

# Assessment of the Management of the Objective Structured Clinical Examination in the Major Clinical Councils in Sudan Medical Specialization Board 2020: Examiners' Perspective

Gamarelanbia Yousif\*<sup>1</sup>, Diya Omer<sup>2</sup>, Eltayeb Abdel Rahman Ali<sup>3</sup>, Emtinan Khougaly<sup>4</sup>

<sup>1</sup>Master of Health Professions Education, Sudan Medical Specialization Board

Corresponding Author\*: [gamarvousif78@gmail.com](mailto:gamarvousif78@gmail.com)

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**Abstract:** Objective Structured Clinical Examination (OSCE) was introduced to overcome the limitations of classical clinical examination to improve the validity and reliability of the exam. The study was conducted to analyze the management of the OSCE in Sudan Medical Specialization Board (major four clinical councils) and recommend an improvement plan.

**Materials and Methods:** Cross sectional study was conducted at major clinical councils and total coverage technique was used.

**Results:** The response rate is 75%, the age of the participants ranged between 41 and 75 years, and there was no significant gender difference. There were more assistant professors. 80% of the examiners are practicing the OSCE exams for less than ten years period, the weight of the OSCE exam out of the total exam was 40% to 50% in about 73%. In 80% there was an agreement between the learning objectives and the OSCE exams. In 68% exam was prepared by the academic staff only. 76% of examiners always use the blue print. 67% of the examiners conduct their exam between five to ten minutes and 40.8% of the examiners prepare 10-15 stations in their exams. In 83% there was one task per station. Checklist are used by 93.2% of the participants. 86.4% of the examiners determine the minimal pass level before the exam. 52.9% of the examiners considered the setting was moderately prepared. 63% of the OSCE exams were evaluated regularly and 53.4% of the examiners update their bank regularly. 66% of the examiners gained their experience in OSCE from their participation in sporadic workshops. Only 50% of the examiners were satisfied in their OSCE standards.

**Conclusion:** Objective structured clinical examination assesses broad range of graduates' competencies. It needs a lot of resources, proper management, training and evaluation.

**Keywords:** Blue print, Check list, Competency, Reliability, Station, Validity.

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## 1. INTRODUCTION

Objective structured clinical examination (OSCE) is used by all medical institutions in order to assess graduates competencies predetermined by these institutions [1]. "OSCE is an assessment tool based on the principles of objectivity and standardization in which the candidate moves through a series of time-limited stations in a circuit for the purpose of assessment of professional performance in a simulated environment" [1], [2], [3]. The OSCE was originally described by

Harden in 1975 and was designed to improve the validity and reliability of the assessment of clinical performance. Until that time, clinical performance was assessed using long and short cases [1] [2], [3], [4]. The original OSCE, described by Harden, involved 18 tests and two rest stations, each station being 4.5 minutes long with a 30-seconds break between each and total time of 100 minutes [5], [6].

Well-constructed OSCE stations, an adequate reliability could be achieved with 14-18 stations each with 5-10 minutes [7], [8], [9]. There is much literature around OSCE theory, but questions remained open about how OSCEs are conducted in practice at each medical institution [10], [11], [12], [13]. A cross sectional study was done on 193 students about the effectiveness of the OSCE at King Saud Bin Abdul-Aziz University for Health sciences (2016). The study result in 59% of the students agreed that OSCE were useful experience, 33.2% agreed that OSCE scores provide true useful measure of clinical skills and 46.6% thought that personality and social relations will affect OSCE scores [14]. Students and examiners considered OSCE as valuable and practical experience, but need more planning, organization and evaluation [14], [15].

To decrease personality and social relation video evaluation without knowing their names is suggested [16], [17], [18].

In Sudan (A study done by University of Khartoum, faculty of medicine, department of surgery 2009): the study revealed that: no unified OSCE format is applied in the final surgical exam. The number of stations should be based on exam blue print, level of competence needed and objectives of the different courses. In general, examination total time and station duration will guide the number of stations. As OSCE of more than two hours become cumbersome and less than one hour might be inadequate for assessment. Their OSCE has fifteen stations of five minutes each [19].

