

# Comparison of students' performance in the traditional oral clinical examination and the objective structured clinical examination

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## ABSTRACT

**الأهداف:** البحث فيما إذا كان الامتحان السريري المحدد الأهداف OSCE باستخدام المريض النموذجي يسمح بتقييم ذو القيمة نفسها للطلاب الخاضعين للامتحان السريري الشفوي التقليدي باستخدام المريض الحقيقي TOCE.

**الطريقة:** قمنا بتحليل راجع لنتائج 904 طالباً في أربعة مجموعات لامتحانات نهاية الفصل باستخدام الامتحان التقليدي، ولامتحانات نهاية العام باستخدام الامتحان المحدد الأهداف، وذلك للسنوات الدراسية من عام 2003م وحتى 2006م، في جامعة الملك عبدالعزيز - كلية الطب - جدة - المملكة العربية السعودية. تم استخدام معادل سبيرمان في مقارنة أداء الطلاب في مختلف أقسام الامتحانين.

**النتائج:** تبين وجود ارتباط وثيق بين اجراء الامتحان السريري المحدد الأهداف OSCE، معدل نجاح الطلاب والنتيجة النهائية للطلاب ( $r=0.786$ )، كما وبينت نتائج الامتحان السريري الشفوي التقليدي TOCE ومعدل نجاح الطلاب ( $r=0.591$ )، وقد كان معدل التكافؤ سبيرمان بين النتائج في الامتحانين OSCE و TOCE يعادل 0.406.

**خاتمة:** من الممكن استخدام الامتحان السريري المحدد الأهداف OSCE في تقييم المهارات السريرية للطلاب كما هو في الامتحان التقليدي TOCE وبموثوقية واعتمادية أعلى وأفضل.

**Objectives:** To find out whether the objective structured clinical examination (OSCE) using standardized patients allows the same evaluation of students as the traditional oral clinical examination (TOCE) using real patients.

**Methods:** The results of 4 cohorts of students (904 students) in the end of posting examination (using the TOCE), and the end of year examination (using OSCE) during the academic years 2003-2006 at King Abdulaziz University, Faculty of Medicine, Jeddah, Kingdom of Saudi Arabia were analyzed retrospectively. Spearman's correlation coefficient was

calculated for comparison of performance in the different parts of the 2 examinations.

**Results:** There was a strong positive correlation between the results of the OSCE and the final grade of the students ( $r=0.786$ ), and between the TOCE and the final grade of the students ( $r=0.591$ ). The coefficient for correlation between the results of the OSCE and TOCE was 0.406.

**Conclusion:** The OSCE can be used for the evaluation of clinical skills like the TOCE with better objectivity and reliability.

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The surgical curriculum at the Faculty of Medicine, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia extends over the years 4, 5, and 6 of the curriculum. In the fourth year, students are assessed only by written examination. At the end of the fifth and sixth year courses, students are assessed by written examination and an oral bedside clinical examination using real patients (end of posting [EOP] examination). At the end of the academic year, students are subjected to the same format of examination (end of year examination [EOY]). Since the introduction of the objective structured clinical examination (OSCE) in the fifth year students' assessment in 2003, to replace the traditional EOY some staff members have repeatedly voiced concern regarding this examinations' modality

being fragmented, and not allowing communication with the examinees when compared with the traditional oral clinical examination (TOCE). Since 2003, we have used both examinations in the evaluation of the fifth year medical students. The TOCE is used in the EOP examination, while the OSCE is used in the EOY examination. The EOP examination consists of 2 parts. The first part is a written multiple choice question (MCQ) paper. The second part is an oral clinical examination (OCE) consisting of 2 short cases over 15 minutes each, using real patients. Students are asked to take a very brief focused history, and perform a focused clinical examination followed by a discussion of investigations and management of the case. Two staff members observe the student. After the discussion, both examiners discuss the student's performance and agree on a mark. Likewise, the EOY examination consists also of 2 parts. The first part is a written MCQ paper. The second part is the OSCE examination. The OSCE examination consists of 10 active stations (history taking or physical examination) using standardized patients (SPs), and another 10 inactive stations (data or image interpretation) over 5 minutes each. A teaching staff member observes the student's performance in the active stations, and registers it on a detailed marking sheet. All observers for each station meet before the examination and agree on the interpretation of each item on the marking sheet in an effort to increase objectivity, and minimize inter-rater differences. The final fifth year mark of the student is the sum of the EOP and the EOY examination mark. As both modalities (TOCE and OSCE) are being used concurrently, we aimed to analyze the students' results in both examinations to see if there is any difference in the students' judgment with both examinations.

