



Report: Holding clinical competency examination among medical students in Faculty of Medicine, Tabriz, Iran

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Abstract

Introduction: The purpose of evaluating educational curriculums is to improve training programs. The application of the results obtained from these evaluations is the proof of success or failure of the program. This study was carried out to report codification of operational plan of the clinical competence examination for medical students.

Methods: In this descriptive-analytical study, the operating process of evaluation program is explained by details step by step. This survey was based on a questionnaire collected from 200 participants of the first clinical competence examination of medical students. Finally, data were analyzed using SPSS.

Results: Of all the participants, 55.8% were female and 44.2% were male. There was no statistically significant difference in score averages between male and female students (14.55 ± 1.72 vs. 14.55 ± 1.3 ; $P = 0.970$). Mean pre-internship exam score among male students was 126.73 ± 21.04 and 128.18 ± 20.96 among female students, and the difference was not statistically significant ($P = 0.630$). There was a statistically significant but weak correlation between examination and pre-internship scores ($r = 0.27$, $P < 0.001$). Exam scores were statistically higher as the absent sessions of students decreased ($P = 0.010$).

Conclusion: Codification of the administrative process and consequently obtaining results has been effective in success of evaluation program and application of the results in future programs. Also it informs authorities how much the goals of training program is satisfied and reminds the necessity of execution of corrective programs.

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Introduction

Clinical competence examination has been designed to engage learners in lifelike experiences with varying reliability designed to simulate real clinical encounters. It has been already shown that this method of examination is a much more powerful predictor of professional accomplishment than classic written examinations.^{1,2} Clinical competence examination allows decisions to be made about medical qualification and fitness to practice, and must be designed with respect to key issues including validity,

blueprinting, reliability, and standard setting.³ Assessment phase of educational curriculums is one of the most important stages of educational planning evaluation to achieve educational equity and also respect patients' rights.⁴ Because of a relatively long interval between clinical training sessions and lack of continuity in the assessment of learned skills, designing and implementation of a comprehensive examination is essential to assess the skills of medical graduates.⁵ The results of this exam reveals the effectiveness of clinical skills training programs and

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strengths and weaknesses of educators and students.⁶ Also act of codifying an exam is effective in collecting useful information and in holding the exam more effectively.⁷

The clinical competency evaluation based on priority and educational curriculum and the objective structured clinical examination (OSCE) approach is the best way to assess students, and allows them to pay attention to practical aspects of education besides theoretical learning.⁸ Associated with the program approved by the Ministry of Health and Medical Education, the purpose of this study was to present a descriptive report of the first clinical competency examination among last-year medical students to show the importance of operational programs in conducting examination that eventually leads to effective use of the results in continuous improvement of educational curriculum.

Methods

This descriptive-analytic study not only outlined the examination holding process, but also described the results of the test. This survey was based on questionnaires collected from 200 medical internship students. Their medical competencies were evaluated using OSCE method. Most of the students had experience of this exam before the end of their externship course. The students had already participated in clinical skills workshops, based on their educational curriculum. The day before exam, participants briefly visited the examination site in order to reduce test anxiety. Assessment was performed in procedural skills, reasoning, problem solving, communication and interpersonal skills, and physical examination.

To increase the validity and reliability, necessary arrangements were held by authorities. Checklists were studied and standardized. The questions were selected in accordance with the priority of training topics. Before the exam, the three stages of the administrative process "before, during and after the exam" were designed. Executive committee members were formed

according to the number of participants. The implementation process was explained to them. The placement exam was designed and laid out in a partitioned hall with appropriate space. Also, stations were simulated. The examination was held in the two parallel tracks with 15 stations to minimize students' time waste in quarantine. After completing the test, both students and examiners were surveyed in oral and written survey regarding to stations, questions, raters, etc.

