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Application of Participatory Teaching in Operating Room Nursing and Evaluation of Its Effectiveness

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Abstract: To study the application and effects of participatory teaching in perioperative nursing. Methods: Sixty interns in the operating room nursing department of our hospital from January 2022 to January 2023 were selected. They were randomly divided into a control group (n=30) and an observation group (n=30). The control group received traditional teaching methods, while the observation group received participatory teaching methods. The theoretical and practical scores of the nursing interns in both groups were compared. The nursing quality scores, team cohesion scores, critical thinking ability scores, and satisfaction with teaching were evaluated before and after the teaching intervention. The theoretical and practical scores of the nursing interns in the observation group were higher than those in the control group (P<0.05). Before the teaching intervention, there was no significant difference in nursing quality scores between the two groups (P>0.05). However, after the teaching intervention, the nursing quality scores of the observation group were significantly higher than those of the control group (P<0.05). Similarly, the observation group had higher team cohesion scores and critical thinking ability scores compared to the control group after the teaching intervention (P<0.05). The satisfaction with teaching was also higher in the observation group compared to the control group (P<0.05). The application of participatory teaching in perioperative nursing education can improve nursing quality, promote team cohesion, enhance critical thinking ability, and increase satisfaction with teaching. It is worth promoting and implementing in the field of perioperative nursing.

1. Introduction

Internship is an important process for nursing staff to transition from school to nursing positions, and it is also a necessary path for clinical healthcare professionals. Improving the quality of teaching for nursing interns is the foundation for improving their comprehensive abilities and helping them understand the significance of nursing work, as well as facilitating the formation of a strong professional consciousness. Especially for the training and mentoring of operating room nursing staff, it requires special attention as it directly relates to the smooth operation of surgical procedures and the safety of individuals. Moreover, the work in the operating room has invasive characteristics. Without proper intervention during surgery, it can pose risks to the nursing staff,

doctors, and patients. In this context, the requirements for the quality of mentoring in the operating room have gradually increased. In traditional mentoring, the instructional teaching method is often applied in operating room nursing mentoring [1]. While this approach helps nursing interns to a certain extent in understanding operating room nursing, developing nursing skills, and cultivating nursing consciousness, it overly emphasizes the teaching itself and neglects the importance of active learning. As a result, the interns' ability to cope with practical situations and perform nursing procedures may be greatly affected after entering practice. Therefore, it is necessary to adopt effective mentoring models to improve the mentoring outcomes. In this study, the authors selected 60 operating room nursing interns from our hospital from January 2022 to January 2023 to analyze the application and effects of participatory teaching. The objective of this study is as follows.

2. Information and Methodology

2.1. General information

A total of 60 operating room nursing interns from our hospital were selected for this study, from January 2022 to January 2023. Using a random number table, they were divided into two groups. The control group (n=30) received conventional nursing mentoring using the routine teaching model. There were 4 males and 26 females in the control group, with an age range of 20-24 years and an average age of (22.43±0.48) years. Among them, 5 had a bachelor's degree and 25 had an associate degree. The observation group (n=30) received participatory teaching using the participatory teaching model [2]. There were 3 males and 27 females in the observation group, with an age range of 20-24 years and an average age of (22.38±0.41) years. Among them, 4 had a bachelor's degree and 26 had an associate degree. The general information of the two groups of nursing interns was compared, and there was no significant difference (P>0.05), indicating comparability between the groups [3].

2.2. Methodologies

Control group: Conventional nursing mentoring involved teaching through a transmission-based approach. During the teaching period, the mentor acted as the main speaker while the students recorded the content and actively learned. The teaching focused on demonstrating the relevant knowledge and standardized technical operations for operating room nursing interns based on the curriculum requirements. After completing the standardized training, the nursing interns were assigned to their respective mentors who guided them in practice and observation.

