

Constructing the Training Curriculum of Standardized Patients for OSCE Examination for Undergraduate Nursing Students in Shanxi Medical University

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Abstract

Objective: The objective of this study is to construct the simulated patient training curriculum for OSCE examination for undergraduate nursing students and to explore the theoretical and practical foundation. **Methods:** To establish TSP training curriculum and SSP training curriculum, 30 experts were invited to finish the questionnaires which were proved by Delphi Method. **Findings:** We established the training curriculum of TSP and SSP, and set the weight of various curricula and teaching contents. **Conclusions:** The experts considered that the degree and importance of these two training curricula were comparable. This conclusion lays the foundation for applying these curricula to teaching practice and clinical practice, and enhancing the teaching outcome of undergraduate nursing students. **Implications:** This study provided a new way of assessing the clinic ability of nursing students.

Keywords

Students Nursing; Objective Structured Clinical Examination; Patient Simulation

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1. Introduction

Objective structured clinical examination (OSCE) is an objective and standardized assessment way that was used in assessing the clinic ability of nursing students [1]-[3]. In 1968, Pr. Barrows reported to use simulated patients (SPs) in medical teaching and developed SP in department of neurology. Since then SP has become the standard practice of modern medical school teaching and has been used around the world [4]. SPs are healthy persons that simulate patients. They can be supervisors, instructors, teacher standardized patient (TSP) and student standardized patient (SSP) [5]. TSP is the teacher who has rich medical knowledge and clinical teaching experience and is the standardized patient and tests the students [6]. SSP is selected from the medical students who have some medical knowledge, and after strict training, is selected as standardized patient [7]. As an objective and effective educational resource, SP is a new method of practical teaching and assessment which meet modern teaching needs [6]. However, due to a directed relationship between the training quality and teaching quality, standard and effective training will be the focus in this area. In consideration of the differences between TSP and SSP in gaining professional knowledge and training, this study is designed to evaluate the comparativity of the training programs for TSP and SSP [8].

2. Methods

2.1. Training Program

2.1.1. Design of SP Training Program

Use the Delphi technique [9].

1) Setting up Research Team

There are one nursing professor and three nursing associate-professors in the research team, whose main task is to select experts, design tables, and data analysis.

2) Establishing Experts Group According to the Filtering Criteria

According to the purpose of the research subjects and Delphi method, we established the experts inclusion criteria: 1) with theoretical knowledge or practical experience in teaching simulation, be familiar with SP recruit and training; 2) Have worked 10 years or more in SP-related fields; 3) being able to offer comprehensive opinions, willing to support nursing research and answer questionnaires; 4) can promise to finish two rounds of consultation. After initial screening, we distributed 34 questionnaires and the recovery rate was 88%. The basic information of experts is listed in **Table 1**.

3) Design Questionnaire

According to the principles of TSP and SSP training programs for nursing undergraduates, and after combining the research data of SP recruit and SP training, we designed the questionnaire which was divided into 4 parts: 1) A letter to experts, introducing the background of this study, explaining the aim and task and the importance of experts' participation, 2) Questionnaire, which is the preliminary designed training program. Each item is scored 1 to 5. Experts need to give comments according to its importance. 3) Basic information of experts: including age, working experience, education background, degree, job title, job duty, professional field, and contact information. 4) The questionnaire about experts' familiarity on this study.

In the process of preliminary designing, we did full data analysis and the filling explanation of questionnaire was accurate and intelligible [10]. Considering the differences between TSP and SSP in training goal and content, we designed the targeted training program.

In order to make sure that the questionnaire is reasonable and scientific, we did pre-survey and revised the defects. After careful analysis, expert coordination group finished the questionnaire.

2.1.2. Questionnaire Distributed and Recovered

There were 2 rounds of expert consultations in this study. We distributed the questionnaires to experts first by E-mail and we sorted and did some statistical analysis after recovering questionnaires. Then we added or deleted some knowledge points according to the selection principle which includes the mean of importance assignment ≥ 4.0 , $CV \leq 0.25$, reference percent of full mark $\geq 10\%$ and expert' suggestion. On this basis, we revised and made the second questionnaire sending to experts with summarized results.

2.1.3. Statistical Analysis

All analyses were performed using SPSS (version 13.0, SPSS Inc., Chicago, IL). In all instances, p-value less

Table 1. Basic information of experts (n = 30).

