

Objective Structured Clinical Examination (OSCE): A Comparison of Interpersonal Skill Scores with Written OSCE Scores

Bai-Horng Su^{1,2,3}, Wu-Chung Shen^{1,3}, Walter Chen^{1,2}, Jui-Sung Hung^{1,4}, Chang-Hai Tsai^{1,2}

¹School of Medicine, China Medical University; ²Department of Pediatrics, ³Committee of Medical Education,

⁴Department of Medicine, China Medical University Hospital, Taichung, Taiwan.

Objectives. To compare the interpersonal skill scores evaluated by standardized patients (SPs) with the scores of written objective structured clinical examination (OSCE) in assessing medical student performance by OSCE.

Methods. A total of 202 fifth year medical students from the Schools of Medicine and Chinese Medicine participated in a 4-problem, 8-station OSCE. Two tracks of the 8-station examination were run simultaneously. The examination was held at the end of the integrated curriculum in the fifth year. Each OSCE problem was divided into two stations, a question station and an answer station; the time limit at each station was 5 minutes. In each question station, students were asked to perform history taking and/or physical examination on a standardized patient who assessed students' interpersonal skills by checklists A (general assessment) and B (clinical skills assessment). Eight senior pediatric residents were recruited to function as SPs. At answer station, the students responded to 3 questions concerning the SP in the preceding question station, this score was taken as written OSCE score.

Results. The results revealed that it was appropriate to assess students' interpersonal skills by well-trained resident to function as SPs. The interpersonal skill scores evaluated by SPs significantly correlated with the written OSCE scores.

Conclusions. Trained residents to function as SPs for evaluating students' interpersonal skills is feasible. The results of an OSCE can be used to evaluate students and to promote clinical education. (*Mid Taiwan J Med* 2005;10:32-7)

Key words

interpersonal skills, objective structured clinical examination (OSCE), standardized patients (SPs)

INTRODUCTION

The assessment methods for medical education have been changed from traditional written tests alone to tests which combine written and performance-based assessment. Many performance-based assessment methods have been developed in the past several decades [1], among which the objective structured clinical examination (OSCE) has become one of the most

common methods for evaluating clinical competence [2]. OSCE has been found to be a valid and reliable method for assessing clinical knowledge and skills when evaluating performance of students. Often, OSCE performance is summarized in an overall score, which may represent a combination of history taking, physical examination, interpersonal and communication skills, technical skills and organization. Interpersonal skills scores are sometimes reported separately because of the concern of their important correlation with clinical competence [3-5].

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Address reprint requests to : Bai-Horng Su, Department of Pediatrics, China Medical University Hospital, 2 Yuh-Der Road, Taichung 404, Taiwan.

The purpose of this study was to compare the interpersonal skills score evaluated by standardized patients (SPs) with the written OSCE score in assessing medical student's performances.

MATERIALS AND METHODS

Students

Two hundred and two fifth year medical students, including 113 in the School of Medicine and 89 in the School of Chinese Medicine, participated in a 4-problem, 8-station OSCE given in June 2004, at the end of the fifth year of the integrated curriculum. The integrated curriculum for fourth and fifth year medical students was introduced in 2001 and is divided into 12 blocks according to organ-systems. Each block consisted of related clinical skills and a communication training course including three sections: patient approach and communication, physical examination and clinical procedures. Each section lasted for 4 hours, including videotape learning, manikin practice, practice among students and contact with patients under the supervision of attending doctors. The students from the Departments of Medicine and Chinese Medicine received the same curriculum for clinical skills training.

OSCE design

Two tracks of the 4-problem, 8-station examination were run simultaneously. The 4 problems included the evaluation of the following situations: an adult male patient with bronchial asthma in the emergency room (instruction to students: history taking and physical examination of chest); an adult male patient complaining of cough and sensation of a mass on the left side of his neck (instruction to students: history taking and physical examination on neck); an adult male patient complaining of fever, jaundice and abdominal pain (instruction to students: history taking and physical examination on abdomen); and an adult male patient complaining of soreness and numbness in his left leg (instruction to students: neurological examination on the lower limbs, excluding sensation and co-ordination). Each OSCE problem was divided into two

stations (Stations 1, 3, 5 and 7 were question stations; Stations 2, 4, 6 and 8 were answer stations). Students could spend up to 5 minutes at each station [6,7]. The whole circuit took 40 minutes; 16 students were evaluated in a single circuit. A computerized buzzer system signaled the students to rotate from station to station until each student had visited every station. It took 9 hours (with 1 hour intermission for lunch) to complete the entire examination process. Precautions were taken to ensure that students from the previous circuit did not meet the students in the waiting room.

