

PERFORMANCE OF UNDERGRADUATE STUDENTS IN OSCE  
IN OBSTETRICS AND GYNECOLOGY IN FINAL MBBS EXAMINATION  
IN OMDURMAN ISLAMIC UNIVERSITY- SUDAN 2008

تقييم أداء طلاب الطب في الامتحان السريري الموضوعي OSCE في التوليد وأمراض النساء  
كجزء من الامتحان النهائي MBBS في جامعة أم درمان الإسلامية في السودان 2008

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ملخص البحث

**هدف البحث:** تقييم أداء طلاب الطب بجامعة أم درمان الإسلامية في الامتحان السريري الموضوعي OSCE كجزء من الامتحان النهائي MBBS في قسم التوليد وأمراض النساء كأداة موضوعية في تقييم كفاءة الطلاب العلمية.

**طرق البحث:** تم اختيار مجموعتين من طلاب الطب، تم تقييم المجموعة الأولى من خلال الامتحان السريري التقليدي (المكون من حالة سريرية واحدة)، بينما تم تقييم المجموعة الثانية من خلال الامتحان السريري الموضوعي OSCE. تم تحليل نتائج الامتحان لتقييم أداء الطلاب في كل منهما ومقارنة النتائج النهائية مع نتائج الاختبار التقليدي.

**النتائج:** شملت الدراسة 515 طالباً أتموا الامتحان النهائي MBBS في قسم التوليد وأمراض النساء في جامعة أم درمان الإسلامية، منهم 254 خضعوا للاختبار السريري الموضوعي OSCE، و261 آخرين خضعوا للاختبار السريري التقليدي. نجح 240 طالباً (بنسبة 94.5%) من مجموعة الامتحان السريري الموضوعي، بينما نجح 247 طالباً (بنسبة 94.6%) من مجموعة الامتحان التقليدي. بلغ المتوسط العام للدرجات في مجموعة الامتحان السريري الموضوعي  $9.8 \pm 65.5$ ، حيث تراوحت النتائج بين 84 كأعلى درجة و41 كأدنى درجة. أما في مجموعة الامتحان التقليدي فقد بلغ المتوسط العام للدرجات  $9.1 \pm 63.6$  حيث كانت أعلى درجة 84 وأدنى درجة 24. لم يلاحظ فارق هام في أداء الطلاب بين النموذجين الامتحانيين.

**الاستنتاجات:** قدمت هذه الدراسة دليلاً موضوعياً على فائدة وقابلية تطبيق الامتحان السريري الموضوعي OSCE في تقييم طلاب الطب في قسم التوليد وأمراض النساء، وهو ما يقود لاعتماد هذا الامتحان وتعميمه.

ABSTRACT

**Objective:** This study was carried out to evaluate undergraduate students' performance in objective

structured clinical examination (OSCE) in the final MBBS examination in obstetrics and gynecology as a useful and feasible tool for students' assessment in Omdurman Islamic University.

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**Methods:** Two groups of medical students were involved in this study. The first group was examined by the traditional long case clinical examination and the second was examined by objective structured clinical examination (OSCE). Analysis of examination results was used to assess students' performance in OSCE, written and their final results compared to traditional examination.

**Results:** In this study, 515 students completed their final MBBS examination in obstetrics and gynecology in OIU were involved, 254 for OSCE and 261 for clinical long case. Two hundreds and forty students (94.5%) attempted the OSCE passed the examination, and 247 students (94.6%) attempted traditional examination passed the examination. The overall mean score of the OSCE group was  $65.5 \pm 9.8$  SD, with 84 highest score and 41 lowest score. The overall mean score for traditional group was  $63.6 \pm 9.1$  SD, with highest score of 84, and lowest score of 24. There is no significant difference between students' performance in the two formats of examination.

**Conclusions:** This study provides a good evidence for the usefulness and feasibility of the OSCE in evaluation of undergraduate students in obstetrics and gynecology. Adoption of OSCE in under graduate assessment is recommended.

