

## Experience of OSCE in faculty of medicine, Alzaeim Alazhari University, Sudan

Saadeldin A. Idris <sup>1\*</sup>, Makram E. Dimitry <sup>2</sup>, Badria H. Mohammed <sup>3</sup>, Ibrahim S. Elkheir <sup>1</sup>, Sami A. Saeed <sup>1</sup>, Ali O.A. Mansour <sup>4</sup>, Ismat M. Mutwalli <sup>1</sup>, Nadir K. Mohammed <sup>1</sup>, Mohammed M. Hafiz <sup>1</sup>, Amani A. Mohamed <sup>3</sup>

<sup>1</sup>Department of Surgery, Alzaeim Alazhari University, Khartoum, Sudan

<sup>2</sup>Department of Medicine, Alzaeim Alazhari University, Khartoum, Sudan

<sup>3</sup>Department of Paediatrics, Alzaeim Alazhari University, Khartoum, Sudan

<sup>4</sup>Department of Obstetric and gyneacology, Alzaeim Alazhari University, Khartoum, Sudan

### ABSTRACT

**Background:** The traditional classical clinical exam (CCE) has limitations in terms of validity and reliability. Nowadays the Objective Structured Clinical Examination (OSCE) is widely used to assess the clinical performance of medical students. **Objective:** To reflect and share the experience of OSCE exams in clinical departments in the Faculty of Medicine, Alzaeim Alazhari University (AAU) and to encourage more modifications to improve its quality. **Material and Methodology:** Data regarding clinical assessment; OSCEs versus classical clinical examinations was collected from faculty records. The collected data was entered computer and managed statistically using SPSS version 21. **Results:** Overall in the group of students examined by OSCE 67.7% rewarded grade B and above, whereas in the contrary 60.5% of students in CCE rewarded grade C+ and below, this difference was statistically significant ( $p=0.002$ ). **Conclusion:** OSCE is an excellent tool, and fair to the students, as all examiners use the same check lists provided by the department. Students tend to do better in the clinical part of the examination when this type of assessment is used.

**Keywords:** Clinical Subjects Assessment; Objective Structured Clinical Examination (OSCE); Classical Clinical Exam (CCE); Grades.

### Introduction

OSCE was introduced in the mid seventies by Harden and it was very slow in gaining momentum to replace classical clinical exams in the medical schools [1]. Oral/viva examinations have been replaced by objective structured clinical examination (OSCE) in clinical sciences to overcome the problems which were faced in traditional clinical examinations in medical institutions [2,3]. OSCE implementation for students' assessment had some shortcomings. It is tedious to prepare and conduct, costly and require a lot of personals.

Examiners can hardly protect time for the whole exam especially if more rounds are planned for a large number of students with a limited set up. Real patients and role players might get exhausted and frustrated [1,4]. Rationale to adopt OSCE in our school is the great variation in the cases and examiners and many times luck plays an important role in the final result of CCE. Some cases are difficult and some examiners are tough and difficult to satisfy. As well there are easy cases and soft examiners who pass students who do not deserve to pass. However, to be fair to this type of classical clinical exam, experienced examiners can pick the good student from the bad one. This method of assessment was originally developed in order to address the unreliability and lack of generalizability of traditional forms of clinical assessment such as long and short cases [5]. It should be remembered that OSCEs are not suitable for testing all aspects of clinical competence: knowledge, for example is best tested using written formats [6]. As well we noted gaps in the knowledge and practice of our

\*Correspondence

**Dr. Saadeldin A Idris**

Department of Surgery, Alzaeim Alazhari University,  
Khartoum, Sudan

**Email:** [saadeldinahmed@hotmail.com](mailto:saadeldinahmed@hotmail.com)

doctors who graduated from different medical schools and started practicing in this country or abroad. Previously doctors and students were not subjected to communication skills (e.g. breaking bad news), performing life support and other useful skills. This is a serious gap in practice of medicine in our country. This stimulated the faculty of medicine to shift to a more reliable and valid system and plans were made to introduce this system in Faculty of Medicine Alzaeim Alazhari university as it is known to be innovative and pioneer in introduction of new system that upgrade the university and the community. The university conducted conventional exams system before introduction of this system, many staff members attended different OSCE exams prior to adoption. Staff was reluctant to accept the new change in the method of assessment; it was hard and took many meetings to convince the staff that this tool of assessment needs to be tested. So, the departments shifted the teaching methods in the clinical rounds towards focused discussions. All the departments started to develop check lists for all the common conditions seen in medical practice. Those check lists have been discussed among the members of the department. To improve the quality, regular OSCE workshops were carried out by the faculty staff.