Item		N	%
Age	≤44	17	56.67
	45~	11	36.67
	>60	2	6.67
Work experience	10 - 20	4	13.33
	21 - 30	19	63.33
	>30	7	23.33
Degree	Bachelor	12	40.00
	Master	13	43.33
	Doctor	5	16.67
Job title	Full professor	12	40.00
	Associate professor	18	60.00
Duty	Dean or vice-dean	4	13.33
	Director or Vice Director in nursing field	18	60.00
	Head of nursing department	5	16.67
	Others	3	10.00
Job filed	Science of nursing education	13	43.33
	Science of Nursing Management	9	30.00
	Clinical care	4	13.33
	Science research in nursing	2	6.67
	Psychology	1	3.33
	Multi-fields	1	3.33

than 0.05 are considered significant. All reported p-values are two tailed.

Descriptive analysis was expressed by frequency, component ratio, approve rating; expert positivity coefficient was expressed by effective questionnaire returns-ratio and the percent of expert offer a proposal; the authority of experts are analyzed by three factors including the academic level of experts, criterion, and familiarity; the consistency of expert opinions was expressed by each item grades; coordination degree of expert opinions was expressed by variable coefficient and expert coordination coefficient.

3. Results and Discussions

3.1. TSP Training Program (See in Table 2)

Table 2. TSP Training syllabus assignment $M \pm S$, CV, full score ratio (n = 30).

Training content	$\bar{X} \pm S$	CV	Full score ratio
Lesson 1 TSP related knowledge	4.65 ± 0.483	0.104	0.6563
Teaching content 1 concept of TSP	4.40 ± 0.712	0.162	0.5313
Teaching content 2 aim of TSP	4.18 ± 0.780	0.186	0.4063
Teaching content 3 function of TSP	4.50 ± 0.622	0.138	0.5625
Teaching content 4 program of taking history and health education	4.68 ± 0.471	0.101	0.6875
Teaching content 5 the necessary quality and knowledge for TSP	4.62 ± 0.492	0.106	0.6250
Lesson 2 OSCE related knowledge	4.34 ± 0.602	0.139	0.4063
Teaching content 1 concept of OSCE	4.37 ± 0.702	0.162	0.500
Teaching content 2 practical significance of OSCE in nursing education	4.21 ± 0.608	0.144	0.313
Teaching content 3 the relationship between OSCE and TSP	4.15 ± 0.767	0.184	0.375
Teaching content 4 the design of OSCE examination hall	4.37 ± 0.609	0.139	0.438

Continued

Lesson 3 introduction of taking history and health education	4.75 ± 0.439	0.092	0.750
Teaching content 1 concept of taking history	4.71 ± 0.456	0.096	0.718
Teaching content 2 technique of taking history	4.78 ± 0.420	0.087	0.781
Teaching content 3 major impact factors for taking history	4.34 ± 0.653	0.150	0.437
Teaching content 4 concept of health education	4.65 ± 0.545	0.117	0.687
Teaching content 5 technique of health education	4.68 ± 0.470	0.100	0.687
Teaching content 6 major impact factors for health education	4.28 ± 0.683	0.159	0.375
Lesson 4 patients' role behavior and mental activity	4.53 ± 0.507	0.112	0.531
Teaching content 1 illness behavior, sick role and role adaptation	4.46 ± 0.567	0.126	0.500
Teaching content 2 patients' need	4.50 ± 0.672	0.149	0.593
Teaching content 3 general psychological changes and psychological problems for patients	4.59 ± 0.499	0.108	0.593
Teaching content 4 characteristic of psychological activity for patients	4.46 ± 0.621	0.139	0.531
Lesson 5 important disease related knowledge in OSCE	4.68 ± 0.535	0.114	0.718
Teaching content 1 related knowledge that TSP need to grasp: medical history, clinical symptoms, physical sign, inspection results	4.62 ± 0.609	0.131	0.687
Teaching content 2 the content of taking history and education that TSP should grasp	4.71 ± 0.581	0.123	0.781
Teaching content 3 patients' psychological states and basic need that TSP should grasp	4.62 ± 0.553	0.119	0.656
Lesson 6 TSP how to act patients and teachers dual roles	4.78 ± 0.490	0.102	0.812
Teaching content 1 provide case content correctly	4.78 ± 0.490	0.102	0.812
Teaching content 2 full in take history table and health education table accurately	4.78 ± 0.420	0.087	0.781
Teaching content 3 introduce standard of scoring to nursing students	4.56 ± 0.564	0.123	0.593
Teaching content 4 feedback of assessment	4.81 ± 0.396	0.082	0.812
Lesson 7 practice	4.68 ± 0.470	0.100	0.687
Teaching content 1 TSP related knowledge	4.62 ± 0.609	0.131	0.687
Teaching content 2 OSCE related knowledge	4.65 ± 0.545	0.117	0.687
Teaching content 3 taking history and health education related knowledge	4.78 ± 0.420	0.087	0.781
Teaching content 4 patients' role behavior and mental activity	4.56 ± 0.564	0.123	0.593
Teaching content 5 important disease related knowledge in OSCE	4.56 ± 0.759	0.166	0.718
Teaching content 6 TSP how to act patients and teachers dual roles	4.81 ± 0.396	0.082	0.812

