance the professional competence of operating room nursing interns, cultivate their professional identity, and yield high teaching satisfaction, thereby improving teaching quality.

**Keywords:** Diversified teaching methods; Operating room nursing interns; Clinical instruction; Teaching satisfaction

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## 1. Introduction

The operating room is a medical setting where emergency rescues or surgical treatments are concentratedly conducted, featuring strong particularities in terms of work environment and nature, and imposing high requirements on the professional skills of medical staff<sup>[1]</sup>. Based on this, nursing interns in operating rooms generally experience confusion and a lack of direction during their clinical internships. Therefore, it is essential to adopt scientific teaching methods to stimulate their enthusiasm for learning and significantly enhance the quality of teaching. Conventional teaching methods primarily rely on oral explanations and on-site observations. While these methods can improve interns' understanding of operating room nursing tasks, they lack interactivity and have

certain teaching deficiencies. In contrast, diversified teaching methods can employ various instructional forms to enhance the interest of clinical teaching, thereby cultivating interns' comprehensive abilities and achieving higher teaching efficiency<sup>[2]</sup>. For this study, 42 nursing interns were selected to evaluate the effectiveness of diversified teaching methods in clinical teaching within operating rooms.

## **2. Materials and methods**

### **2.1. General information**

The control group consisted of 21 nursing interns who began their internships in the operating room from March 2023 to March 2024, including 2 males and 19 females, aged between 19 and 25 years old, with an average age of  $(22.16 \pm 2.34)$  years. Among them, 19 had a junior college degree, and 2 had a bachelor's degree. The experimental group consisted of 21 nursing interns who started their internships in the operating room from April 2024 to April 2025, including 1 male and 20 females, aged between 19 and 24 years old, with an average age of  $(22.05 \pm 2.31)$  years. Among them, 19 had a junior college degree, and 2 had a bachelor's degree. There were no significant differences in the data between the two groups ( $p > 0.05$ ).

#### **2.1.1. Inclusion criteria**

Full-time junior college or undergraduate degree; completion of on-campus course learning tasks; first-time internship in the operating room; informed consent for the study.

#### **2.1.2. Exclusion criteria**

Internship period shorter than 1 month; transfer to another department midway; frequent absenteeism or prolonged leave; repeated tardiness or early departure; withdrawal from the study midway.

### **2.2. Methods**

The control group received conventional teaching methods: Based on the teaching syllabus, instructors systematically explained operating room nursing knowledge. Interns were organized to visit the operating room environment 1–2 times per week, where they were briefed on operating room regulations, environmental layout, daily nursing tasks, key challenges, and precautions during nursing. They also observed surgical procedures and learned nursing operational skills.

The experimental group received diversified teaching methods:

#### **(1) Objective-based teaching**

During the first week in the department, interns underwent a 2-day pre-job training, which systematically explained the basic workflow of the operating room, introduced the work environment and departmental regulations, and clarified the therapeutic effects of commonly used instruments and the usage of surgical items. In the second week, interns were briefed on the operating room nursing process, demonstrated sterile operation techniques, and outlined key aspects during nursing. In the third week, the correct positioning methods for surgical postures were demonstrated, principles of positioning were explained, the basic process and precautions for surgical cooperation were shown, and infection prevention measures and occupational protection points in the operating room were discussed from multiple perspectives, including sterile operation procedures and disinfection protocols. Organize interns to discuss the risk factors for infection in the operating room, enabling them to gain a comprehensive understanding of

relevant knowledge about operating room infections. In the fourth week after entering the department, guide interns in training surgical cooperation skills and conduct exit assessments for them.

(2) Scenario simulation teaching method

Determine the specific content of scenario simulation teaching based on the teaching syllabus and specialized knowledge of the operating room. Assess interns' expectations for clinical teaching in the operating room and assign one teaching task per week, such as ward round procedures and nursing operations. Divide interns into groups of 6–7, with each group selecting a team leader. Distribute teaching tasks 1–2 days in advance, encouraging interns to consult relevant literature or online resources to preview the teaching content beforehand. During class, require each group of interns to engage in role-playing. The teaching instructor sets up simulated operating room scenarios, selects classic cases such as fracture surgeries, explains case information to each group of interns, and guides them in recreating surgical nursing scenarios. After the simulation teaching, the teaching instructor provides feedback on relevant operational skills, including intraoperative nursing key points, aseptic technique principles, and surgical nursing coordination, pointing out deficiencies and offering improvement suggestions.

