

Application Research of In Situ Simulation Combined with Standardized Patients in Clinical Practice Teaching of Obstetrics and Gynecology

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Abstract

Objective: To explore the application effect of in situ simulation combined with standardized patients (SP) in clinical practice teaching of obstetrics and gynecology. **Methods:** According to the undergraduate teaching objectives of clinical medicine, typical clinical cases were collected to establish in situ simulation teaching plans, set up in situ simulated real clinical environments and scenarios, and recruit SPs for systematic training. A total of 312 undergraduate medical students majoring in clinical medicine who attended probation courses in the Department of Obstetrics and Gynecology at the Affiliated Hospital of Youjiang Medical University for Nationalities (Clinical Medical College) from September 2023 to June 2024 were randomly divided into a joint teaching group and a traditional teaching group by drawing lots. The traditional teaching group (control group) adopted the traditional clinical practice teaching mode, while the joint teaching group (research group) used the in situ simulation combined with SP teaching mode. The two groups were compared in terms of assessment results of practical skills and case analysis, satisfaction with probation courses, and academic self-efficacy. **Results:** The scores of the research group in medical history collection, physical examination, skill operation, doctor-patient communication, and case analysis were significantly higher than those of the control group, with statistically significant differences ($P < 0.05$). The satisfaction with probation courses and academic self-efficacy of the research group were also higher than those of the control group, with statistically significant differences ($P < 0.05$). **Conclusion:** The application of in situ simulation combined with standardized patient teaching methods in probation teaching is beneficial to improving the effect of clinical practice teaching in obstetrics and gynecology.

Keywords

In situ simulation; Standardized patients; Obstetrics and Gynecology; Clinical practice teaching.

1. Introduction

In situ simulation (ISS) originates from simulation teaching [1], It is a training method based on multiple theoretical foundations such as situational cognition, connectionism, cognitive load, and constructivist learning[2], also known as "on-site simulation"[3], It integrates simulation with real medical environments, enabling the development of simulation teaching in real clinical settings. It allows participants to be immersed in real clinical environments, thereby better observing, evaluating, and training their abilities in medical theory, practical operation skills, and doctor-patient communication. Standardized patients (SPs) refer to individuals who,

after systematic, professional, and standardized training, can accurately simulate the actual conditions of clinical patients. They place students in scenarios of interacting with "patients," effectively training medical students to integrate medical theoretical knowledge with clinical practice, improve clinical thinking and disposal abilities, and cultivate good doctor-patient communication methods and humanistic care for patients [4]. The teaching method combining in situ simulation with standardized patients integrates the above two teaching methods, moving the teaching scene from simulation laboratories to reality, conducting teaching in real medical environments. It can set simple scenarios, scenarios with "traps" or even multi-disciplinary joint scenarios, where patients are played by standardized patients.

Obstetrics and gynecology is a highly professional and practical discipline. With the transformation of medical models, the continuous expansion of medical student enrollment, many patients' refusal to participate in teaching-related obstetrics and gynecology examinations or operations, and the randomness and limitation of clinical disease types in actual work, the teaching of obstetrics and gynecology clinical probation courses is facing enormous pressure. The traditional clinical probation teaching of obstetrics and gynecology adopts a teaching method where teachers lecture on professional knowledge, and students mainly listen, watch, and imitate. This indoctrinating teaching often makes students passively accept knowledge, failing to give full play to their enthusiasm and initiative in learning. As a result, students have a superficial understanding of the learning content, affecting the establishment of their clinical thinking platform. In summary, various factors lead to poor quality of clinical practice teaching in obstetrics and gynecology, and there is an urgent need to improve the probation teaching mode and enhance the teaching quality. Based on this, we applied the in situ simulation combined with standardized patient teaching method in the probation of undergraduates majoring in clinical medicine in obstetrics and gynecology, achieving good results, which are reported as follows.

2. Objects and Methods

2.1. Research Objects

A total of 312 undergraduate medical students majoring in clinical medicine who attended probation courses in the Department of Obstetrics and Gynecology at the Affiliated Hospital of Youjiang Medical University for Nationalities (Clinical Medical College) from September 2023 to June 2024 were selected as research objects. They were randomly divided into a joint teaching group and a traditional teaching group by drawing lots. The traditional teaching group (control group) adopted the traditional clinical practice teaching mode, while the joint teaching group (research group) used the in situ simulation combined with SP teaching mode. Among the control group, there were 70 males and 86 females, with an average age of (23.44 ± 2.25) years. In the research group, there were 68 males and 88 females, with an average age of (23.66 ± 2.99) years. There were no statistically significant differences in age and gender between the two groups ($P > 0.05$), so they were comparable.