To produce competent doctors from these medical institutions, evaluation of the assessment methods is of rigorous important [20], [21], [22]. If the OSCE examinations are conducted according to committee meeting; blue printing the exam according to the learning objectives, station profile, proper scenario; clear instructions, effective marking system; station refinement, questions bank; orientation and briefing to examiners, patients and students with available resources, OSCE can assess the graduate competencies efficiently and effectively. Blue print is defined as procedure to construct the examination and to map its contents against the learning objectives to produce a valid and reliable examination [23], [24], [25].

## 2. PROBLEM STATEMENT

We conducted this study to evaluate different approaches of OSCE exams in different councils to determine areas of good performance to reinforce them and areas that need improvement. To fill the gap between actual and desired OSCE practice. If workshops are conducted at the Educational Developmental Centers (EDCs) to reach a consensus about how to conduct a good OSCE exams it potentially may lead to produce a competent graduate to serve their societies [1], [26].

## 3. RATIONALE

By analyzing and evaluating the strengths and weaknesses of the current OSCE exams in Sudan Medical Specialization Board (four major councils), filling the gap between actual and desired OSCE practice can be done. The expected results of this study is to find the deficiencies in the OSCE and to put improvement plan including workshops at educational developmental centers may better prepare the examiners to be efficient assessors of graduate competencies.

## 4. RESEARCH QUESTION

What are the strengths and weaknesses areas of OSCE exams in SMSB in 2019: examiners` perspective? OBJECTIVES

1. To assess how the examiners plan to set the OSCE exam by using the blue print.
2. To estimate the number and time of the stations.
3. To categorize the marking system used.
4. To assess the frequency of evaluation of the OSCE.
5. To determine the source of training in OSCE exam.

## 5. METHODS AND MATERIALS

### Study design:

A descriptive cross sectional study.

### Study area:

“Sudan Medical Specialization Board (SMSB), was established in 1995 by presidential decree under the Sudan Medical Specialization Act (1995). SMSB is the sole professional training body in the Republic of the Sudan mandated to manage and deliver medical and health specialty programmers in the country. The driving foundation of SMSB is its specialty councils, which are responsible for the implementation of all activities concerning training of medical doctors including the development and review of curricula.

### Study duration:

Six months from 01/09/2019 to 28/02/2020.

### Study population:

Examiners who participate in OSCE in the four major clinical councils at SMSB. Their number was 137 examiners, 103 responded to the questionnaire, gave a response rate about 75%.

### Sampling:

Total population sampling.

### Study variables:

Use of blue print in planning OSCE.

Number of OSCE stations.

Time per station.

Method of scoring system.

Regular evaluation of OSCE exams.

The source of training in OSCE.

The alignment between learning objectives and OSCE exams.

The type of the minimal pass level.

Number of task per station.

### Plan of data collection:

This process started by taking the permission to collect the data, then the collection itself, and finally data handling. The researcher constructed the Questionnaire and it was revised by many content experts in medical education. The questionnaire consists of the following components: introductory socio-demographic data of the examiners (e.g. sex, age, academic qualification, and specialty), and then questions related to the context of the OSCE including planning, implementation and evaluation. The questionnaire consists of 25 items of closed ended questions and some five points Likert scale questions. Small pilot preliminary study was conducted using small sample-20 examiners- and many problems were identified and the questionnaire was amended. The data was collected by the researcher and one trained data collector.

### Data processing and analysis:

The data was sorted making careful comparison between copies of data and collecting similar data together. Data was cleaned at three levels: consistency check searching for the logical pattern; range check ensuring the data was collected within the range of the study; check for completeness ensuring that there was no missing data. Double data entry was used, and then the data was categorized, coded and summarized.

Biostatistician analyzed the data using SPSS version 23, descriptive statistics like mean, standard deviation with normal curve to describe and visualize numeric variable (age) and all other categorical variables described by frequency tables and bar charts as univariate analysis. Data presented through tables, numerical summaries and graphic summaries.