(3) Multimedia teaching method

Teaching instructors use electronic devices to film videos of skills operations such as surgical nursing coordination and capture images of key steps, compiling them into teaching materials. These materials are played for interns in the third week after they enter the department, systematically demonstrating surgical nursing operation techniques and the treatment processes of various surgeries. After the video playback, interns are encouraged to ask questions, and the teaching instructor provides targeted answers.

The clinical teaching period for both groups is 4 weeks.

## 2.3. Observation indicators

(1) Assessment scores

Prior to the conclusion of the internship period, unified assessment activity will be organized, encompassing two components: theoretical knowledge (including 30 points for terminology explanations, 20 points for true/false questions, and 50 points for case analysis) and practical skills, each with a maximum score of 100 points.

(2) Teaching satisfaction

A self-designed teaching satisfaction scale will be utilized, encompassing items such as teaching content, format, and attitude, with a total score of 100 points. High satisfaction is defined as exceeding 75 points, basic satisfaction ranges from 40 to 75 points, and dissatisfaction is indicated by a score below 40 points.

(3) Teaching quality

A self-designed teaching quality questionnaire will be employed, covering aspects such as stimulating learning interest, fostering teamwork abilities, enhancing problem-solving skills, improving critical thinking, and cultivating hands-on skills, with each item carrying a score of 20 points. Teaching quality will be positively scored.

(4) Professional identity

The Nurse Professional Identity Scale will be selected, encompassing five dimensions such as coping with professional setbacks and professional cognitive evaluation. Each dimension includes six items, with each item scored from 1 to 5 points, totaling 150 points. Professional identity will be positively scored.

## 2.4. Statistical analysis

Data will be processed using SPSS 28.0 software. Continuous variables will be compared using *t*-tests, while categorical variables will be compared using chi-square ( $\chi^2$ ) tests. Statistical significance will be considered as  $p < 0.05$ .

## 3. Results

### 3.1. Comparison of assessment scores between the two groups

The experimental group achieved higher assessment scores ( $p < 0.05$ ). See **Table 1**.

**Table 1.** Comparison of assessment scores between the two groups [ $\bar{x} \pm s$ , points]

Group	Number of participants	Theoretical knowledge				Operational skills score
		Terminology explanation	True/False questions	Case analysis	Total score	
Experimental group	21	27.85 $\pm$ 1.52	18.47 $\pm$ 0.89	47.32 $\pm$ 2.15	93.64 $\pm$ 3.22	94.36 $\pm$ 2.28
Control group	21	26.12 $\pm$ 1.87	17.36 $\pm$ 1.24	44.83 $\pm$ 2.96	88.31 $\pm$ 4.07	90.42 $\pm$ 2.31
<i>t</i> -value	-	3.290	3.333	3.119	4.706	5.563
<i>p</i> -value	-	0.002	0.002	0.003	< 0.001	< 0.001

### 3.2. Comparison of teaching satisfaction between the two groups

The experimental group demonstrated higher teaching satisfaction ( $p < 0.05$ ). See **Table 2**.

**Table 2.** Comparison of teaching satisfaction between the two groups [n/%]

Group	Number of participants	Highly satisfied	Basically satisfied	Dissatisfied	Satisfaction rate
Experimental group	21	11 (52.38)	8 (38.10)	2 (9.52)	90.48 (19/21)
Control group	21	8 (38.10)	5 (23.81)	8 (38.10)	61.90 (13/21)
$\chi^2$					4.725
<i>p</i> -value					0.030

### 3.3. Comparison of teaching quality scores between the two groups

The experimental group achieved higher teaching quality scores ( $p < 0.05$ ). See **Table 3**.

**Table 3.** Comparison of teaching quality scores between the two groups [ $\bar{x} \pm s$ , points]

Group	Number of participants	Stimulate learning interest	Cultivate teamwork ability	Improve problem-solving ability	Enhance mental flexibility	Cultivate practical ability
Experimental Group	21	17.92 $\pm$ 1.45	18.25 $\pm$ 1.32	17.68 $\pm$ 1.51	18.63 $\pm$ 1.27	17.41 $\pm$ 1.58
Control Group	21	15.14 $\pm$ 2.03	16.02 $\pm$ 1.94	14.87 $\pm$ 2.12	16.35 $\pm$ 1.89	15.29 $\pm$ 1.97
<i>t</i> -value	-	5.107	4.355	4.947	4.588	3.847
<i>p</i> -value	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

### 3.4. Comparison of professional identity scores between the two groups

Before teaching, there was no significant difference in professional identity scores between the two groups ( $p > 0.05$ ). After teaching, the experimental group exhibited higher professional identity scores ( $p < 0.05$ ). See **Table 4**.