To analyze the data, SPSS for windows, (version 16, SPSS Inc., Chicago, IL, USA) was used. Quantitative data are presented as mean \pm standard deviation (SD), while qualitative data are demonstrated as frequency and percent (%). Student's t-test, Fischer's exact, and analysis of variance (ANOVA) tests were used to analyze data. P-value less than 0.05 was considered statistically significant.

Results

Of all the participants, 55.8% were female and 44.2% were male. Mean exam score among male and female students was 14.55 ± 1.72 and 14.55 ± 1.3 respectively, and the difference was not statistically significant ($P = 0.970$). Mean pre-internship exam score among male students was 126.73 ± 21.04 and 128.18 ± 20.96 among female students, and the difference was not statistically significant ($P = 0.63$). There was a statistically significant but weak correlation between examination and pre-internship scores ($r = 0.27$, $P < 0.001$). Exam scores were statistically higher as the absent sessions of students decreased ($P = 0.010$) (Table 1).

Table 1. Mean exam scores among students with different number of absent sessions

Absent sessions	Exam score (mean \pm SD)	P
No absent session	14.94 ± 1.32	< 0.001
Less than 3	14.76 ± 1.4	
3-5	14.54 ± 1.3	
More than 5	13.64 ± 1.84	

SD: Standard deviation

The effectiveness of clinical skills workshops in students' success has been demonstrated.

According to students' opinion, clinical skills workshops are complementary for the trainings in clinical departments.

The effect of this exam in students' clinical improvement was moderate to high, with an average score of 3.5, and the score of student who had self-study was low (1.90). So, the need to strengthen and facilitate tutorial learning for students was palpable. According to the survey, a high percentage of dissatisfaction was related to the abdomen, intubation and suture stations and the high percentage of satisfaction was from cardiopulmonary resuscitation (CPR), choking and vaccination stations. Thus, according to students' satisfaction of stations, main needs has been specified and can lead to more qualified training and designing more standardized questions.

Based on a Likert score questionnaire, the student's satisfaction from exam executive committee and exam environment was good (4.60 and 4.46, respectively) and manikins' quality, digital and video recording systems were the least satisfactory fields. Mean scores achieved in stations are shown in figure 1.

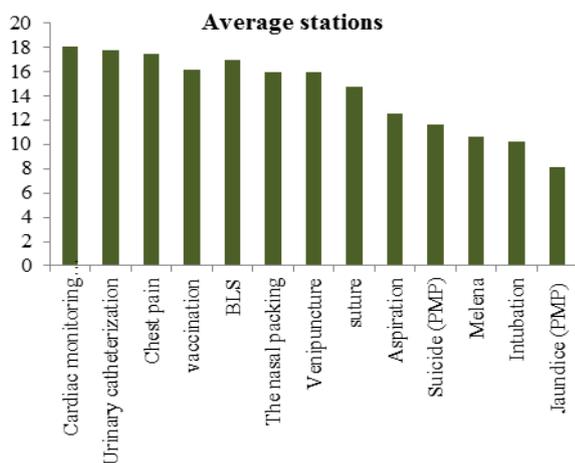


Figure 1. Mean achieved scores in different stations of clinical competency examination

Discussion

OSCE method was first described by Harden.⁹ It was a combination of conventional practical anatomy exams using standardized patient employed by Dr. Barrow in the assessment of medical students ten years ago.¹⁰

To assess clinical skills, OSCE is a well-known method. During the past half century, thousands of studies have been carried out which has led many universities to apply this test to measure relevant clinical skills.¹¹ But not all the skills or abilities of the individual are measurable by routine tests, so special attention must be given to more accurately assess the reliability and validity of the test.¹²

In the medical curriculum, clinical skills attainment is one of the most important aspects being assessed.^{13,14} In recent years, more emphasis is put on the practical aspects of education not theoretical learning. In the medical curriculum, students should be able to work with patients in different social, emotional, and psychological situations.^{5,15,16} Theoretical teaching cannot be effective in reaching this stage.¹⁷ In these situation, what is needed is a unified training program that includes evaluation of cognitive, psychomotor and emotional evaluation. As a result, the assessment should be done in this regard.