#### Ethical concern:

Essential legal acceptance was acquired from the Ethical Committee to collect the necessary data after explaining the purpose of the study, also permission was obtained from the concerned four major clinical councils (Obstetrics and Gynecology, Pediatrics, Internal Medicine, and Surgery).

## 6. RESULTS

A total of 103 completed questionnaires were received out of 137 distributed, and the response rate was 75%. 52 were male examiners and the rest were females. Their ages were ranging between 34 and 75 years, with the mean of 51 years. From the total number of the examiners: 47.6% were assistant professors, 27.2% were associated professors, 11.7% were full professors and 13.6% belonged to other institutions. 24.3% were internal medicine physicians as well as the surgeons, 26.2% from Obstetrics and 25.2% from the Pediatrics. 45.6% of the examiners have been conducting the OSCE between five to ten years. In 80% there was an agreement between the learning objectives and the OSCE exams. 86.4% of the examiners determine the minimal pass level before the exam. In 68% exam was prepared by the academic staff only. In 83% there was one task per station. In 83% there was one task per station. Only 50% of the examiners were satisfied in their OSCE standards.

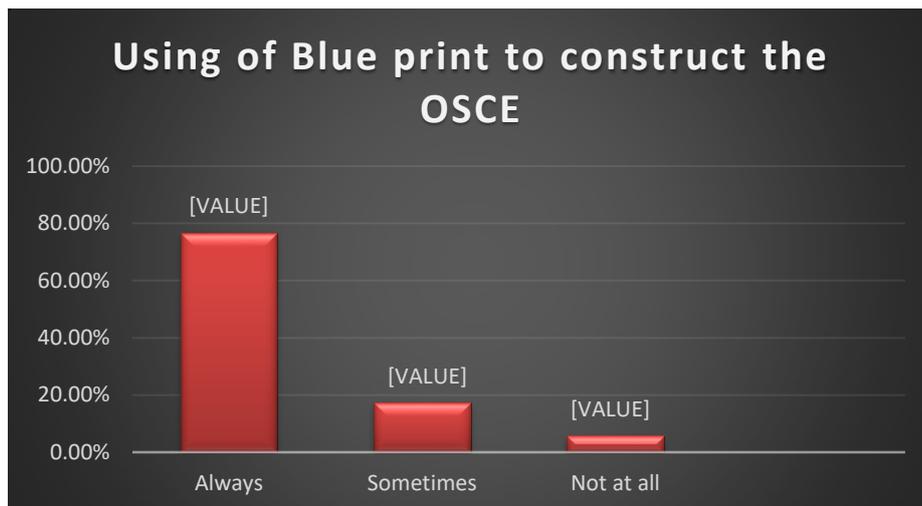


Fig 1. Distribution of the examiners according to the use of blue print to construct OSCE exam.

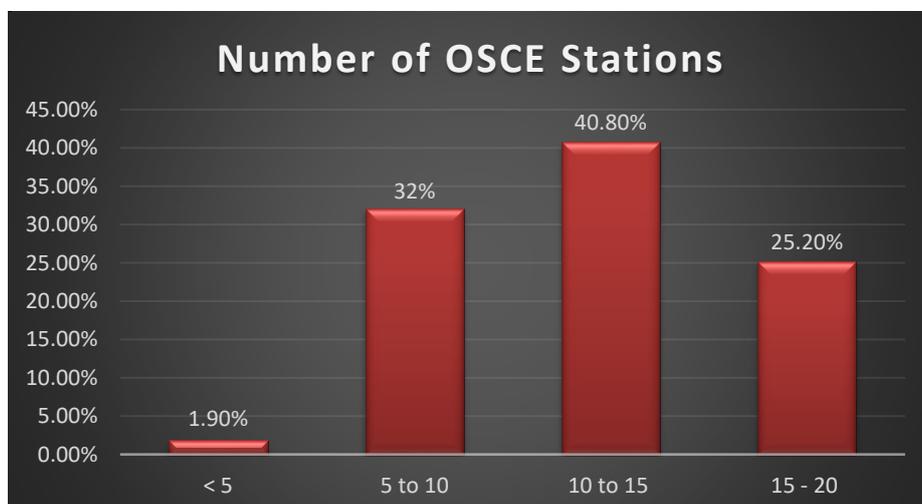


Fig 2. Distribution of the examiners according to the Number of the OSCE stations.