## INTRODUCTION

Omdurman Islamic University (OIU), was founded since 1912, however, faculty of medicine was only established in 1990 and the first intake was in 1991 and has graduated till now 14 batches. Summative assessments have been used since the graduation of the first batch, with ongoing changes in both concept and implementation. Since then, the faculty has undergone many workshops in an attempt to reform curriculum and to adopt a reliable, valid and a feasible method of examination for graduation and certification purposes. In the last two years, extensive re-evaluation of undergraduate medical education with new educational objectives and more effective standardized examination system for students' assessment in obstetrics and gynecology has been done. In the first few years of graduation, written examination in obstetrics and gynecology consisted of essay writing, short notes

questions and multiple choice questions (MCQs), true and false type adopted. This had been changed with the introduction of modified structured essay questions and structured short solving problems in both obstetrics and gynecology, it is going on till now, however, MCQs were changed from true and false type to one single true answer, rather than one best answer for both obstetrics and gynecology. Clinical examination and unstructured oral examination had been going on till last batch no 14. With the introduction of problem based learning (PBL) in education, an attempt to change to an objective structured clinical examination (OSCE) started with the first group of batch 15 as a final certifying examination. The OSCE consist of a set of different stations. Each station is a task or set of tasks to be done by students in a determined time. Some stations are with an evaluator to check the tasks done by the student, and some have a simulator where the students can take history or conduct a clinical examination. Other stations are static with materials for identification or interpretation.<sup>1</sup> It has been extensively assessed and found to be a good tool with good validity and reliability.<sup>1</sup> There are no available records or data on OSCE in this university or other universities in Sudan, which necessitates documentation of such an experience.

This study was carried out to evaluate undergraduate students' performance in objective structured clinical examination (OSCE) in the final MBBS examination in obstetrics and gynecology in Omdurman Islamic university, 2008.

## METHODS

Since the first batch examination in 1997, an ongoing debate has been discussed in the department of obstetrics and gynecology, regarding methods of examination and students' assessment. Unstructured oral and clinical long case in obstetrics was always under consideration, being the major determinants of failure or success in the final examination. In this study, review of students' performance during the final examination in obstetrics and gynecology was done from examination records in department of obstetrics and gynecology for four subgroups in batches, 15 and 16 in faculty of medicine in Omdurman Islamic university. No names or index

numbers were included, with particular confidentiality to candidate's performance, examiners' marking or reports. Abstract data was used for critical analysis of the examination procedures and students' performance to compare consistency of both written and OSCE performance and the final results of the examination compared to the results of students attempted the last traditional examination. Computed analysis was done using SPSS. Test of significance was done using chi square with a 95% confidence.

Moving from calendar system to semester system, now each batch is subdivided into four subgroups, rotating between departments of internal medicine, general surgery, pediatrics and obstetrics and gynecology. The subgroup varies from 60-70 students maximum. This makes revolution in assessment and shifting to OSCE easier, rather than the whole big number of students (230-240) at the end of the year. At the end of each semester, there is a full certifying examination, composed of OSCE 50%, written 40% and 10% for continuous assessment.

Two groups of medical students were involved in this study. The first group was examined by the traditional long case clinical examination and the second was examined by OSCE. In this study, 515 students completed their final MBBS examination in obstetrics and gynecology in OIU were involved, 254 for OSCE and 261 for clinical long case. The whole examination was composed of 15 different stations, categorized into three main domains. Group I, three consecutive interactive stations linking history taking from a simulator, conducting clinical examination on a

real patient with prepared checklist for examiners and a structured discussion of problem identification and management (30%). Group II, other three interactive stations for counseling, history taking and reasoning to reach a diagnosis and management from a simulator, including cold and emergency cases (20%). Group III, the rest 9 static stations with surgical instruments, radiographs, specimens, investigations and scenarios with structured tasks to answer (50%). A group of 17 students rotate through the 15 clinical stations performing specific task in turn, while two members of the group at rest. The examination was well prepared; the model answers were agreed on, the scoring key was designed before giving the examination and the weights of questions were balanced to insure more marks for skills stations. The examination management was proper, the instructions were clear, there was no confusion, the layout was suitable, the space was convenient and the time was just adequate for answering each station. Before conducting the examination, all students were prepared and oriented to the examination, as well as the examiners and role players.

