OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)

Abstract

The objective structured clinical examination (OSCE) is a type of exam that allows students to be evaluated in an uniform, standardized, reliable, and objective manner. It is performed in various clinical stations that imitate real-life clinical circumstances and scenarios. The hallway of OSCE exam rooms, each occupied by a distinct and challenging patient, is a comfortable environment for the physician or other healthcare practitioner. When standardized patients (SPs) are used in OSCE assessments, the linear sequence of the many station and skill problems is strikingly comparable to those of the actual world. OSCE has proven to be so beneficial in fields other than medicine that it is now being used in dentistry, nursing, midwifery, pharmacy, event engineering, and law

Keywords: OCSE, Standarized patient, Simulation, Health care, Organization, Station.

Authors

Ms. Sameeksha Bhardwaj
Staff Nurse
Government Medical College
Budaun
Uttar Pradesh, India.
sam.bhardwaj48@gmail.com

I. INTRODUCTION

OSCE stands for “Objective Structured Clinical Examination”. It is a method of evaluating clinical competence in which the components are evaluated in a planned or structured manner with consideration given to the examination's objectivity. In simple terms, an OSCE is an organizational framework in which several stations are set up in an examination room to examine students as part of an objective, systematic clinical examination. Students may be required to carry out a procedure at each station, including history taking, predetermined clinical tasks, and diagnosing patients' problems. Students may frequently interact with 'patients' while carrying out clinical activities; these patients could be healthy volunteers or mock patients. Students are also required to respond to questions with their findings and interpretations. Examiners with checklists monitor and score students at some stations(1). An OSCE is a modern(2) kind of examination that is frequently used to evaluate professionals in the healthcare industry.

II. HISTORY AND PURPOSES

The first OSCE was conducted by Prof. Ronald Harden at the University of Dundee as an alternative to traditional clinical assessment methods. He tested the students using a few patients who were available during the examination period. Since scoring was not standardized, traditional evaluations had poor reproducibility as a student's grade could be influenced by the patient's performance or examiner bias. The OSCE model was developed in order to standardize clinical examinations and minimize variables and biases that can affect the evaluation(3) . Since the very first paper on OSCE appeared in the British Medical Journal in 1975, several medical schools and professional organizations adopted it.The format of OSCE is continuously evolving and may include real or simulated patients, clinical specimens, and other clinical materials. The main purpose of the OSCE is to evaluate specific clinical competencies such as history taking, physical examination, diagnosis, communication, and counseling.(4)

III. USES OF OSCEs

Common uses of the OSCE are listed below(1).

1. As a performance-based assessment tool for determining whether students or trainees meet the minimum requirements as barrier (exit) exams during the undergraduate years in the majority of medical schools.
2. In Nursing College exams as a postgraduate high stakes evaluation tool.
3. For use in undergraduate medical and nursing education as a formative evaluation tool.
4. As a tool for evaluating graduates seeking highly competitive licensure and certifications to practice medicine and nursing.
5. As a tool for education that can give immediate feedback.

Objective structured clinical examinations (OSCE) assess students' abilities to carry out complex clinical tasks, including those that are frequently observed as well as vital to practice.[4]

IV. PRINCIPLES OF OSCE

There are two core principles of the OSCE model (1);

- Objectivity and
- Organization.

OSCE's objectivity is attained through the use of a standard examination model, actors who acts as patients in a consistent manner, and examiners who have undergone training to ensure that they are asking the same questions consistently grading students. The organization concentrates on creating an experience where each OSCE station evaluates a particular clinical job in a structured and consistent way with the course schedule.

V. TYPES OF OSCE

There are 4 types of OSCE (1):

1. **OSPE :** It stands for Objective Structured Practical Examination, and it is used to assess practical skills, knowledge, and/or data interpretation in non-clinical settings.

2. **OSATS:** It stands for Objective Structured Assessment of Technical Skills. It is a tool for assessing objective skills that consists of a global rating scale and a procedure-specific checklist. It is mostly used for providing feedback or monitoring progress in surgical specialties training.

3. **OSVE:** It stands for Objective Structured Video Examinations. The variation consists of videotaped recordings of patient-doctor interactions to students at the same time and questions about the video clips are asked. Written responses are graded in a standardized manner.

4. **TOSCE:** It stands for Team Objective Structured Clinical Examination. Formative evaluation of frequent consultations in general practice. A group of students visits each station in a group and performs each task in a sequence. Candidates are graded on their performance and given feedback. The team approach increases efficiency and facilitates peer learning.

VI. KEY ELEMENTS IN OSCE

The key elements of OSCE are mentioned below(6):

1. **The steering committee:** This is a group of 6 to 12 clinical experts having experience, knowledge, and skills in conducting OSCEs. They are in charge of fundamental aspects like ensuring the confidentiality of the contents, defining the level of difficulty to be assessed, evaluating the results, compiling the information to be received by the students, organizing the teaching staff in charge of the various stations, and issuing the corresponding certificates. The committee is also in charge of developing professional examiner criteria, setting test weighting criteria, and designing the clinical scenarios, cases, and items that will compose the clinical stations.