### Clinical subjects assessment

Our medical school has adopted the following exam in clinical assessment:

Theoretical: This is composed of single best answer questions (SBA), number of questions is variable; 100 in surgery, pediatrics, obstetrics & gynecology and 60 in medicine. The second paper includes structured extended questions, number is also variable between departments (5-10 problems), in this type of questions a theme is set and clinical scenarios are set and structured questions created and students write the appropriate answer. All parts of each subject are well represented in paper 1&2 of the concerned specialty. Any type of examination that can be answered by pen and paper is not part of the OSCE even when it tests clinical domain. In many occasions, examination organizers who are not well informed on the OSCE include stations where photographs, X-ray films, MRI, ECG, EEG, and Echocardiography recordings are portrayed for either spot diagnosis or description of findings and the candidate is given questions on a paper to answer by either writing the answer or selecting it from a list of options. Similarly, lab data for interpretation or video clips are used in the same erroneous manner [7]. In our clinical exam in addition this component of Objective structured practical exam OSPE materials were introduced in surgery and pediatrics e.g. videos, photographs, MRI, X-rays, and CT scan in form of

video-projected structured clinical exam (ViPSCE)/CCE. The questions are structured according to the material presented and students answer in appropriate papers. We have adequate number of computers of use for the exam purposes. It should be mentioned that the university did great effort to provide the set up and environment for the exam. The departments discuss the degree of difficulty of each question and calculate the minimum pass level (MPL) before the paper exam. The paper result of theoretical exams is obtained before the commencement of the clinical part of the exam.

OSCE: It was first adopted in department of Surgery (Batch 9 - 2007), thereafter adopted in the other departments consecutively. In surgical department there are 6 OSCE stations, there are five clinical stations and the time of each is 5 minutes and two identical history stations each is given 10 minutes. The exam is run in lots of 6 students and the history station is doubled to allow for smooth running of the exam. In medicine the OSCE consist of 5 stations 10 minutes for each. Three of them are for clinical examination, one station for history and the last is static station. In Pediatrics the OSCE composed of 8 stations, 8 minutes for each. Four stations are for clinical examination, two for history taking, one for communication skills, and the remaining one station for developmental assessment. Whereas in obstetrics and gynecology the OSCE composed of 10 stations, 7 minutes for each. Four static stations, two for clinical examination, two for history taking, two for discussion, and one station for communication skills.

Check Lists: We consider check lists as objective tools, structured and unbiased tools of assessment. The most difficult part of OSCE is developing check lists. That they need to be updated and improved all the time. In a typical OSCE, examinees rotate through a number of stations staffed by either real or standardized patients, where they are required to perform different clinical tasks. The examinees are observed and their performance is assessed using structured checklists [8]. At the end of each OSCE station there are 2 minutes are allowed for interaction and discussion by the examiner. The examiner initially acts as an observer; the students report their findings to the examiner, then the discussion of different aspects take place in the last 2 minutes.

### Material and methodology

The Faculty of Medicine in the University of Alzaeim Alazhari (AAU) is a governmental medical school that graduated seventeen batches of students. It adopts the semester system. Ten semesters are spent by the student to be graduated. The first four semesters are spent in basic medical sciences and there is some exposure for integrated teaching in surgical anatomy integrated

clinical teaching where basic sciences and clinical disciplines are included. Introduction to clinical subjects starts in semesters 5 and 6, communication skills; medical ethics are introduced at this stage. Pathology, community medicine, forensic medicine and research methods are also taught at this stage. Subspecialties like ENT, anaesthesia, orthopaedics, urology and ophthalmology as well as paediatric surgery are taught in

semester 8, 9 and 10. In semester 8, 9 and 10 there is consolidation of teaching of general surgery, general medicine, pediatrics, obstetrics and gynaecology and psychiatry. Clinical assessment is carried out at the end of semester 8, 9, and 10. In faculty of Medicine AAU we adopt grade scoring system for students' performance as shown in table 1.

