

Assessment of Clinical Competence of Medical Students Using the Objective Structured Clinical Examination: First 2 Years' Experience in Taipei Veterans General Hospital

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Background: Competence-oriented education is currently the mainstream method of teaching clinical medical education. The objective structured clinical examination (OSCE) is a widely employed and accepted tool to measure the clinical competence of medical students. We describe the first 2 years' experience of OSCE in Taipei Veterans General Hospital.

Methods: At Taipei Veterans General Hospital, every 7th-year medical student has taken the OSCE since 2006. There were 15 stations in the first 2 years' OSCEs. In years 1 and 2, 133 and 132 students were assessed by the OSCE, respectively. The content of the OSCE included internal medicine, surgery, pediatrics, obstetrics and gynecology, communication, and emergency training. All categories and results of examinees' evaluation at each station were recorded inclusively and compared statistically.

Results: The average scores of students from the 15 stations ranged from 47.7 ± 16.4 to 93.7 ± 8.5 in 2007. The score for communication skills was the lowest, whereas the score for Micro-Sim was the highest. Communication skills and electrocardiography interpretation were the 2 categories in which most of the students failed. A reliability analysis was conducted of the 2007 OSCE questions. The overall score and reliability (Cronbach's reliability) was 0.641. The difference between the impacts on reliability after deleting a test item ranged from 0.59 to 0.65 for all stations. This meant that every station had a similar impact on reliability after being deleted. The squared multiple correlation, R^2 , of the reliability of each item was between 0.12 and 0.49, with chest X-ray interpretation being the lowest. The item-total correlation was between 0.10 and 0.41, with interactive case being the lowest.

Conclusion: The OSCE is an effective method for assessing the clinical competence of medical students. The OSCE could be improved further by modifying the examination questions and promoting effective training for standardized patients and examiners. [*J Chin Med Assoc* 2010;73(11):589–595]

Key Words: clinical competence, evaluation, objective structured clinical examination, standardized patient

Introduction

The objective structured clinical examination (OSCE), which was developed in 1975,¹ is an assessment instrument that evaluates medical students' performance

based on clinical knowledge, skills and attitudes. The objective of the OSCE is to improve the evaluation of clinical education on competence via real-case scenarios that are acted out by standardized patients. Compared with the traditional written test, the OSCE can



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better examine students' performance levels of clinical competence by combining various aspects of clinical knowledge and competencies into a single examination. It has become an important method that has been adopted by domestic and international medical institutions to evaluate the clinical competence of medical students.²⁻¹⁰

Each OSCE script represents a realistic clinical case, in which examinees are given the same problem and asked to execute the same task. The examiners evaluate students' clinical performance during the scenario based on the standardized checklist that includes medical history inquiry and communication skills, physical examination, clinical skills, examination procedures, clinical thinking, emergency training, and medical ethics. OSCE can be used as a formal evaluation method and for clinical teaching purposes. In addition, feedback from students, standardized patients and professors can all contribute to improving the curriculum and content of clinical education.

The term standardized patient refers to an individual instructed and trained by professional health care personnel to act as a patient according to the role-play script.⁴ Standardized patients should act in an objective and realistic fashion as asked, and perform in a standardized manner, not to be modified over time or by the interlocutor. Simulation of clinical scenarios and of standard operation procedures helps facilitate an objective evaluation of students' clinical competence,¹¹ that is, to obtain systematically and skillfully a patient's basic medical history and undertake physical check-ups, to illustrate clinical logic and analytical and decision-making abilities to analyze and solve a patient's problem, and at the same time, to develop and refine communication skills with patients. The application of the OSCE helps students to develop the patient-centered concept so that patients do not need to worry about becoming a guinea pig for students, which reduces their uneasiness and sense of danger.

Within the past decade, evaluation of the clinical competence of medical students with OSCE has become a more advanced concept in Taiwan. To date, the majority of medical institutions in Taiwan have adopted, or are adopting, the OSCE method as an important reference when evaluating medical students' clinical competence.⁵⁻¹⁰ Since 2006, Taipei Veterans General Hospital (TVGH) has targeted 7th-year medical student trainees who have received training at the institution as candidates for regular OSCE before the end of the semester. The objective of the present study was to analyze the preliminary experience with the OSCE in the hope of improving the examination quality.

Methods

Research subjects

This retrospective study collected and analyzed the relevant information of OSCEs conducted on 7th-year medical students at TVGH in 2006 and 2007, including the structure and content of the OSCE, students' OSCE scores, establishment of passing standards, examinees, examiners, and basic information of standardized patients. Most 7th-year medical students at TVGH came from medical schools in Taiwan, which included Chung Shan Medical University, China Medical University, Taipei Medical University, National Defense Medical Center, and National Yang-Ming University.

Research methods

At the end of 2005, representatives from the Clinical Skills Training Center and the Departments of Internal Medicine, Surgery, Obstetrics and Gynecology, and Pediatrics at TVGH convened to prepare for the OSCE. The examination was conducted during April and May of 2006 for 8 separate groups, with 18 students per group. The first version of the OSCE test comprised 15 questions, in which the short stations lasted for 10 minutes and the long stations for 20 minutes. Since then, all 7th-year medical students of the institution have been required to take the OSCE. The planning and organizing of the OSCE followed a set of guidelines. To begin, an OSCE executive team was assembled, in which the members had to be familiar with the tested areas and content. The background of the members had to include different medical fields, such as professors of internal medicine, surgery, obstetrics and gynecology, and pediatrics. In addition, the executive team was required to have the ability and influence to mobilize further human resources, financial support and materials, if necessary. The examination procedure had to be discussed and revised by experts. Sufficient numbers of standardized patients and examiners needed to be trained. Finally, the evaluation questionnaire for the standardized patients and examiners was also discussed and revised by the experts. The validity of our study depended on the expert validity.

Test tools

The Clinical Skills Training Center was used as the OSCE location. Volunteers from the institution, students from Chinese Culture University and Taipei National University of the Arts, and other volunteers were invited to participate as standardized patients. The volunteers were trained on how to act based on a common scenario and in a consistent way. Training was also provided for their feedback and evaluation skills.

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