Observation group: Participatory teaching method: (1) After guiding the nursing interns into the operating room, the mentor needs to establish effective communication and understand the characteristics of each intern. Combining the teaching outline, the mentor clarifies the starting point and focus of the teaching. Throughout the mentoring period, the mentor ensures close communication with the nursing interns, building a good teacher-student relationship. The mentor introduces the operating room environment and explains the nursing content and disease characteristics involved in the operating room [4]. If the nursing interns have any doubts or questions, the mentor patiently answers them. The mentor also guides and manages the emotional state of the nursing interns, ensuring their active learning and focused attention. Regular assessments are conducted to understand the differences in learning outcomes among the nursing interns and provide individualized teaching. During practice, appropriate encouragement and praise are given to the nursing interns. (2) The number of mentors in the department is recorded, and the nursing interns are divided into groups. Each group usually consists of four nursing interns with one assigned mentor. It is important to ensure consistent learning progress among the four nursing

interns to enhance teaching effectiveness. Regular group discussions are organized to identify and address any issues. (3) During the teaching process of fundamental theoretical knowledge and skills, the teaching plan is adjusted based on the learning progress of the nursing interns. Various forms of teaching, such as active learning, scenario-based teaching, and problem-based approaches, are combined to enhance the participation of the nursing interns. Skill teaching is given particular emphasis. In the classroom, the mentor helps the students understand the key points of basic operations in the operating room and encourages their active participation through questioning. Relevant materials on operational points are provided to the nursing interns beforehand to aid their understanding. Teaching is conducted through demonstration and simulation, ensuring a good level of comprehension. The mentor guides the nursing interns to practice simulated operations, correcting any mistakes, and providing a summary [5]. (4) Once the nursing interns have acquired certain operational abilities and successfully entered practical training, observations are conducted, and participatory teaching is implemented. Each group is led by a mentor to conduct ward rounds. Clear responsibilities are assigned, such as circulatory nurses and instrument nurses, to ensure that everyone has well-defined responsibilities and operational abilities. Before conducting patient rounds, the mentor communicates with the patients to establish unified understanding. The relevant patient information is fully introduced to the nursing interns, giving them a general impression and understanding of the patient. They are encouraged to actively assess any obstacles encountered during practical operations and develop coping strategies. If the nursing interns' practical skills are not satisfactory, scenario-based teaching and practical exercises can be carried out. (5) The theoretical knowledge and nursing points mentioned above need to be transformed into on-the-job teaching. Through one-on-one mentoring, the nursing interns' abilities are comprehensively assessed and optimized. Principles such as individualized teaching, gradual progression, step-by-step guidance, and active participation are followed during one-on-one mentoring. Most nursing interns experience timidity during the practical operation process, so verbal encouragement is necessary [6].

2.3. Observation indicators

① Comparison of theory scores and operation scores;
② Comparison of nursing quality scores before and after taking teaching;
③ Comparison of team cohesion scores before and after teaching;
④ Comparison of critical thinking ability scores before and after teaching;
⑤ Comparison of satisfaction with teaching.

2.4. Statistical processing

SPSS18.0 statistical software was used to analyze the data, and the measurement data were expressed as mean + standard deviation ($\bar{x} \pm s$) with t test, and the count data were expressed as rate (%) with X2 test, and the difference was considered statistically significant with $P<0.05$ [7].

3. Results

3.1. Comparison of theory scores and operation scores

The theory scores and operation scores of nursing interns in the observation group were higher than those of the control group ($P < 0.05$), see Table 1;

Table 1: Comparison of theoretical and operational scores ($\bar{x}$ ±s) (points)

Group	Number of cases	Operation Score	Theoretical score
Observation Group	30	93.47±2.98	91.84±5.39
Control group	30	86.58±5.65	77.69±5.13
t	-	5.908	10.416
P	-	0.000	0.000

3.2. Comparison of nursing quality scores before and after teaching

Before teaching, the nursing interns' quality of care scores of the two groups were compared (P>0.05), and after teaching, the nursing interns' quality of care scores of the observation group were higher than those of the control group (P<0.05), see Table 2;