**Methods.** The results of all students in both examinations (EOP/EOY) in 4 consecutive years from 2003-2006 at the Faculty of Medicine, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia were analyzed. All students were included in the analysis. Thirty-five examiners (all with long academic experience) were involved. The same examiners participated in both examinations. The students were randomly assigned to the examiners. For each student, the grades for each part of the examination are calculated such as: TOCE mark + written EOP = EOP mark; OSCE mark + written EOY = EOY mark; EOP mark + EOY mark = 5th year final mark. We compared the students' performance in the TOCE examination with their performance in the OSCE examination. Then, the results of the written part of the EOP and EOY examinations were compared. Additionally, we compared the total result of both examinations (written + clinical). We also tested

the correlation between each of the 2 examinations and the final fifth year mark.

The comparisons were carried out using the nonparametric correlation procedure calculating the Spearman's correlation coefficient. Calculations were carried out using the SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). A *p*-value of <0.01 was considered statistically significant.

**Results.** The Spearman's correlation coefficients for each of the study years and for the total cohort of the students are shown in Table 1. It can be observed that there is a significant positive correlation between any corresponding parts of the 2 examinations (TOCE/OSCE and written EOP/written EOY). The same applies when comparing the EOP mark with the EOY mark, in particular, the coefficients for the comparison of the OSCE ( $r=0.786$ ) and TOCE ( $r=0.591$ ) marks with the fifth year final mark. The strongest positive correlation is observed between the EOY mark and the fifth year final mark ( $r=0.933$ ,  $p=0.00$ ). All correlations are significant at the 0.01 level (2-tailed).

**Discussion.** Since Harden et al<sup>1</sup> introduced the OSCE as a means of assessing clinical competency, it is being used increasingly for both under- and postgraduate students. We introduced the OSCE in 2003 and have reported previously on the way it is being performed.<sup>2</sup> Some of our faculty members repeatedly voiced their concern regarding the fragmentation of the clinical

**Table 1 -** Spearman's correlation coefficient for the different pairs of examinations.

| Correlation pairs         | 2003<br>(N=204) | 2004<br>(N=228) | 2005<br>(N=221) | 2006<br>(N=251) | All years<br>(N=904) |
|---------------------------|-----------------|-----------------|-----------------|-----------------|----------------------|
| OSCE/TOCE                 | 0.452           | 0.413           | 0.474           | 0.393           | 0.406                |
| Final written/EOP written | 0.614           | 0.416           | 0.408           | 0.487           | 0.471                |
| EOY/EOP                   | 0.687           | 0.510           | 0.525           | 0.605           | 0.569                |
| EOY/fifth year final      | 0.943           | 0.915           | 0.928           | 0.927           | 0.933                |
| EOP/fifth year final      | 0.864           | 0.797           | 0.783           | 0.848           | 0.812                |
| OSCE/fifth year final     | 0.832           | 0.676           | 0.771           | 0.771           | 0.786                |
| TOCE/fifth year final     | 0.624           | 0.560           | 0.646           | 0.641           | 0.591                |

*p*-value = 0.00 in all cases, OSCE - objective structured clinical examination, TOCE - traditional oral clinical examination, EOP - end of posting, EOY - end of year, 5th year final - final mark of the 5th year surgery course

cases, the use of SP's, and the inability to communicate with the examinees during the observation. They insist on the continuous use of the unstructured traditional oral bedside examination as the sole assessment method in spite of its proven subjectivity, and low validity and reliability.<sup>3,4</sup> We analyzed the results of 4 groups of students to see if they achieved similar scores in the clinical examination using the OSCE and the TOCE. Our results showed that there is a high degree of correlation between the students' scores in both examinations. Such a positive correlation was reported by other investigators.<sup>5-10</sup> In our study, this positive correlation is most significant when we compared the EOY examination result with the final fifth year mark. This confirmed that the OSCE allows at least the same evaluation of clinical competence as the TOCE, with the advantage of being more objective and more reliable.

The big advantage of this study is that it analyzes performance of the same students in both examinations, and that the same examiners are evaluating these students. An important aspect to be considered is the use of real patients in the clinical examinations when there are big numbers of students to be assessed. Patients soon become uncooperative and fairness in the judgment becomes, least to say, difficult. Not only patients are disturbed by the repeated examinations, students are also under repeated stress, and the examinations are resource intensive. It is well known that there is no assessment modality suitable to measure all domains.<sup>6,11</sup> Hence, this study is not intended to advocate replacing the traditional clinical examination on real patients with the OSCE. We are rather advocating a combination of the written examination, the OSCE, and direct observation in the clinical setting.<sup>5,11</sup>

In conclusion, based on our results, we suggest to the curriculum committee to decrease the burden of repeated examinations by using the TOCE involving real patients for the evaluation of final year students only. The OSCE examination has proven reliable enough for assessing students' clinical competence in earlier clinical years. We are now in the process of collecting data of the

4th-year students who were evaluated utilizing OSCE, to compare it with their performance in the final year using TOCE.

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## Ethical Consent

All manuscripts reporting the results of experimental investigations involving human subjects should include a statement confirming that informed consent was obtained from each subject or subject's guardian, after receiving approval of the experimental protocol by a local human ethics committee, or institutional review board. When reporting experiments on animals, authors should indicate whether the institutional and national guide for the care and use of laboratory animals was followed.