3.2. Training Syllabus of SSP See in Table 3

Table 3. TSP Training syllabus course weights order.

Course Name	Course weight	Curriculum places
F TSP How to play dual roles of teacher and patients	0.128	1
C Special care and summary of health education	0.127	2
E Relevant knowledge of the disease in all subjects of the undergraduate nursing students OSCE test	0.126	3
G Overall practice class	0.126	3
H Assessment	0.126	3
A Relevant knowledge of TSP	0.125	4
D The role behavior and psychological activity of patients	0.122	5
B Relevant knowledge of OSCE	0.117	6

3.3. Consulting Results of Delphi Method

Delphi was used to determine weights of indicators at all levels. Using Questionnaire to describe classification of indicators at various levels and connotation and relative importance of various entries, the experts gave corresponding suggestions, and the evaluation index that they believe should increase or adjust. Ask an expert to judge the importance of primary index in the index system and the importance of the secondary index at the corresponding level index and suitability, and according to determine each index and its weights. Two rounds of back-to-back consultation were conducted. In this paper, in order to illustrate its reliability, we adopted the method of calculating the degree of consistency between evaluators to reflect the equality of the assessment system. Test results show that the internal consistency Cronbach alpha is 0.90, content validity was 0.83. After the investigation, the author did the reliability analysis to each survey, inherent reliability coefficient of each survey results are more than 0.8.

3.4. The Design Results of Training Syllabus

Tables 2 and 4 show that in the SP training curriculum, the outline assignment mean is between 4.40 - 4.87, all is more than 4.0; coefficient of variation is 0.071 - 0.130, all is less than 0.25, full score ratio is 0.433 - 0.867, the result shows that the expert assignment fluctuations is small. Therefore the coordination of experts' advice is conducive to form SP training outline of undergraduate nursing students in the OSCE. After two rounds of consultation using Delphi, training curriculum, the structure is more stable. The experts' opinion on the expression of the assignment, the recognition rate etc. tend to be more consistent.

Analysis of Table 3 shows that the weight of the TSP training syllabus reflects the following characteristics: the weight gap between the overall design of the eight courses is not very big, the weight gap of the teaching content of each training course is not big; Structure of TSP training syllabus is reasonable, comprehensively reflects the training objectives from four angles including the goal, teaching content, teaching time, and teaching methods; How the dual roles of teacher and patient is played is the key for TSP training, and this play a decisive role for clinical nursing teachers to be a qualified TSP.

Analysis of Table 5 shows that the first of the SSP training syllabus' the weight is "the related knowledge of SSP and related knowledge of common disease in all the subjects". This outline was mainly aimed at SSP of undergraduate nursing students in the OSCE. To understand and master the relevant knowledge of the SSP is the basis of being SP. Solid knowledge of the common diseases in all areas are the prerequisite to be good SP; Secondly, the role of SP is to undertake the dual role of patient and examiner. Therefore, how the SSP play the dual role is the most important in the course design. Thirdly, the clinical practice and the overall connection are important. After accepting the experts' opinions, we added the clinical practice in the design of curriculum in the second round of the outline in order to strengthen the knowledge of the SSP on the disease. Overall, the weight of eight courses were similar, which also suggests that all the courses are very important, the content of undergraduate nursing students' SSP training outline in the OSCE is very necessary.

The essence of the OSCE is the integration of students' knowledge and skills into a professional practice [11]. Experimental study by Critchley *et al.* [12] and Khattab *et al.* [13] showed that SP was superior to the traditional test methods in the clinical ability test. The application of student SP for nursing assessment and health education in their research, effect of medical history collection are similar, The students' interest in learning and clinical skills were improved. At the same time, the SP method is good for conducting universal training and examination and reducing subjectivity. Therefore, this training method is feasible practically.