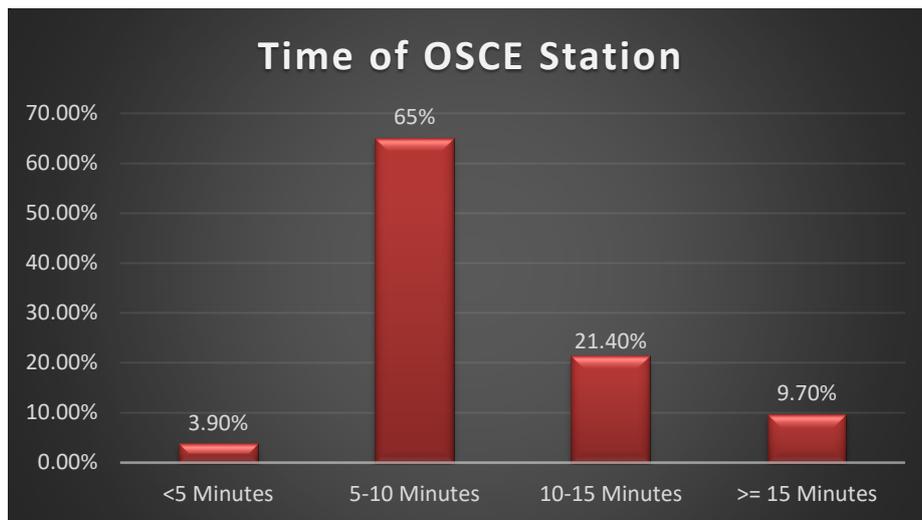


Fig 3. Distribution of the examiners according to the time per station.

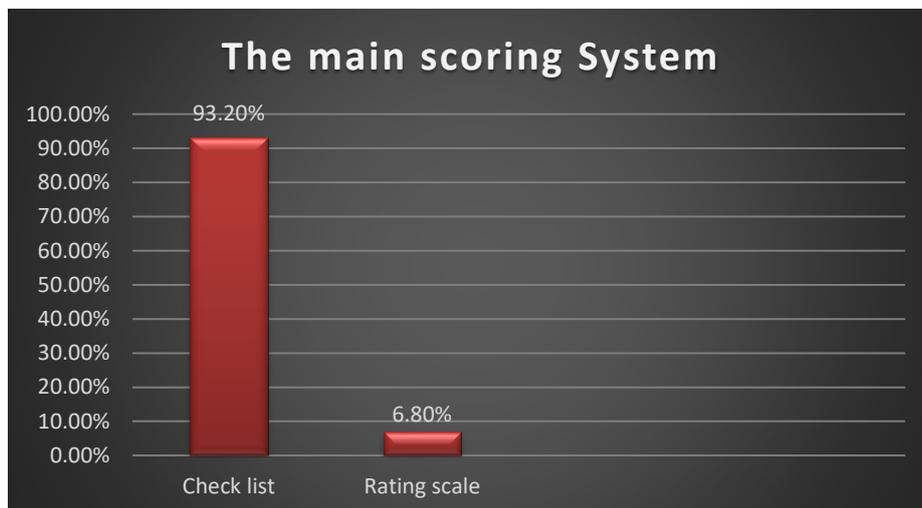


Fig 4. Distribution of the examiners according to the main scoring system.

