

The Application of SimMan Scenario Simulation in Nursing Education

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Abstract. [Objective] Study the application effect of SimMan situational simulation in nursing education; [Method] Using the whole group sampling method, the 8 classes of nursing undergraduate classes in 2017 were divided into the experimental group and the control group, the 1-4 classes were the experimental group, the 5-8 classes were the control group, and the experimental group used the SimMan3G simulator teaching, the control group used conventional simulated human teaching. Comparative analysis of the teaching effects of the two groups; [Results] The theoretical test and practice results of the test group were significantly higher than the control group. The difference was statistically significant ($P < 0.05$); [Conclusion] SimMan scenario simulation teaching can improve the theoretical knowledge and practical operation ability of nursing students, and improve the effectiveness of teaching nursing students.

Introduction

SimMan scenario simulation teaching is controlled by computer, and simulated people are restricted to the corresponding symptoms and signs, combined with the configuration simulated clinical environment, and students can obtain clinical evaluation and take care of the patients in different roles such as nurses, doctors or family members. It is a teaching method for critical thinking training and comprehensive skill development. . Simulation teaching method was first applied in nursing education in 1991^[1]. In 1932, the first hypodermic injection using a simulated human was performed at Indian university. In 1960, the first generation of Sim simulators were used for clinical trial teaching. In 1960, simulators were used in first aid training. In 1980, METI mimics were used in anesthesiology training^[2]. The high-end medical simulator SimMan3G is a new generation of medical integrated simulator that simulates people's basic vital signs and blood, sweats, and even responds to pain. Teachers can set up case scenarios through computers, so that nursing students can visualize abstract content in theoretical learning. They can feel immersive in the operation, perceive the complex nursing environment of the hospital, and improve the ability and judgment of nurses on the spot. Improve the ability of nurses to adapt to the field and critical thinking ability, but also combine theory and practice to improve teaching results. This study used SimMan scenario simulation teaching for the 2017 nursing undergraduate nursing students, and achieved good teaching results.

Materials and Methods

General Information. Level Using the cluster sampling method, the 8 classes of undergraduate students in the undergraduate class were divided into the experimental group and the control group, the 1-4 classes were the experimental group, the 5-8 classes were the control group. And the experimental group was 136, including 10 boys and 126 girls. There were 125 people in the control group, including 12 male students and 113 female students. There was no statistical difference in age and gender between the experimental group and the control group, there was no statistical difference between the two groups before the test.

Methods. The experimental group nurses use SimMan scenario simulation teaching: teachers set up typical cases according to the learning content, and input them into the SimMan3G mentor

running program through the computer before class, so that SimMan3G simulating people have corresponding vital signs, or can simulate according to needs. The patient performs the necessary dressing to make the simulator more realistic, and the teacher prepares rescue supplies, test equipment, medicines, etc. before class. In the classroom, a group of 4 students is formed to form a small team to perform real operations on the simulator. In this process, the teacher can play different roles according to the needs, such as doctors, family members, etc. , and control and guide the whole process. The performance of each nursing student is objectively judged, and encouragement and correction are given in time. The control group adopts the traditional teaching mode. Firstly, the operation video is watched, and then the teacher decomposes the operation steps, the nursing students watch the learning at the bedside, and then exercises with the ordinary simulated human props. The teacher guides and guides the performance of each nursing student. Judging, giving timely encouragement and correction.

Teaching Effect Evaluation. The objective of this study was the Objective Structured Clinical Examination (OSCE)^[3]. The assessment contents mainly included: nursing consultation, nursing examination, clinical nursing data collection, nursing evaluation, nursing diagnosis, nursing operation, and health assessment. Each station is evaluated by 3 teachers, and the results are divided into averages. The theoretical assessment adopts the written test closed-loop method, and the theoretical assessment contents of the two groups of nursing students are completely consistent.

Statistical Analysis. The collected data were analyzed by computer software SPSS 20. 0. The t-test was used for comparison between the two groups. The results were expressed in the form of mean and standard deviation ($\bar{x} \pm \bar{s}$). $P < 0. 05$ was considered statistically significant.

Results

The theoretical scores and practical operation ability of the nursing students in the experimental group were significantly higher than those in the control group. There were statistical differences between the two groups, $P < 0. 05$. as show in Table 1 . The operation results of the two groups before and after teaching were compared. There was no significant change in the scores. The performance of the experimental group after teaching was significantly improved compared with that before the teaching. As show in Table 2.

Table 1 Comparison of teaching effects between the two groups

Group	Number(n)	Theoretical Score($\bar{x} \pm \bar{s}$)	P	Operation Score ($\bar{x} \pm \bar{s}$)	P
Experimental	136	$84. 59 \pm 1. 24$	0. 02	$87. 54 \pm 5. 61$	0. 01
Control	125	$73. 28 \pm 1. 87$		$76. 93 \pm 6. 14$	

Table 2 Before and after operation of teaching

	Group	Number(n)	Operation score ($\bar{x} \pm \bar{s}$)	P
Pre-teaching	Experimental	136	$75. 26 \pm 6. 15$	$>0. 05$
	Control	125	$76. 33 \pm 5. 34$	
After teaching	Experimental	136	$87. 54 \pm 5. 61$	$<0. 05$
	Control	125	$76. 93 \pm 6. 14$	

Discussion

The results of this study show that the theoretical performance and operational scores of the experimental group are significantly higher than the control group, indicating that SimMan scenario

simulation teaching can improve the teaching effect. The results of this study are consistent with the results of Youqing Peng^[4], JieMa^[5], Yingqing Lu^[6], and so on. Compared with the practical operation ability before and after teaching in the control group, there was no statistical difference, and there was no statistical significance. The practical operation ability of the experimental group was greatly improved compared with that before the teaching, which was statistically significant, indicating that the SimMan scenario simulation can effectively improve the clinical practice of nursing students. Practice operational capabilities. This result coincides with the research results of Hongyan Bian and Yingfan Zhang^[7-8].

SimMan's scenario simulation is concrete, vivid and realistic, which can fully mobilize students' enthusiasm, initiative and interest, so that nursing students can effectively combine theoretical knowledge with clinical practice, improve students' independent thinking ability and clinical thinking ability, clinical decision-making ability, clinical nursing ability^[9]. And the complex clinical environment requires the nursing staff to have fast and accurate clinical judgment ability^[10], but the nursing students can not fully display the clinical complex medical environment in traditional teaching. SimMan's scenario simulation teaching can do just that; SimMan scenario simulation emphasizes the ability of nursing students to observe the condition, the development of the disease and the communication and communication with the patient during the operation, and the nurse plays in all aspects of health care. Positive role, good critical thinking and communication skills are very important^[11]. using SimMan scenario simulation teaching can improve the ability of nursing students to observe the condition, and in the process of simulation operation, team collaboration is required, the teamwork ability of nursing students is also a great improvement^[12]. Nursing plays an invaluable role in the rehabilitation of patients. The health care industry is different from other industries. In practice, errors are not allowed, otherwise it will cause irreparable consequences. In the SimMan scenario simulation, the nursing students are allowed to make mistakes, and continue to progress until success, these successes can enhance the clinical care confidence of nursing students^[13].

In summary, SimMan scenario simulation teaching can improve the clinical thinking ability, clinical decision-making ability, clinical nursing ability, team collaboration ability, and observing the disease ability of the nursing students. It can improve the teaching effect and effectively combine the theory with the practical operation. After graduation, students can be more qualified for clinical nursing work, which is worthy of promotion and implementation in major universities.

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