## RESULTS

Students completed their final MBBS examination through OSCE were 254, in four subgroups, 240 students (94.5%) passed the examination, while 14 students (5.5%) failed (Table 1). The overall mean score was  $65.5 \pm 9.8$  SD, the highest score was 84, while lowest score was 41. The mean score for written was  $65.9 \pm 11.0$  SD, with highest score of 87 and lowest score of 32. In OSCE, the mean score was  $65.0 \pm 10.1$  SD, with 86 highest score and 38 lowest score. Students' performance

Assessment tool	Pass		Fail		Total	
	No.	%	No.	%	No.	%
Paper	230	90.6	24	9.4	254	100.0
OSCE	236	92.9	18	7.1	254	100.0
Final result	240	94.5	14	5.5	254	100.0

Table 1. Distribution of students' performance in written, OSCE and final result in the MBBS examination in obstetrics and gynecology in O.I.U 2008.

Assessment tool	Pass		Fail		Total	
	No.	%	No.	%	No.	%
OSCE	236	92.9	18	7.1	254	100.0
Clinical	246	94.3	15	5.7	261	100.0
Total	482	93.6	33	6.4	515	100.0

Table 2. Distribution of students' performance in OSCE and clinical long case in the final MBBS examination in obstetrics and gynecology in O.I.U 2008.

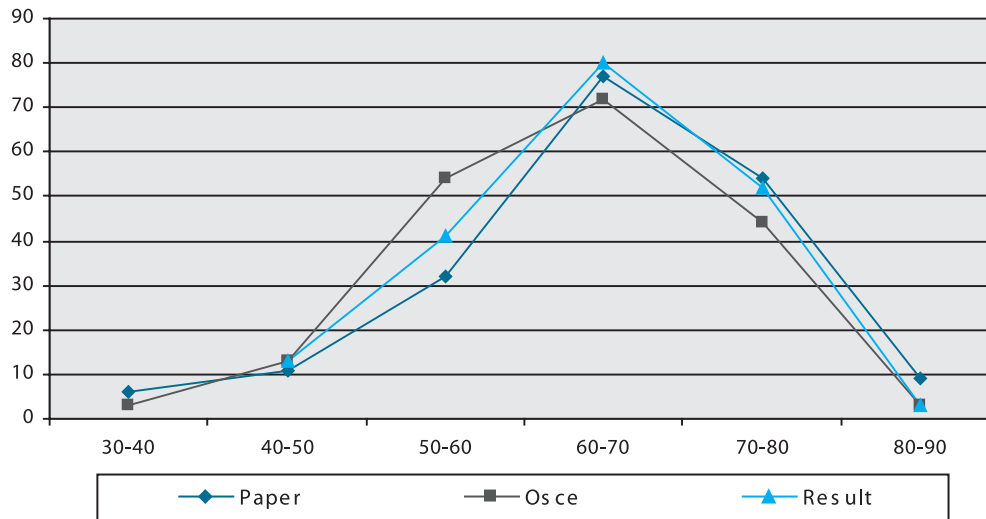


Figure 1. Students' performance in final MBBS examination in written, OSCE and their final results in obstetrics and gynecology in O.I.U 2008.

in group I OSCE was  $20.6 \pm 8.4$  SD, group II was  $10.6 \pm 2.8$  SD and group III was  $29.8 \pm 5.4$  SD. Two hundreds and sixty one students completed their final examination through the conventional method (written 40%, OSCE 20% and single long obstetric case 40%), 247 students (94.6%) passed the final examination, while 14 students (5.4%) failed (Table 2). Their overall mean score was  $63.6 \pm 9.1$  SD, with highest score of 84 and lowest score of 24. The mean score in written was  $24.7 \pm 3.9$  SD with highest score of 34 and lowest of 12. The mean score in OSPE was  $14.5 \pm 2.5$  SD, highest score of 19 and lowest of 02. In clinical long case the mean score was  $24.4 \pm 4.4$  SD, highest score was 34 and lowest was 8.

Table 2 shows no discrepancy between students' performance in paper, OSCE and final result of the examination. This table also shows the consistency between students' performance in clinical, OSCE and Final result of the examination, (Chi-square=0.385, p-value=0.535).