The question station consisted of a 5-minute interaction between the students and the SPs, in which each student was asked either to obtain a focused history or to perform a physical examination. The performance of each student was evaluated by SP. In each answer station, the student responded to 3 short-answer questions about the SP seen in the preceding question station. The maximum score for each answer station was 3 points; this score was taken as written OSCE score in this study and can be a reflection of clinical competence.

Standardized patients

Eight senior pediatric residents who had been trained to act in a consistent manner were recruited as SPs. They attended a 10-hour training course including OSCE orientation, role play and evaluation by using checklists. They were divided into 4 teams. Each team had 2 residents who functioned as SPs in the question stations.

Interpersonal skills checklist

The SPs used checklists to assess students' performance. There were 2 forms of checklists to assess the interpersonal skills. All stations had the uniform checklist A as in Table 1 for general assessment which included 5 items to evaluate attitude and interpersonal communication skills; each item was scored as 0 or 1 according to predetermined criteria; therefore the maximum score for checklist A is 5 points. Checklist B for clinical skills assessment (including history taking and physical examination on different parts of body and case management) are different

Table 1. Example of standardized patient's checklist A for general assessment

Department:	Grade:	
Student name:	Number:	
A. General assessment		Score (Full: 1 point)
1. Greets patient and introduces self		
2. Identifies activity		
3. Appropriate posture/positioning of patient		
4. Identifies and responds to verbal and non verbal cues		
5. Close interaction with patient and explain		
TOTAL SCORE		
Scoring: 1 = performed the task correctly and in an appropriate order 0 = did not perform / attempt the activity		
Examiner :		

according to the performance-specific task in every station. The performance-specific checklist B consisted of 5 items corresponding to specific actions in 1B, 3B and 5B, and 10 items in 7B. Therefore, the maximum score was 5 points for 1B, 3B and 5B, and 10 points for 7B. An example of checklist B is shown in Table 2.

Statistical methods

The interpersonal skill scores obtained in checklists A and B were compared with the written OSCE scores using Pearson's correlation. The comparisons were conducted on each problem separately and then on 4 problems as a total. Student's *t* test was used to compare the scores of checklist A. A *p* value < 0.05 was considered statistically significant.

RESULTS

The checklist A scores, which represented the general assessment of interpersonal communication, except 7A of problem 4, significantly correlated with the written OSCE scores acquired in the paired answer stations. The checklist B scores, which represented the assessment of performance-specific clinical skills significantly correlated with the paired written part scores of OSCE in all 4 of the problems. The sum of scores in checklist A, checklist B and checklist A plus B all significantly correlated with

Table 2. Example of standardized patient's checklist B for station 5B in problem 3

Department:	Grade:	
Student name:	Number:	
B. Assessment for abdominal examination		Score (Full: 1 point)
1. Did student ask you to point out the pain area first with one finger before the examination?		
2. Did student begin palpation from your left lower abdomen and finally to right upper abdomen?		
3. Did student perform Murphy sign?		
4. Did student ask whether the pain refer to right scapular area or right shoulder?		
5. Did student auscultate chest?		
TOTAL SCORE		
Scoring: 1 = performed the task correctly and in an appropriate order 0 = did not perform / attempt the activity		
Examiner :		

the sum of written OSCE scores of all the 4 problems. The results are summarized in Table 3.

There was no significant difference ($p > 0.05$) between the scores in checklist A among the 4 problems (Table 3).

DISCUSSION

The integrated curriculum for fourth and fifth year medical students was introduced in 2001 at the China Medical University. This is the first time students' performance was assessed by OSCE. This experimental OSCE consisted of only 4-problem, 8-station because 202 students should be evaluated within one day. The results revealed that interpersonal skills scores evaluated by resident SPs were related with the written part scores of OSCE which represent the clinical competence, this is compatible with previous reports [3-5].