Table 2: Comparison of quality of care scores before and after teaching ($\bar{x}$ ±s) (points)

Group	Number of case	Nursing Practice		Assisting and Collaborating		Nurse-Patient Communication		
		Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching	
Observation Group	30	12.00±2.39	18.14±1.09	10.89±2.21	18.15±1.39	10.95±2.93	18.23±1.26	
Control group	30	12.01±2.35	15.35±1.21	10.76±2.18	14.53±1.41	10.78±2.89	15.00±1.19	
t	-	0.016	9.383	0.229	10.014	0.226	10.208	
P	-	0.987	0.000	0.819	0.000	0.822	0.000	

Table 2: (continued)

Group	Number of cases	Service Attitude		Emergency Response Capability		Total Score	
		Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching
Observation Group	30	11.25±2.34	18.16±0.59	10.23±3.06	18.35±1.46	70.46±4.23	96.35±1.56
Control group	30	11.19±2.30	15.23±1.10	10.19±3.03	14.85±2.26	70.40±4.19	81.16±2.31
t	-	0.100	12.857	0.051	7.125	0.055	29.848
P	-	0.921	0.000	0.960	0.000	0.956	0.000

3.3. Comparison of team cohesion scores before and after teaching

Table 3: Comparison of team cohesion scores before and after coaching ($\bar{x}$ ±s) (points)

Group	Number of cases	Self-discipline		Enjoyment of community		Belongingness		Valuability	
		Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching
Observation Group	30	1.26±0.53	2.66±0.31	1.45±0.44	2.80±0.15	1.26±0.46	2.78±0.20	1.57±0.52	2.73±0.14
Control group	30	1.24±0.56	2.04±0.22	1.47±0.46	2.25±0.26	1.20±0.47	2.13±0.37	1.53±0.54	1.23±0.33
t	-	0.142	8.933	0.172	10.036	0.500	8.465	0.292	22.919
P	-	0.888	0.000	0.864	0.000	0.619	0.000	0.771	0.000

Before teaching, the team cohesion scores of nursing interns in the two groups were compared (P > 0.05), and after teaching, the team cohesion scores of nursing interns in the observation group were higher than those of the control group (P < 0.05), see Table 3;

3.4. Comparison of critical thinking ability scores before and after taking teaching

Before teaching, the critical thinking ability scores of nursing interns in the two groups were compared (P > 0.05), and after teaching, the critical thinking ability scores of nursing interns in the observation group were higher than those of the control group (P < 0.05), see Table 4;

Table 4: Comparison of Critical Thinking Skills Scores before and after teaching ($\bar{x}$ ±s) (points)

Group	Number of cases	Disconnectivity		Cognitive Maturity		Curiosity		self-confidence	
		Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching	Before teaching	After teaching
Observation Group	30	35.10±6.24	44.25±4.09	37.19±7.36	44.28±4.05	33.92±6.62	45.17±3.99	38.31±6.88	45.25±4.47
Control group	30	35.18±6.32	40.34±4.06	37.28±7.48	41.50±4.19	33.73±6.53	42.01±4.03	38.19±6.89	41.19±4.29
t	-	0.049	3.716	0.047	2.613	0.112	3.052	0.068	3.589
P	-	0.961	0.001	0.963	0.011	0.911	0.003	0.946	0.001

3.5. Comparison of satisfaction with teaching

Observation group: 96.7% (29/30), 21 cases were very satisfied, 8 cases were satisfied, and 1 case was dissatisfied, Control group: 76.7% (23/30), 17 cases were very satisfied, 6 cases were satisfied, and 7 cases were dissatisfied, Comparison of the two groups (P < 0.05).