Several studies have been conducted regarding assessments of the students. A study by Wadde et al. entitled "Assessment of III MBBS Students Using OSPE/OSCE in Community Medicine: Teachers' and students' perceptions" showed that all participants had considered this evaluation method useful and willing to use it in the future.¹⁸

In Iran, this examination is used to assess residents and also have been conducted for interns several times in several universities.^{19,20} However, after years of follow-up, it has been introduced officially to assess students before graduation and Tabriz Faculty of Medical Sciences as a center, Iran, has held the above-mentioned test four times so far coordinated with subsidiary centers.²¹⁻²³ Feedback from internal and external assessors, as well as professors and students participating in the test, along with the results of the statistical analysis of four previous exams, all approved that despite some shortcomings, tests have had proper reliability and validity.^{24,25}

Eftekhari et al. conducted a study entitled

"Association of the pre-internship OSCE in final year medical students with comprehensive written examinations" in Tehran University of Medical Sciences, Iran. The purpose of this study was to evaluate the association of the pre-internship OSCE in last year medical students with comprehensive written examinations. The results showed that grade point average was highly correlated with National Comprehensive Pre-internship Examination and OSCE.²⁶

The findings suggested that neither OSCE nor written forms of assessments can replace each other.²⁷ They are complimentary and should also be combined by other evaluations to cover all aspects of clinical competence efficiently. The findings of previous studies and the results of the present study showed that practical tests with achievable goals are necessary, and their reliability and validity must be carefully assessed.²⁸

The results of the survey in this study are quite consistent with the results of previous studies and the students participated in the test were satisfied with OSCE method. In line with our findings, Jafari et al. demonstrated that proper planning can be done in this regard to obtain higher scores in such tests.²⁹ Accordingly, Bansal and Gaur have concluded that OSCE is the most preferred way of assessing clinical skills of students and concluded that more efforts should be made to integrate it into each and every institution's medical curriculum.³⁰

It can be concluded that the students and teachers had consensus over using objective structured clinical/practical examination as a tool of assessment in community medicine. OSCE can provide a valid and reliable method of assessing the clinical skills of students. OSCE is a highly reliable and valid clinical examination that provides unique information about the performance of individual residents and the quality of postgraduate training programs. The results of these tests can be considered as need assessments for groups, leading to a continuous improvement in learning.

Conclusion

Codification of the administrative process and the obtained results has been very effective in success of evaluation programs and the extend of the application of the results. According to the students' opinion, the OSCE clinical competency test can have a positive effect on their learning and leads to an increase in their enthusiasm to learn practical skills. Also, it informs authorities about how much the goals of training program are satisfied and emphasizes the necessity of execution of corrective programs. In order to enhance the reliability and validity of this exam, it is necessary to establish collaboration between educational groups and organize the experienced executive committee. Notably, in this study, 5 min was considered for the students to accomplish their tasks in each station. This short time may also reduce the divergent validity of OSCE. Prolonging the duration of the stations to 15 or 20 min can potentially provide the examinees with the opportunity of demonstrating their clinical skills in a superior quality, therefore improving the divergent validity of OSCE.

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Authors' Contribution

All authors contributed to this work. Seyed Kazem Shakouri and Hamid Reza Morteza-Bagi designed the study. All authors participated in holding the exam and in gathering the data. Hamideh Nouriasl and Nahideh Khoshmaram interpreted the data, conducted the literature review and wrote the manuscript. Data analysis and interpretation of the analyzed data was done by Atefeh Mohammadzadeh under supervision of Hamideh Nouriasl. Editing the whole manuscript and submitting the paper was done by Nahideh Khoshmaram.

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Conflict of Interest

Authors have no conflict of interest.

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Ethic Approval

The ethical committee of research affairs of Tabriz University of Medical Sciences has approved the current study.

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