Figure 1 shows the consistency between students' performance in paper, clinical, OSCE and final result of the examination.

## DISCUSSION

Traditional methods of assessment might be accepted if proved to be valid and reliable.<sup>2</sup> Known methods, such as unstructured oral or long clinical examination can give

misleading impression of the student's competencies, with subsequent chances of bias.<sup>3</sup> Unstructured oral (viva) and clinical long case examination which have been used for long in this faculty and all other faculties of medicine in Sudan, is not without debate. It is likely to be unreliable, has no reference criteria for evaluation, no standards or structures for marking and scoring.<sup>4</sup> It lacks specific objectives to be assessed, may not be related to training and education of students, with different independent examiners with different schools for assessment and evaluation. It is likely to be bias, may be influenced by impression, appearance, gender and luck. It does not assess attitude, with difficulties in finding similar cases and raters for all students.<sup>3</sup> In this examination, it is replaced by objective structured clinical examination (OSCE). OSCE is a well established structured assessment tool which is competency-based and is a valid practical and effective mean of assessing clinical skills that are fundamental to the practice of medicine.<sup>5</sup> It has the advantage of preparing standardized structured checklist of tasks for each student with the same degree of difficulty for all students on the same material by the same examiner, with insuring objectivity. It is less bias, structured, easy scoring, with no inter-rater or inter-case variability.<sup>6</sup> The interactive stations were made to assess, communication skills, attitude, collection of informations, interpretation of results, reasoning and establishing a clinical diagnosis and planning for management. All students were assessed



on the same materials and scored by the same examiner. Time spent with patients (and simulated patients) is longer compared with the long single case; it was six out of 15 stations. Each student's final result was assessed by six independent examiners (interactive stations) compared to two or three dependent ones in the long case system examination.<sup>7</sup> The inclusion of interactive stations, with trained role players (simulators), is especially good for cold cases however, emergency cases were included. Checklist with key features or questions make students focus on common findings in history taking and examination with good clinical reasoning for discussion and problem management.<sup>8</sup> It is a comprehensive examination assessing student's skills, attitude and knowledge.

Although traditional method have been used for student's assessment for a long time and both students and examiners are aware of it, but the performance of students in OSCE is similar both in the final result and in the OSCE compared to clinical long obstetric case, which ensures that the new format is at least as good as the old.<sup>3</sup> Students score in OSCE is consistent with their performance in written, which may indicate the consistency of the examination; its content was relevant to training and absence of luck or bias. There is no significant discrepancy in students' performance in OSCE and written examination and between the final results of students' performance attempting the OSCE and the conventional method, (Chi square 0.535, p-value 0.385). The OSCE has the advantage of assessing different clinical domains than traditional methods,<sup>9</sup> while the traditional examination covers only small part of the curriculum.<sup>10</sup> Feasibility of the examination as a tool of assessment was demonstrated by the smooth delivery of the examination, its shorter duration, one day compared to 6-8 days in traditional examination. Number of patients needed in this examination is maximum of eight, while in traditional, a big number of patients is needed, or sometimes same patient is used more than once in different days, which affects some of the student's performance, as well as the confidence of the staff participating both as examiners or simulated patients and from majority of the students who welcome the learning experience.<sup>11</sup>

OSCE is expected to be cost-effective, particularly on the number of examiners and the time (hours instead of days) needed to conduct the examination. This would easily reduce the cost of the examination, especially when questions' bank is established and model answers and checklists are prepared, where the preparation and delivery of the examination will be easily conducted in a shorter time with the minimum number of examiners. Preparation of the examination is time consuming, including, setting of the examination, designing, typing, photocopying and marking of static stations. However, it is done by the staff members and can be done in ample time before conducting the examination. It may be difficult if the number of candidates is too big. This licensing form of examination can be carried out by an independent body for all medical graduates (national body board), which will unify the methods of examination, contents, standard reference and allow objective competition of different schools and help universities to develop their academic activities, curricula and methods of teaching.

## CONCLUSIONS

This study provides a good evidence for the usefulness and feasibility of the OSCE in evaluation of undergraduate students in obstetrics and gynecology. Adoption of OSCE in under graduate assessment is recommended.

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