The interpersonal skill scores evaluated by SPs were shown in checklists A and B. Items on checklist A were used for the general assessment of attitude and interpersonal communication; therefore, the same form was used at each of the 4 problems stations. The checklist A scores, except 7A of problem 4, significantly correlated with the written part scores of OSCE acquired in the

Table 3. The correlation between interpersonal skill scores (assessed by checklists) and written part scores of OSCE at answer stations

Checklists	Written part scores of OSCE		Correlation	<i>p</i>	
1A	3.4 ± 0.5	St-2	2.5 ± 0.9	0.704	< 0.01
1B	4.4 ± 0.7	St-2	2.5 ± 0.9	0.537	< 0.05
3A	4.3 ± 1.9	St-4	1.4 ± 0.8	0.489	< 0.05
3B	2.9 ± 1.3	St-4	1.4 ± 0.8	0.729	< 0.01
5A	4.1 ± 0.6	St-6	2.1 ± 0.8	0.571	< 0.05
5B	2.8 ± 0.9	St-6	2.1 ± 0.8	0.311	< 0.05
7A	4.7 ± 0.5	St-8	1.2 ± 0.8	0.078	< 0.05
7B	5.5 ± 1.4	St-8	1.2 ± 0.8	0.687	< 0.01
Total A	4.2 ± 1.7	Total St	6.8 ± 1.9	0.458	< 0.05
Total B	3.8 ± 1.0	Total St	6.8 ± 1.9	0.607	< 0.05
Total A+B	31.8 ± 4.0	Total St	6.8 ± 1.9	0.573	< 0.05

Values are mean ± SD. 1A, 3A, 5A, 7A and 1B, 3B, 5B: maximum score are 5; 7B: maximum score is 10; written part scores of OSCE at answer stations 2, 4, 6, 8: maximum score are 3. St = station.

paired answer station. The high mean score of checklist 7A did not correlate with the low mean written part scores of OSCE at paired station 8. However, there was a significant correlation between the low mean score of checklist 7B and the score of the paired station 8. Checklist B identified each of the actions necessary to perform the required task correctly. This result revealed that the clinical skills of most students required at problem 4 were not competent enough to fulfill the task, therefore, contributed to the low written OSCE scores. By this way, clinical faculties should be aware that clinical education is to be reinforced.

Several studies have raised the question that who should evaluate interpersonal skills, a faculty mentor or the SP [6,8,9]. Given the increasing clinical demands on faculty time, it is important to know whether SPs can assess interpersonal skills as validly and reliably as faculty members. Some studies have found that, on average, SPs gave more positive evaluations of communication skills of medical students than did faculty members or other professional staff [8,9]. Another reported that faculty mentors and SPs appear to be interchangeable as evaluators of interpersonal skills [6]. In this experimental OSCE, different SPs assessed students' interpersonal communications by checklist A and acquired well correlated scores for all the 4 checklists A. The SPs also assessed students' clinical skills by checklist B and acquired scores correlated well

with the paired written OSCE score. This implied that the trained resident SPs are consistent in evaluating students' interpersonal skills and clinical competence.

Establishing and maintaining an active SP program requires a large amount of manpower and financial support. Training senior residents to function as SPs can alleviate many of these problems in medical schools with limited resources. The use of resident as SPs can reduced manpower costs and requires no extra expense. Although our pediatric senior residents received only a 10-hour training course in preparing to function as SPs, the results of this study revealed that the course was sufficient for them to serve as SPs. This is partly because resident SPs were already familiar with the clinical content of the case scenarios, therefore, reducing the time and effort required to develop the skills. Resident SPs can also improve their clinical teaching and training skills through their student interaction acquired in OSCE. Despite the above advantages of using residents as SP, there were also a few disadvantages. For example, some students did not think that they could treat resident SPs as real patients. Sometimes, resident SPs may be over enthusiastic to impose pressure on students. Senior residents may be unwilling or uninterested to devote time to educational activities including being tutors in problem-based learning (PBL), clinical skills training and OSCE. We offered credits to residents serving as SPs in this OSCE

and beneficial for their promotion.