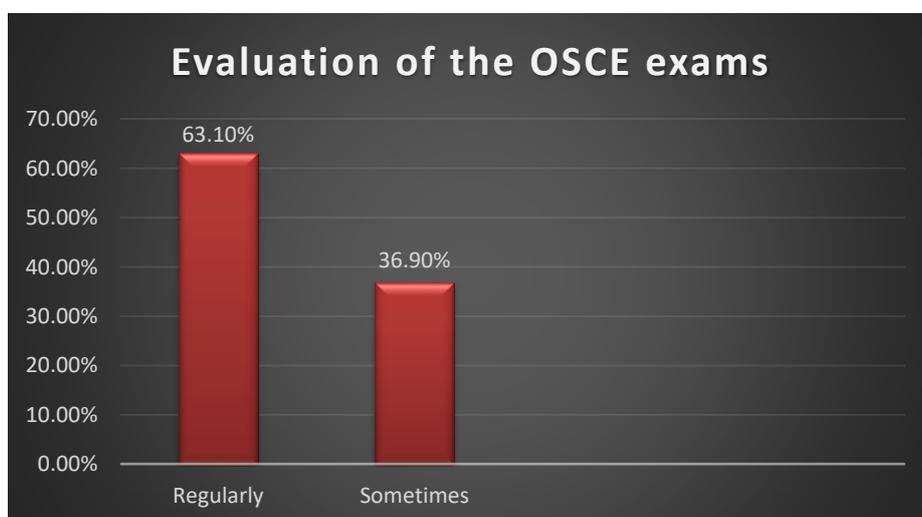


Fig 5. Distribution of the examiners according to the evaluation of the OSCE exam.

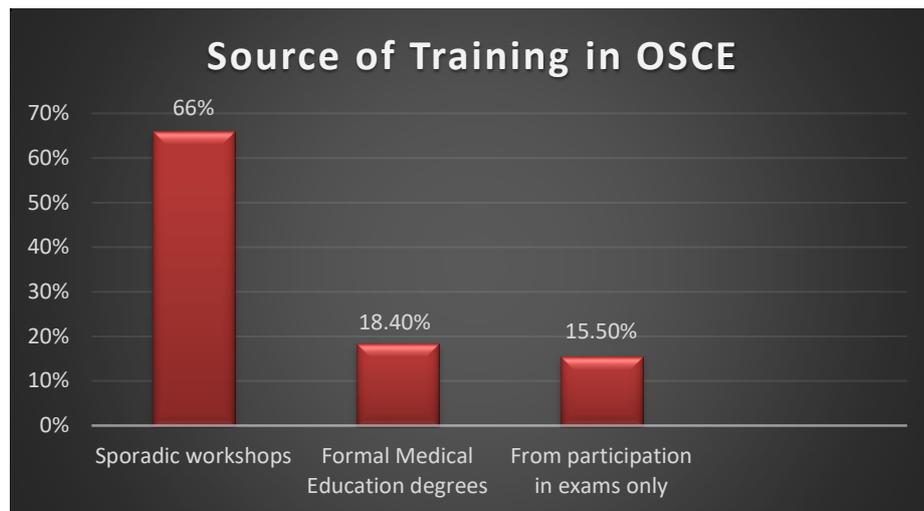


Fig 6. Distribution of the examiners according to the source of training in OSCE.

## 7. DISCUSSION

The study was conducted to assess the management of OSCE exams in the four major clinical councils at SMSB. In the present study, the response rate was 75%. The background descriptive data showed that the age of the participants ranged between 41 and 75 years, and there was no significant difference in gender among examiners. According to systematic review using PRISMA in Korea, Examiner sex was found not to predict score variance in a clinical skills assessment [27].

Regarding academic qualification, there were more assistant professors among the participants, and that may be due to their younger age, lack of interest in research and publication to upgrade their qualifications, lack of motivation and support from their institutions in addition to the financial and time constraints. There was no significant difference in the number between examiners in the four major disciplines that participate in the study. In this study we had 12 Professors, no one of them below 50 years of age.

The majority (about 80%) of the examiners are practicing the OSCE exams in their institutions for less than ten years period, and this indicates that the OSCE exam as an assessment tool was introduced recently in their councils. For that reason and others, it is very difficult to find enough detailed and updated data about OSCE exams in many Sudanese academic institutions. This in contrast with other countries that established OSCE as an assessment tool in undergraduate and postgraduate medical education for different competencies [1], [2], [3], [19].