4. Conclusion

Facing the increased demand for nursing staff in the society and the relative lack of clinical teaching resources, application of standardized patient (SP) has shown that it has unique advantages and broad prospects for development. Under the current economic conditions of China, and as the less than optimal capital investment in college education, training of standardized patients is an innovative and beneficial attempt.

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Table 4. Training outline of SSP assignment mean \pm Standard deviation, variable coefficient, Full score ratio (n = 30).

Training content	$\bar{X} \pm S$	CV	Full score ratio
Lesson One Relevant knowledge of SSP	4.87 \pm 0.346	0.071	0.867
The teaching content 1 Concept of SSP	4.60 \pm 0.498	0.108	0.600
The teaching content 2 The purpose of cultivating the SSP (necessity)	4.70 \pm 0.466	0.099	0.700
The teaching content 3 Play of he processes of the special care and health education of SSP	4.70 \pm 0.466	0.099	0.700
Lesson two Relevant knowledge of OSCE	4.63 \pm 0.556	0.120	0.667
The teaching content 1 Concept of OSCE	4.53 \pm 0.571	0.126	0.567
The teaching content 2 The design of the OSCE test stand	4.63 \pm 0.556	0.120	0.667
The teaching content 3 The relationship between OSCE and SSP	4.70 \pm 0.4796	0.103	0.667
Lesson three nursing assessment and summary of health education	4.80 \pm 0.407	0.085	0.800
The teaching content 1 The contents of nursing assessment	4.50 \pm 0.572	0.127	0.533
The teaching content 2 Nursing assessment skills	4.70 \pm 0.535	0.114	0.733
The teaching content 3 The main factors influencing the nursing assessment	4.53 \pm 0.507	0.112	0.533
The teaching content 4 The content of health education	4.40 \pm 0.563	0.128	0.433
The teaching content 5 Health education skills	4.60 \pm 0.563	0.122	0.633
The teaching content 6 The influence factors of clinical nursing health education	4.57 \pm 0.568	0.124	0.600
Lesson four The role behavior and psychological activity of patient	4.63 \pm 0.490	0.106	0.633
The teaching content 1 Role and role adaptation of Patients	4.57 \pm 0.568	0.124	0.600
The teaching content 2 The needs of the patient	4.67 \pm 0.547	0.117	0.700
The teaching content 3 General psychological change and psychological problems of Patients with	4.53 \pm 0.571	0.126	0.567
The teaching content 4 Psychological activity of Patient's	4.53 \pm 0.571	0.126	0.567
Lesson five Related knowledge of common diseases in all the subjects	4.87 \pm 0.346	0.071	0.867
The teaching content 1 The related knowledge of key disease in all the subjects	4.80 \pm 0.407	0.085	0.800
The teaching content 2 Main points of nursing assessment and health education content of Priority diseases in all the subjects	4.80 \pm 0.407	0.085	0.800
The teaching content 3 Psychological state and basic need of the patient's with key disease in all the subjects	4.70 \pm 0.466	0.099	0.700
Lesson six SSP How to play dual roles in patients and grade giver	4.83 \pm 0.379	0.078	0.833
The teaching content 1 How to provide cases correctly	4.73 \pm 0.583	0.123	0.800
The teaching content 2 How to accurately fill in the table of nursing care and assessment of health education methods	4.77 \pm 0.430	0.090	0.767
The teaching content 3 How to explain to a student nurse grading	4.67 \pm 0.547	0.117	0.700
The teaching content 4 How to feedback	4.67 \pm 0.606	0.130	0.733
Lesson seven Clinical practice	4.80 \pm 0.407	0.085	0.800
Lesson eight overall practice	4.67 \pm 0.479	0.102	0.667

Table 5. SSP Training syllabus course weights order.

The training content	Course weight	Curriculum places
A The related knowledge of SSP	0.128	1
E Related knowledge common diseases in all the subjects	0.128	1
F SSP How to play dual roles in patients and grade giver	0.127	2
G Clinical practice	0.126	3
H Overall practice	0.126	3
C Nursing assessment and Summary of health education	0.123	4
B The related knowledge of OSCE	0.122	5
D The role behavior and psychological activity of patient	0.122	5

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Contributors

Zheng Jie and Gao Yuzhen was involved in the conception and design of the study. Jing Yuejuan, Wang Shujuan prepared and cleaned the data and Zheng Jie did the statistical analysis and wrote the first draft. All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

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