In summary, trained residents serving as SPs for evaluating students' interpersonal skills is feasible and students' interpersonal skill scores were well correlated with the clinical competence. Case content is an important factor that influences students' performances of interpersonal skills. The results of an OSCE can be used as an evaluation of students and to promote clinical education.

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REFERENCES

1. Swanson DB, Norman GR, Linn RL. Performance-based assessment: lessons from the health professions. *Educational Researcher* 1995;24:5-11.
2. Harden RM, Stevenson M, Downie WW, et al. Assessment of clinical competence using an objective structured examination. *Br Med J* 1975; 1:447-51.
3. Warf BC, Donnelly MB, Schwartz RW, et al. The relative contributions of interpersonal and specific clinical skills to the perception of global clinical competence. *J Surg Res* 1999;86:17-23.
4. Sloan DA, Donnelly MB, Johnson SB, et al. Assessing surgical residents' and medical students' interpersonal skills. *J Surg Res* 1994;57:613-8.
5. Colliver JA, Swartz MH, Robbs RS, et al. Relationship between clinical competence and interpersonal and communication skills in standardized-patient assessment. *Acad Med* 1999;74:271-4.
6. Donnelly MB, Sloan D, Plymale M, et al. Assessment of residents' interpersonal skills by faculty proctors and standardized patients: a psychometric analysis. *Acad Med* 2000;75(10 Suppl):S93-5.
7. Sloan DA, Donnelly MB, Schwartz RW, et al. The Objective Structured Clinical Examination. The new gold standard for evaluating postgraduate clinical performance. *Ann Surg* 1995;222:735-42.
8. Finlay IG, Stott NC, Kinnersley P. The assessment of communication skills in palliative medicine: a comparison of the scores of examiners and simulated patients. *Med Educ* 1995;29:424-9.
9. Cooper C, Mira M. Who should assess medical students' communication skills: their academic teachers or their patients? *Med Educ* 1998;32:419-21.

客觀結構式臨床技能評估(OSCE)：人際行為技能得分與 OSCE筆試得分之比較

蘇百弘^{1,2,3} 沈戊忠^{1,3} 陳偉德^{1,2} 洪瑞松^{1,4} 蔡長海^{1,2}

中國醫藥大學 醫學系¹

中國醫藥大學附設醫院 兒科部² 醫學教育委員會³ 內科部⁴

目的 本研究在比較學生在客觀結構式臨床技能評估(objective structured clinical examination, OSCE)考試中所得的人際行為技能得分與所得到的OSCE筆試部份得分兩者之相關性。

方法 這次OSCE考試共有醫學系及中醫學系五年級學生202人參加，在五年級整合課程結束期末考後實施。一套OSCE考試有四個題目，每一個題目分成二站：詢問站及試卷站，總共設置成爲八個站，每一個站限時都是5分鐘，每個循環費時40分。二套完全一樣題目的OSCE考試同時進行。問題站配置有一個標準化病人，學生根據張貼在入口處的指示來執行病史詢問或身體某部份的理學檢查，標準化病人使用評量表來考核學生的人際行為技能得分，評量表分爲A表、B表兩部份：A表爲一般評量，B表爲臨床技能評量。有八個兒科部的資深住院醫師擔任標準化病人。試卷站是給學生在這裡回答和前一個問題站的標準化病人相關的考題，其答卷得分算做OSCE筆試得分。

結果 研究顯示利用訓練過的標準化病人來對學生做人際行為技能評量是可信的，由標準化病人評量學生所得到人際行為得分與回答考卷所得到的OSCE筆試得分確實呈現有意義的正相關，因而能反映出學生的臨床能力。

結論 訓練住院醫師來擔任標準化病人是可行的。由分析OSCE考試的結果，可以用來評量學生以及做爲改進教學之參考。(中台灣醫誌 2005;10:32-7)

關鍵詞

人際行為技能，客觀結構式臨床技能評估，住院醫師擔任標準化病人

聯絡作者：蘇百弘

地址：404台中市北區育德路2號

中國醫藥大學附設醫院 兒科部

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