**Table 4.** Comparison of professional identity scores between the two groups [ $\bar{x} \pm s$ , points]

Group	No. of cases	Coping with practice frustration		Professional cognition and evaluation		Professional social skills		Professional social support		Professional self-reflection	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Experimental group	21	16.58 ± 3.21	25.34 ± 2.45	17.92 ± 3.05	26.71 ± 2.18	15.23 ± 3.44	23.89 ± 2.67	18.65 ± 2.87	27.12 ± 2.01	16.04 ± 3.32	24.97 ± 2.11
Control group	21	16.21 ± 3.40	21.09 ± 3.12	18.23 ± 3.26	23.45 ± 2.94	14.97 ± 3.60	20.15 ± 3.25	18.90 ± 3.11	23.78 ± 2.87	15.78 ± 3.55	21.08 ± 2.09
<i>t</i> value	-	0.363	4.910	0.318	4.082	0.239	4.075	0.271	4.368	0.245	6.002
<i>p</i> value	-	0.719	< 0.001	0.752	< 0.001	0.812	< 0.001	0.788	< 0.001	0.808	< 0.001

## 4. Discussion

The operating room is a crucial department in major hospitals, characterized by its strong professionalism and involvement in multiple disciplines<sup>[3]</sup>. Patients in the operating room typically have severe conditions and are often in special physical states, leading to a high level of nursing risk and demanding a high degree of professionalism from clinical medical staff. Clinical internship teaching serves as the primary approach for cultivating nursing talent in the operating room, effectively integrating theoretical knowledge with clinical practical skills to enhance the overall competence of interns<sup>[4]</sup>. Additionally, clinical internship teaching should also focus on nurturing interns' professional ethics, improving their teamwork and problem-solving abilities, and enabling them to quickly adapt to the working environment of the operating room.

Conventional teaching methods can provide nursing interns with systematic explanations of knowledge, demonstrate nursing operational skills in the operating room, and organize interns to observe surgical procedures, thereby enhancing their understanding of theoretical knowledge and operational skills. However, it is challenging to highly integrate theory with practice, and clinical teaching often lacks interactivity and engagement<sup>[5]</sup>. Furthermore, the internship period for interns is relatively short, while the learning content in operating room nursing is extensive, and nursing operational skills are complex. Conventional teaching methods struggle to effectively improve the nursing skills of interns, resulting in generally average teaching outcomes<sup>[6]</sup>. In contrast, diversified teaching methods can place interns as the main focus of teaching, fully leveraging their subjective initiative, utilizing various teaching formats to enhance their participation in teaching, guiding them to think deeply, and thereby comprehensively improving their professional competence.

The results show that the assessment scores of the experimental group were higher than those of the control group ( $p < 0.05$ ). The reason is that diversified teaching methods can effectively integrate teaching resources using various teaching approaches, fully considering the learning styles of interns, thereby meeting their diverse learning needs. This approach is conducive to stimulating the enthusiasm of interns and improving their cooperation in teaching. Additionally, this teaching method can organically combine theoretical teaching with practical teaching, enabling interns to fully grasp theoretical knowledge through skill practice, achieving a comprehensive

understanding of learning content, and thereby improving their assessment scores <sup>[7]</sup>. The teaching satisfaction and teaching quality scores of the experimental group were higher than those of the control group ( $p < 0.05$ ). The reason lies in the fact that the diversified teaching method is characterized by strong personalization and humanism. It can scientifically arrange the teaching progress according to the learning ability and habits of the interns, helping them find efficient learning methods, thereby stimulating their learning interest and significantly improving their teaching satisfaction <sup>[8]</sup>. Moreover, the diversified teaching method can optimize the learning experience of interns, enabling them to discover their personal value through independent learning and teamwork, thus enhancing their self-confidence. Based on this, interns can take the initiative to improve their skills and comprehensively cultivate their abilities, which is conducive to effectively enhancing teaching quality <sup>[9]</sup>. The occupational identity score of the experimental group after teaching was higher than that of the control group ( $p < 0.05$ ). The reason is that this teaching method enables interns to fully recognize their professional mission in clinical practice and take the initiative to provide humanistic services to patients. Meanwhile, it can improve the nurse-patient communication awareness of interns through scenario simulation teaching and classic case analysis, guiding them to think from the perspective of patients, thereby enabling them to deeply appreciate their professional value and facilitating the cultivation of their occupational identity <sup>[10]</sup>.

## 5. Conclusion

In conclusion, implementing the diversified teaching method for nursing interns in the operating room can effectively improve their professional competence, significantly enhance their occupational identity, and increase their satisfaction with teaching methods, thereby achieving high teaching quality.

## Disclosure statement

The authors declare no conflict of interest.

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