**Table 1: The grade scoring system in faculty of medicine AAU**

Grade	Score
A	≥80
B <sup>+</sup>	75 — less than 80
B	65 — less than 75
C <sup>+</sup>	60 — less than 65
C	50 — less than 60
F	< 50

\*Note; D grade was in use in the past before the implementation of OSCE, it represents scores 50 — < 55, while C score was 55 — < 65

Over the last 4 years the method of clinical assessment has been changed from the classical one that included one long case and 2-4 short cases to the OSCE, and we are no longer adopting the classical method of assessment. Data regarding clinical assessment; OSCEs (Batch 17) versus classical clinical examinations (Batch 8) was collected from faculty records. For collected data was entered computer and managed statistically using SPSS version 21. Ethical approval was obtained from the Medical Research Ethics Committee at the Faculty of Medicine AAU, Sudan.

**Results:** Marks achieved by students in both groups using the conventional CCE and OSCE system were tested using the Chi square test. Overall in the group of students examined by OSCE 67.7% rewarded grade B and above, in contrary 60.5% of the students of CCE rewarded grade C<sup>+</sup> and below this difference was statistically significant (p=0.002). Further analysis showed a significant difference between groups in Surgery, Obstetrics & gynaecology, Medicine and paediatrics as p values were p=0.000, p=0.004, p=0.000, and p=0.008 respectively (table 2).

**Table 2: Comparative results between OSCE exam (Batch 17) and traditional classical clinical examination (Batch 8)**

	Grade	Surgery	Obstetrics and Gynaecology	Medicine	Paediatrics	Total	P value
OSCE	A	22 (15.6%)	13 (9.6%)	13 (9.8%)	7 (5.5%)	55 (10.3%)	P = 0.002
	B <sup>+</sup>	21 (14.9%)	29 (21.5%)	18 (13.7%)	26 (20.3%)	94 (17.5%)	
	B	54 (38.3%)	56 (41.5%)	49 (37.1%)	55 (42.9%)	214 (39.9%)	
	C <sup>+</sup>	17 (12.1%)	19 (14.1%)	24 (18.2%)	11 (8.6%)	71 (13.2%)	
	C	23 (16.3%)	17 (12.6%)	28 (21.2%)	26 (20.3%)	94 (17.5%)	
	F	4 (2.8%)	1 (0.7%)	0	3 (2.3%)	8 (1.5%)	
<b>Total</b>		<b>141</b>	<b>135</b>	<b>132</b>	<b>128</b>	<b>536</b>	
Classical Clinical Examination	A	10 (10.9%)	3 (3.1%)	5 (5.3%)	3 (3%)	21 (5.5%)	
	B <sup>+</sup>	14 (15.2%)	13 (13.3%)	10 (10.5%)	14 (14.1%)	51 (13.3%)	
	B	13 (14.1%)	35 (35.7%)	16 (16.8%)	16 (16.2%)	80 (20.8%)	
	C <sup>+</sup>	22 (23.9%)	22 (22.4%)	27 (28.4%)	21 (21.2%)	92 (24%)	
	C	17 (18.5%)	16 (16.3%)	20 (23.2%)	25 (25.3%)	78 (20.3%)	
	F	7 (7.6%)	5 (5.1%)	13 (13.7%)	13 (13.1%)	38 (9.9%)	
<b>Total</b>		<b>92</b>	<b>98</b>	<b>95</b>	<b>99</b>	<b>384</b>	
<b>P value</b>		0.000	0.004	0.000	0.008		