4. Conclusion

4.1. Requirements for nursing care in the operating room

Surgery is a commonly used diagnostic and treatment method in clinical practice. However, it is invasive and exposes patients to incisions. To ensure patient safety, precise equipment and a good environment are required for surgery [8]. In this context, the operating room was created in clinical practice. The nature of the work in the operating room is quite special, and the quality of nursing work in the operating room is relatively high. The smooth progress of nursing work in the operating room not only requires nurses to have excellent professional abilities, but also requires good communication skills, ability to respond to emergencies, and risk awareness. In addition, during surgery, some patients will undergo local anesthesia, which can cause relatively serious negative emotions. Without positive guidance, patients may experience anxiety, tension, depression and other emotional issues that can affect their physiological parameters and ultimately, the success of the operation. Furthermore, during surgery, many sharp surgical instruments are used, and if patients struggle or nurses make mistakes during their own operation, there is a certain probability that the nursing staff will be scratched. If the situation is serious, it may lead to hospital infections, which is also a professional risk for nurses. Under these potential risks, it is believed in clinical practice that in addition to the surgical operation, the nursing content of operating room nurses should include close communication with patients and their families to obtain their understanding. In some medical disputes, a portion of them occur because nurses fail to promptly inform patients and their families about the precautions and consequences of the surgery, leading to patients having different opinions and resulting in medical disputes with patients and their families [9].

4.2. The current situation of nursing education in the operating room

Due to the unique environment of the operating room, most nursing interns may experience nervousness and fear when they enter the operating room, which can affect the quality of their education. The traditional nursing preceptorship model mainly uses an instructive approach for teaching. In the practical process, nursing interns are guided by preceptors to understand the operating room environment, relevant regulations, and nursing requirements. The preceptors also introduce the interns' professional skills and awareness in relation to the current working status of the operating room. After the preceptors have a basic understanding of the nursing interns, they guide them to participate in the nursing care in the operating room, enhancing their nursing abilities through observation and simulation. However, it has been found through practice that the instructive teaching model, in which the preceptors play the main role and employ a "teach first, learn later" approach, does not recognize the importance of the nursing interns' active learning, resulting in poor teaching effectiveness. In general, the traditional instructive preceptorship method is one-sided and singular, lacking in cultivating students' initiative and yielding average teaching results.

4.3. Advantages of participatory nursing education

Participatory teaching is a collaborative teaching model in which students are actively involved. It allows for the integration of students' actual needs and learning situations, and the development and implementation of teaching plans. Throughout the teaching process, more intuitive, visual, flexible, and diverse teaching methods can be adopted to encourage student participation, ensuring closer connections between interns and interns, interns and teachers, and teachers and teachers, thereby facilitating effective information transmission and feedback. In general, participatory nursing education offers three advantages: (1) It fully mobilizes students' enthusiasm and increases nursing interns' confidence in nursing work. (2) It ensures that interns develop practical skills, enhancing their ability to respond to emergencies and handle situations. (3) It promotes a sense of responsibility in nursing interns and improves work quality.

During the implementation of participatory nursing education, preceptors can combine their previous work experience and select typical cases in the operating room to guide interns' participation in nursing care, ensuring their objective understanding of operating room nursing work. Through practical experience, nursing interns can improve their basic operational and communication skills, enabling them to develop comprehensive abilities. Additionally, the application of participatory teaching provides nursing interns with opportunities for simulated practice, further enhancing their capabilities [10].

4.4. Research and analysis

Research findings indicate that the teaching outcomes of the observation group of nursing interns were superior to those of the control group. This suggests that the application of participatory teaching methods can further enhance the teaching effectiveness of surgical nursing interns. The reason for this is that participatory teaching helps nursing interns gain a maximum understanding of the surgical environment and job requirements, and through simulation and practice, enhances their teaching abilities. It is worth noting that participatory teaching is not limited to the surgical setting and can also involve simulation-based practice during the teaching period. Therefore, it is necessary for the department to provide teaching venues and equipment to ensure that nursing interns can proficiently use surgical instruments. Through participation, nursing interns gradually improve their initiative and proactiveness, and can promptly identify and address problems, thereby enhancing the

quality of teaching.

In summary, the application of participatory teaching in surgical nursing education can further enhance the quality of nursing teaching and is worth promoting.

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