2. **Specification table:** This is a fundamental document that contains the entire test design. It is divided into rows and columns that show the placement of the stations, student rotations (circuits or rounds), the subjects to be assessed, the assessors, the testing tools, and the design of each station.

3. **Clinical Stations:** These are the physical locations where the simulated cases take place and the students are graded. Prior to the test, specific elements and materials must be identified and checked at each clinical station(7). Each station is labeled with a number that should make it easy to find. To minimize losing time or concentration, access to the next station should be rapid and simple. As a result, a network of corresponding stations optimizes both resources and time.It is essential to build and maintain a bank of peer-reviewed, quality-assured OSCE stations that may be used in several examination sessions(1).

4. **The cases:** These are the primary contents in OSCEs and the foundation for the various clinical stations. Each case often contains a description of the patient's data, medical history and physical examination findings, as well as clinical or imaging tests and examinations. It also includes the various questions to be answered and a checklist to objectively, uniformly, and consistently assess the needed abilities. To the greatest extent possible, the examples should have the following characteristics: 1) prevalence: they should address common diseases; 2) comprehensiveness: several skills should be checked in each case; 3) feasibility: the station design must be feasible in light of the available resources; and 4) evaluation facilitation via a checklist. It would also be interesting to include simulation manikins in OSCE patient cases to practice imaging-related skills (such as pleural markings, image-guided biopsies, or ultrasound).

5. **Selection and training of standardised patients and assessors:** Standardised patients are usually actors who have been trained to act out a patient's medical history, physical examination, attitudes, and emotional qualities based on the case scenario. They always deliver the same material and behave consistently in front of all students. The assessors must be qualified and experienced, both in the clinical scenario to be evaluated and in the way the OSCE functions and developes. Prior to the examination, they must familiarize themselves with the case to be examined, the various points to be completed by the student, the evaluation criteria, and the basic regulations of the test(6).

VII. APPROACHES OF OSCE

There are 2 main approaches of OSCEs:

1. **Summative OSCEs:** It is the standard assessment method used to determine whether a student passes a subject or receives an accreditation or certification. Formative assessment assesses students' progress and knowledge and is used to diagnose students' difficulties, providing data to enhance teaching and learning(8). Although it was originally established as a summative evaluation tool, OSCEs are now used worldwide for both formative and summative assessment in health profession training(9,10). Summative OSCEs have been proposed to have a negative influence on learning due to concern about the ultimate result and to encourage the use of tactics and cheating to obtain better test scores, to the cost of learning. Students who take part in a formative OSCE typically cherish the opportunity as a learning experience, though they may fail to recognize its formative nature(11).

2. **Formative OSCEs:** They often include immediate feedback from standardised patients or provide students with access to performance data, scores, checklists and video recordings to supplement feedback(12). This feedback identifies the student's strengths and weaknesses in the different competencies assessed, encouraging continuing progress even after the test is done. As a result, formative OSCEs can be quite beneficial in postgraduate training(11,13).

VIII. Advantages of OSCE

Following are the advantages of OSCE(3):

- **Broader content coverage:** Unlike the conventional short or long case examination format, multi-station OSCE allows broader content and domain coverage.
- **Reduced bias:** Independent examiners mark student performance at each station using a predetermined marking template that is adapted to each patient scenario, reducing examination variability.
- **Practicability:** OSCE allows for the use of virtual patients and clinical materials, reducing the necessity for real patients during the examinations.

IX. DISADVANTAGES OF OSCES

Following are the disadvantages of OSCE (3]:

- **Task fragmentation:** The OSCE is frequently criticized for fragmenting a physician's task because candidates are encouraged to focus on a specific task, potentially undermining what a physician is expected to do in real life.
- **Construct invalidity:** The OSCE is based on a predefined list of activities that a candidate must complete during the exam. This, however, may not be an accurate representation of how a competent and experienced physician operates in real life.
- **Time and budget for preparation:** The time required for simulated patient (SP)-based OSCE preparation is longer since it includes script creation, training, and pilot testing. It may take several sessions for an SP to become acquainted with the case and portray the results realistically and consistently. A genuine concern is the higher budget required to run a good SP program.

X. STEPS IN OSCE

Steps in developing an Objective Structured Clinical Examination(14):

1. Specify the types of skills to be examined.
2. Determine the types of assessments (for example, a uniform checklist).
3. Consider the number of skill assessment stations required (it is advised to have 10 to 15 stations, with each station lasting six minutes), because the length of the examination is defined by the number of assessment stations and the time each candidate spends at each station.
4. Allocate examination resources (such as space for exa, nomination, marking sheets, and plastic models).