2.2. Inclusion and Exclusion Criteria

Inclusion criteria: Undergraduates majoring in five-year clinical medicine at Youjiang Medical University for Nationalities who attended probation courses in obstetrics and gynecology; healthy, without mental illness; supportive of medical education reform and voluntarily participating in this study.

Exclusion criteria: (1) Those who could not continue until the end of the experiment and withdrew midway[5];(2) Those with language communication barriers or mental illnesses; (3) Those with low cooperation and failure to follow relevant department regulations.

2.3. Research Methods

(1) According to the disease types required to be mastered in the undergraduate teaching syllabus of obstetrics and gynecology for clinical medicine majors, collect real and typical clinical cases from wards, outpatient and emergency departments (such as vaginal bleeding, vaginal discharge, abdominal pain, abnormal leucorrhea, lower abdominal masses, etc., involving pregnancy diagnosis, prenatal care, abortion, premature delivery, hypertensive disorders in pregnancy, placenta previa, placental abruption, premature rupture of membranes, umbilical cord prolapse, childbirth, postpartum hemorrhage, amniotic fluid embolism, uterine fibroids, ovarian tumors, hydatidiform mole, abnormal uterine bleeding, induced abortion, etc.), compile in situ simulation cases, showing the clinical characteristics and individual characteristics of the cases, in line with the occurrence and development process of the diseases.

(2) Compile SP training lesson plans based on in situ simulation cases, recruit nursing workers, first and second-year resident trainees, or family members of medical staff, and conduct systematic SP training together with teachers of the joint teaching team, requiring them to pass the simulation assessment to prepare for SP teaching.

(3) Set up wards, operation rooms, and outpatient and emergency clinics for in situ simulation combined with standardized patient teaching in the ward area, outpatient and emergency departments, equipped with corresponding medical equipment and some necessary simulation molds.

(4) Implement teaching using two methods:

① The research group implemented the in situ simulation combined with standardized patient teaching method: In a real clinical medical environment, SPs played patients with certain diseases, and students played doctors to reproduce the patient's visit status. Undergraduates participating in clinical probation were brought into this scenario, allowing them to inquire about medical history, analyze disease types, provide examinations, diagnoses, and treatments after analysis, simulate the clinical diagnosis and treatment process, and test students' emergency response, doctor-patient communication skills, and humanistic feelings. Medical history collection, physical examination, some skill operations, and doctor-patient communication were completed with the cooperation of SPs, and some skill operations were completed using simulation molds; SPs needed to provide feedback on various links such as students' medical history collection, physical examination, skill operation, case analysis, doctor-patient communication, and humanistic care; teachers summarized and analyzed the entire teaching process, focusing on commenting on students' practical operations and clinical thinking.

② The control group implemented traditional teaching: The traditional teaching group was taught by the same teachers as the joint teaching group, adopting the traditional classroom teaching method, mainly with teachers' lectures, and students mainly listening, watching, and imitating. The teaching content was roughly the same as that of the joint teaching group, based on the teaching syllabus.

2.4. Teaching Assessment and Effect Evaluation Indicators

(1) Compare the assessment results of clinical practice skills and case analysis between the two groups of probationers, including medical history collection, physical examination, skill operation, doctor-patient communication, and case analysis [6].

(2) Compare the course satisfaction of the two groups of probationers. Through anonymous questionnaires, investigate the satisfaction scores of students after the probation. 8-10 points were considered satisfied; 5-7 points were considered average; 1-4 points were considered dissatisfied. Total satisfaction = (satisfied + average)/total number × 100% [7]

(3) Compare the academic self-efficacy of the two groups of students. Using the self-efficacy scale compiled by relevant scholars, the scale includes two dimensions of self-efficacy: learning ability and learning behavior, with a total of 22 items. The scale adopts a Likert five-level scoring method, and the total score ranges from 22 to 110 points. A higher score indicates stronger academic self-efficacy[8].

2.5. Statistical Processing

SPSS 22.0 software was used for data analysis. Count data were tested by chi-square test, and measurement data were tested by t-test. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of Clinical Practice Skills and Case Analysis Assessment Results between the Two Groups

Table 1. Comparison of clinical practice skills and case analysis assessment results between the two groups ($\bar{x} \pm s$, points).

Group	Number of cases	Medical history collection	Physical examination	Skill operation	Doctor-patient communication	Case analysis
Research group	156	92.55±3.29	89.68±4.14	93.32±2.85	96.62±3.94	86.18±9.83
Control group	156	85.24±4.56	83.41±4.27	84.48±3.01	87.53±3.50	81.34±7.50
T value	/	16.237	13.167	26.636	21.543	4.889
P value	/	<0.05	<0.05	<0.05	<0.05	<0.05

3.2. Investigation on Probation Course Satisfaction of the Two Groups of Students

As shown in Table 2, the total satisfaction of the research group was 96.15%, which was significantly higher than 80.77% of the control group, with a statistically significant difference ($P < 0.05$).