Concerning the construction of the OSCE, 76% of examiners always use the blue print to plan and prepare their OSCE exams, and this is the most effective and fair approach to address the features of the best exam such as reliability and different types of validity [23], [24], [25]. The construction should follow clear guidelines: station profile (the title or the condition, time of station, domain, competence level, type of the examiner and resources whether real patient, role player, manikin or equipment); station scenario or preamble in real patient language (name, age, presentation, setting). Although assessment blue print is an efficient method for test construction, it was not implemented in many medical schools worldwide [25].

The benefits of using the blue print cannot be overlooked: assesses the learning objectives; avoids over- or under-representation of the objectives; uses appropriate formats for the competencies and skills being assessed; shows students the topics you value; and ensures similar exam contents from year to year [25].

The number of the stations was different and diverse and that explained the difference between the four major disciplines in conducting their OSCE exams. There was no consensus about a fixed number of OSCE stations, but it depends on the context of the practice and many other factors [1], [6], [8]. Generally, in practice OSCE less than one hour or more than three hours is not effective. 67% of the examiners conduct their exam between five to ten minutes per station, and this also indicates differences between contexts and specialties.

Checklist was used by 93.2% of the participants while only 6.8% used rating scale. In fact checklist is better for inexperienced examiners and standardized patients because it is structured and the mark is divided according to specific statements, and in our context it is the suitable marking system and it is used in many institutions [28], [29]. A lot of discussion is going on about this checklist and the recommendations for high level type with more standardization. In some medical schools the global rating was used. Global rating is a complementary method to check the degree of mastery and performance and in this case is used only with checklist unlike rating scale. Other indication for global rating is to determine the minimal pass level by using borderline methods (borderline group method or regression method) and can be used with checklist and rating scale [30].

The most important step in the academic management is the evaluation, and in about 63% the OSCE exams were evaluated regularly. Actually, we need to evaluate all the steps of how we manage our OSCE exams and even the written ones. Part of the evaluation is to give a constructive feedback to the examiners who participate in the exam, and in this study 38.8% the exam committee gave a feedback to those examiners on a regular basis and in 20.4% they received regular feedback from the participating examiners, and this needs to be a usual practice. Generally, we lack the practice and culture of giving and receiving feedback; together with lack of proper documentation; and we lack the qualitative evaluation.

To plan, prepare and participate in the OSCE exam is not an easy job, because you are responsible for assessing graduates or specialists who supposed to serve their communities, so it is essential that the assessors must be highly qualified, and highly dedicated with reasonable training enough for basic essential requirements of international and national medical education accreditation criteria. 66% of the examiners gained their experience in OSCE from their participation in sporadic workshops in assessment conducted in different academic institutions, while only 18.4% have formal degrees in medical education, and this is a good starting point to have this number, because medical education is new specialty in Sudan, and by time it will achieve a lot because many batches are working to get their master degrees in medical education.

#### ***Limitations:***

This study is not without limitations, finding and meeting the examiners was a problem and took most of the time of the study because it was conducted during Corona virus pandemic. This study is a situation analysis about the management of OSCE, but it is better to involve more academic institutions in the study and to add qualitative tools.

## **8. CONCLUSION**

OSCE exam is fair, objective, structured, flexible, reliable and valid if properly managed. It covers broad range of clinical competencies that need to be mastered. To prepare an effective OSCE, a lot of investment including human and non-human resources are required. In this study, most of the recommended criteria of effective OSCE were there: majority of the examiners used the blue print; the number and time of stations were different explaining different specialties; and checklist was the major marking system. Some areas need special attention and improvement. As a practical implications of this study: proper planning and preparation; effective and harmonized implementation; evaluation and feedback will lead to a better OSCE practice.

## **9. RECOMMENDATIONS**

- Regular use of the blue print and train the examiners on how to use it.
- Regular revision, update and evaluation of the stations.
- Encourage more training of the examiners by half a day training session before the exam with constructive feedback.
- More discussion is needed regarding the scoring marking system and standard setting.
- More studies are needed to determine the reasons behind low satisfaction rate towards present OSCE exams revealed by this study.

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