5. Prepare the necessary staff resources (including examiners, timekeepers, and patients/volunteers).
6. Determine/arrange the exam day/period
7. After the exam, conduct a review/evaluation of the exam's setup.
8. To create concise marking schemes that focus on actions that distinguish between good and poor performance.
9. To provide marking scheme instructions for the examiners on what students would do at each station.
10. To give students instructions outlining exactly what they need to do at each station.

XI. CANDIDATES PREPARATION FOR OSCEs

Preparing for OSCEs is not the same as studying for a theory exam. Clinical skills, rather than pure theoretical knowledge, are assessed in an OSCE. It is critical to acquire correct clinical methods and then practice them frequently until they are perfected, while also having a knowledge of the underlying theory behind the methods used. Marks are awarded for each step in the method; thus, it is critical to break down the method into its individual steps, memorize the steps, and then learn to perform the steps in order.

In many OSCEs the stations are extended using data interpretation. For instance, the candidate may be required to take a brief history of chest pain before interpreting an ECG. It is also common to be asked for a differential diagnosis, which medical investigations the applicant would like to perform, or a treatment plan for the patient.

XII. CONCLUSION

The OSCE is a structured, uniform, systematic, objective and standardised assessment model. It is being increasingly used in undergraduate medical training at global level due to its proven effectiveness in assessing different skills and competencies among students. It is being practiced in nursing on a wide scale these days.

REFERENCES

[1] Khan KZ, Ramachandran S, Gaunt K, Pushkar P. The Objective Structured Clinical Examination (OSCE): AMEE Guide No. 81. Part I: an historical and theoretical perspective. Med Teach. 2013 Sep;35(9):e1437-46. doi: 10.3109/0142159X.2013.818634. PMID: 23968323.
[2] Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured examination. Br Med J. 1975 Feb 22;1(5955):447-51. doi: 10.1136/bmj.1.5955.447. PMID: 1115966; PMCID: PMC1672423.
[3] Harden R M, Stevenson M, Downie W W, Wilson G M. Assessment of clinical competence using objective structured examination. Br Med J 1975; 1 :447 doi:10.1136/bmj.1.5955.447
[4] Amin, Zubair; Eng, Khoo Hoon (2009). Basics in Medical Education (2 ed.). WORLD SCIENTIFIC. doi:10.1142/7044. ISBN 978-981-283-538-3.
[5] Criscione-Schreiber L. Turning Objective Structured Clinical Examinations into Reality. Rheum Dis Clin North Am. 2020 Feb;46(1):21-35. doi: 10.1016/j.rdc.2019.09.010. PMID: 31757285.
[6] https://www.elsevier.es/en-revista-radiologia-english-edition--419-articulo-the-objective-structured-clinical-examination-S2173510723000113?newsletter=true
[7] Agarwal A, Batra B, Sood A, Ramakantan R, Bhargava SK, Chidambaranathan N, Indrajit I. Objective structured clinical examination in radiology. Indian J Radiol Imaging. 2010 May;20(2):83-8. doi: 10.4103/0971-3026.63040. PMID: 20607015; PMCID: PMC2890931.

[8] Dante D. Dixson & Frank C. Worrell (2016) Formative and Summative Assessment in the Classroom, Theory Into Practice, 55:2, 153-159, DOI: 10.1080/00405841.2016.1148989
[9] Madalena Folque Patrício, Miguel Julião, Filipa Fareleira & António Vaz Carneiro (2013) Is the OSCE a feasible tool to assess competencies in undergraduate medical education?, Medical Teacher, 35:6, 503-514, DOI: 10.3109/0142159X.2013.774330
[10] Blamoun J, Hakemi A, Armstead T. A Guide for Medical Students and Residents Preparing for Formative, Summative, and Virtual Objective Structured Clinical Examination (OSCE): Twenty Tips and Pointers. Adv Med Educ Pract. 2021;12:973-978 https://doi.org/10.2147/AMEP.S326488
[11] Debra Pugh, Isabelle Desjardins & Kevin Eva (2018) How do formative objective structured clinical examinations drive learning? Analysis of residents' perceptions, Medical Teacher, 40:1, 45-52, DOI: 10.1080/0142159X.2017.1388502
[12] Aaron W. Bernard, Gabbriel Ceccolini, Richard Feinn, Jennifer Rockfeld, Ilene Rosenberg, Listy Thomas & Todd Cassese (2017) Medical students review of formative OSCE scores, checklists, and videos improves with student-faculty debriefing meetings, Medical Education Online, 22:1, DOI: 10.1080/10872981.2017.1324718
[13] Lee, M.H.M., Phua, D.H. & Heng, K.W.J. The use of a formative OSCE to prepare emergency medicine residents for summative OSCEs: a mixed-methods cohort study. Int J Emerg Med 14, 62 (2021). https://doi.org/10.1186/s12245-021-00383-4
[14] https://ar.talic.hku.hk/am_osce.htm Chan C.(2009) Assessment: Objective Structured Clinical Examination, Assessment Resources@HKU, University of Hong Kong [http://ar.cetl.hku.hk]: Available: Accessed: DATE 1 Aug 2023.