Table 2. Comparison of probation course satisfaction between the two groups [n (%)]

Group	Number of cases	Satisfied	Average	Dissatisfied	Total satisfaction
Research group	156	129 (82.69)	15 (11.62)	6 (3.84)	150 (96.15)
Control group	156	98 (62.82)	28 (17.95)	30 (19.23)	126 (80.77)
χ^2 value	/				18.087
P value	/				<0.05

3.3. Comparison of Academic Self-efficacy between the Two Groups of Students

Table 3. Academic self-efficacy of the two groups of students ($\bar{x} \pm s$, points)

Group	Number of cases	Self-efficacy of learning ability	Self-efficacy of learning behavior	Total score
Research group	156	48.94±2.96	51.31±2.29	100.25±3.47
Control group	156	40.58±5.96	39.48±4.88	80.06±8.27
T value	/	15.690	27.410	28.118
P value	/	<0.05	<0.05	<0.05

4. Discussion

Medicine is a discipline combining theory and clinical practice, which has strict requirements on the theoretical knowledge and clinical operation ability of medical staff[9]. Obstetrics and gynecology is an important discipline in clinical medicine, covering the entire process of diagnosis and treatment of childbirth and gynecological diseases. At the same time, the physiological structure of women is relatively special, and the operations for relevant examinations are relatively private. Moreover, patients have a strong sense of self-protection, leading to many problems for students in clinical probation. Clinical probation is an important link in medical clinical practice teaching, a key stage for medical students to transform theoretical knowledge into clinical practice through contact with patients' diagnosis and treatment processes, and also an important period for cultivating medical students' outlook on life, values, and morality, which affects the quality of teaching.

In clinical teaching, the combination of in situ simulation and standardized patients expands the teaching scene from simulation laboratories to actual medical environments. This method can design various scenarios from simple to complex, including those with challenging "traps" and complex cases requiring multi-disciplinary collaboration[10]. In these scenarios, patient roles are played by trained standardized patients to simulate real visit processes. This method places students in a real clinical environment, enabling them to personally experience and practice the analysis, examination, diagnosis, and treatment of clinical cases[11]. This method not only enriches the teaching content, improves the vividness of teaching forms, but also enhances the sense of reality of the scene, allowing students to obtain more intuitive and perceptual understanding. The use of real medical equipment not only increases students' sense of freshness and urgency, but also stimulates their learning interest and improves learning efficiency. In addition, this teaching method also meets the needs of students for multiple operational practices on clinical cases, and allows for systematic evaluation of students' learning outcomes.

With the transformation of today's medical model and the improvement of the public's demand for medical and health services, people not only need doctors with superb professional skills who can treat physical diseases, but also doctors who respect patients and have humanistic care[12]. The in situ simulation combined with standardized patient teaching method, where patients are played by standardized patients to reproduce the patient's visit status, makes it easier for students to empathize, so that they can care about patients from the bottom of their hearts, actively analyze the condition, communicate with patients, and treat them, ultimately achieving the goal of cultivating humanistic literacy and improving the comprehensive quality of medical students.

The results of this study show that the scores of the joint teaching group in medical history collection, physical examination, skill operation, doctor-patient communication, and case analysis are higher than those of the traditional teaching group, with statistically significant differences ($P < 0.05$). The analysis suggests that the implementation of in situ simulation combined with standardized patient teaching method in obstetrics and gynecology clinical probation teaching can improve students' practical skills and clinical thinking ability. At the same time, by comparing the course satisfaction and academic self-efficacy data of the two groups of students, it is found that the probation course satisfaction and academic self-efficacy of the joint teaching group are higher than those of the traditional teaching group, with statistically significant differences ($P < 0.05$). The results of this study suggest that the in situ simulation combined with standardized patient teaching method can improve students' knowledge mastery and mobilize their subjective initiative, thereby helping to improve their competence in future jobs. This is mainly because compared with traditional teaching methods, this teaching mode combining in situ simulation and standardized patients not only makes up

for the insufficient number of cases and limited practice opportunities in clinical probation, but also improves students' initiative and enthusiasm, enhances their ability to analyze and solve problems, strengthens the training of clinical thinking, and cultivates good doctor-patient communication skills and humanistic care for patients[13].

5. Conclusion

In conclusion, the application of in situ simulation combined with standardized patient teaching methods in obstetrics and gynecology probation teaching is beneficial to improving the effect of clinical practice teaching in obstetrics and gynecology, enhancing students' comprehensive quality, and improving teaching quality, which is worthy of promotion and application.

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