## Discussion

We first adopted the OSCE in the faculty of medicine in Alzaeim Alazhari (2007). Initially adopted in department of Surgery, then after implemented in the other departments in a consecutive manner. By 2011 we graduated batch 14 using this type of exam and since the introduction of the system we conducted 6 similar exams running in all departments. Medical schools in the United Kingdom have been using this tool of assessment for the last few years [9]. Harden in 1975 adopted the use of stations in the OSCE where up to 20 stations are used with timing from 5-10 minutes [1,9]. Elfaki *et al.* [10] reported their experience in this type of exam in Umm-Alqura, Makkah, Saudi Arabia. They used this tool of assessment since the year 2000 and in their experience they ran over 25 OSCE exams and they concluded that it was good adjuvant tool of assessment especially for large number of candidates. They also mentioned some pitfalls like some examiners may not show up and students may be lost in the circuits and some mixing in the mark sheets. It is worth mentioning that the OSCE exam was used as a tool of assessment in the early seventies in some medical schools [1,9]. It can be used for large number of students, however, it has the following disadvantages, they are compartmentalized; and student's skills and knowledge are tested in compartments and not used to look to the patient as a whole. OSCE is meant mainly for student's interpersonal skills, history taking skills, physical examination and diagnostic skills [2]. The OSCEs are believed to be more valid, reliable and more practical than the traditional exams as a tool for assessment [2,11,12]. This assessment tool can be used for summative and formative purposes [13, 14]. Our experience with the OSCE is of short period, however, we found that this type of exam needs good organization and it is not difficult to run. No much training of examiners is required and no much experience is needed providing that the examiners are oriented about the marking system. The reason for that, the check list, the questions, answers and marks for the station are prepared by the staff members of departments [15]. The use of long case as a tool of assessment was extensively criticized and some claimed that it is not a good tool for assessment [16-18]. Whereas, OSCE system gives the student more chance to compensate if he performs badly in one station. As well it gives the departments more chance to introduce assessment of communication skills, breaking bad news in the OSCE format and to cover a wider range of clinical situations which we could not assess in formal conventional clinical exam [19, 20]. The results of the students improved well when this type of the exam was introduced, this is likely to be due to the increased

number of the stations and if any student performs badly in one station, he is likely to compensate in the rest of the stations. JC Konje *et al.* cited by Shallaly *et al.* [21] discussed in his paper the discriminatory power of the OSCE and found that the result improved for considerable extent when the OSCE was used. This is similar to our finding that the results of the OSCE exam are much better than the results of the conventional CCE; students do much better in the OSCE than the classical conventional exam. We think the reason behind that is the students are subjected to more material than the classical exam and this allows them to compensate if they do badly in some stations. They are doomed to fail if they do badly in one case in the conventional exam, particularly if this was the long case. The small pilot study carried out by Shallaly *et al.* [21] where he compared the results of conventional exam marks and check lists and found that both were comparable and found that check lists are more fair when a decision of fail and pass of a student needs to be determined. Since our introduction of the OSCE we have been working very hard to improve on our check lists, we kept changing them and improved on the construction and marking. We noted that a good way of improving on the check list is to get a patient with the problem and ask a doctor from the department to interview and examine that patient among senior members of the department. The senior members of the department act as observers and compare the performance with that on the check list. This will add a lot to the available check lists. When interpreting performance scores on an objective structured clinical examination (OSCE), are all checklist items created were equal? Although assigning priority through checklist item weighting is often used to emphasize the clinical importance of selected checklist items, Payne *et al.* [22] proposed the use of critical action analysis as an additional method for analyzing and discriminating clinical performance in clinical skill assessment exercises. A critical action is defined as an OSCE checklist item whose performance is critical to ensure an optimal patient outcome and avoid medical error. In that study, the authors analyzed a set of clerkship OSCE performance outcome data and compared the results of critical action analysis versus traditional checklist item performance scores. Their results showed that students who scored above the median correctly performed the critical actions more often than those scoring lower. However, for 9 of 10 cases, 6% to 46% of higher-scoring students failed to perform the critical action correctly. The conclusion of that paper is that failure to address this skill assessment outcome is a missed opportunity to more fully understand and apply the results of such examinations to the clinical performance development of medical students. Including critical action analysis in

OSCE data interpretation sharpens the eye of the OSCE and enhances its value in clinical skill assessment. This study should alert our attention to the fact that check lists should be critically prepared and a lot of effort and team work is required for that. We included at the end of the check list in the OSCE exam a row for global assessment, this is marked by the examiner and does not bear any marks but it will alert our attention if the mark is parallel to the global assessment, it is also a type of check to the examiner who is marking the check list.

**Conclusion:** A well organized OSCE needs good planning, enough resources, adequate number of patients and dedicated examiners. It is an excellent tool, fair to the students as all the examiners use the same check lists provided by the department. Students tend to do better in the clinical part of the examination when OSCE is used. Training of examiners for the OSCE is very easy and this type of exam does not require experienced examiners as the check lists are already there and when interaction is needed it is already included in the check lists. Also in the classical clinical exam the examiners used to score the final mark at the end of exam not for each step separately as in an OSCE, this way of marking for each step separately made a great difference in the assessment of students, and may point to the better results in the OSCE.

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