

Objective Structured Clinical Examination: A Review

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Abstract

Background: The Objective Structured Clinical Exam (OSCE) is a performance-based exam and it is considered a gold standard summative and formative assessment method challenging process. It is requiring a considerable amount of theoretical and practical knowledge. OSCE was first described by Harden in 1975.

Purpose: The purpose was to review concept of Objective Structured Clinical Exam (OSCE) and explaining its steps, construction, advantages and disadvantages.

Method: A literatures were searched from databases: Google Scholar, Pubmed, CINAHL, and Science Direct. Key words used to retrieve literature include OSCE, OSPE, objective structured clinical exam, practical exam. Searching was limited in English language, full text.

Results: Twelve studies were reviewed in this paper. The author clearly explained the sequential steps in construction of OSCE. During the exam, trainees are observed and evaluated as they go through a series of stations where they interview, examine and treat standardized patients presenting with some type of problem.

Conclusion: Unlike the conventional clinical exam, the OSCE could evaluate areas most critical to performance of health care professionals such as communication skills and ability to handle unpredictable patient behavior.

Keywords: OSCE, OSPE, clinical examination, practical examination, formative assessment and summative assessment.

Introduction

OSCE means objective structured clinical examination. Objective, because examiners use a checklist for evaluating the trainees without bias, Use of checklist and training of examiners ensures impartiality. Structured, because every learner sees the same problem and perform the same tasks in the same time frame organized in a standardized way. Clinical, because the tasks are representative of those faced in real clinical situations, the examination entails the clinical aspects of a health worker. An examination, that declares those who are competent/skilled to handle patients¹.

History of OSCE

OSCE was first developed at the University of Dundee, Scotland in the early 1970s by Dr. Ronald Harden and colleagues. Building on the success of OSCEs in undergraduate medical education, the Royal College of Nursing Institute nurse practitioner program first pioneered the use of the OSCE in advanced nursing, beginning in the early 1990s. worldwide, 50% of countries practicing the OSCE now. There is a national OSCE in Canada, taken by all medical school¹.

Goal and purpose of OSCE

The goal of an OSCE is to help in the learning process of health science students and to produce competent health workers thus developing staff development. The skills typically assessed through OSCE are interpersonal and communication skills, History-taking skills, Physical examination of specific body

systems, Mental health assessment, Clinical decision-making, formation of differential diagnosis, Clinical problem-solving skills, Interpretation of clinical findings and investigations, Management of clinical situations, including treatment and referral, Patient education, Acting safely and appropriately in an urgent clinical situation. The purpose of the OSCE is to provide feedback on performance, evaluate basic clinical skills, measure minimal competencies, and provide practice of the LEARNER².

Organize an OSCE

Harden's 12 Tips for Organizing an OSCE

- What is to be assessed?
- Duration of station
- Number of stations
- Use of examiners
- Range of approaches
- New stations
- Organization of the examination
- Assigning priority
- Resource requirements
- Plan of the examination
- Change signal
- Records

OSCE Station

It is the region where the skills are demonstrated by the candidate. The observer checks and put tick mark (✓) against the skill shown in check list. The OSCE examination consists of about 15-20 stations each of which requires about 4-5 minutes of time. All stations should be capable of being completed in the same time. The students are rotated through all stations and have to move to the next station at the signal. Since the stations are generally independent students can start at any of the procedure stations and complete the cycle. Thus, using 15 stations of 4 minutes each, 15 students can complete the examination within one hour³.

The types of station

- (i) Procedure Station:** The student is expected to perform a decided task in front of an observer who observes the student while doing the task and gives marks as per the provided checklist⁴.
- (ii) Response Station:** The student is expected to respond to certain questions, either based on the previous procedure station or chosen separately to evaluate areas of knowledge, interpretation, problem solving etc⁴.
- (iii) Question stations:** are a type of Response stations, meant to test the knowledge part of the skills tested in prior stations. (knowledge on practice) Sometimes response station and question station will be combined together. It is called as couplet station. It depends upon institution⁴.
- (iv) Rest Station:** These stations are meant to give a break to the students⁴.
- (v) Critical Stations:** These stations are the must pass stations as they are meant to judge the most important and critical component of students curriculum⁴.

The points are to be remembered before arranging for the OSCE

Depending upon the curriculum, purpose and domain, the station must be clearly defined. Identify the skills which the student must learn and thus need to be assessed. Depends on the competencies to be assessed in the examination, create the station. Each task assigned is identified as an OSCE. If standardized patient (may be volunteers or paid employee) are involved they must be properly trained and given clear and detailed instructions to maintain uniformity on their part. It is a good practice to observe standardized patients do their part in front of a clinician⁵.

The major components of OSCE

1. The (examination) coordinating committee
2. The examination coordinator
3. Lists of skills, behaviors and attitudes to be assessed
4. Criteria for scoring the assessment (marking scheme of checklist)
5. The examinees
6. The examiners
7. Examination site

Examination station setup

1. Time and time allocation between stations
2. Anatomic models for repetitive examinations (Breast, Pelvic/Rectum)
3. Couplet Station
4. Examination Questions
5. Environment of Exam Station
6. Examination Station Circuit. Patients Standardized or Simulated Instruction to Patients
7. Timekeeper
8. time clock and time signal Contingency Plans
9. Assessment of Performance of the OSCE

Construct OSCE

Checklist is the most important component of OSCE/OSPE. Before preparing discuss with the experts and review the literature to prepare items in a checklist. Check list contains the vital steps which the examiner want the students to follow to accomplish the identified procedure to fulfill the set objective. Checklist should be complete with list of material required for that station, instructions to technical staff, with model answers and marks distribution. Each step in the checklist can be given same or differential marks depending upon the significance of that step over another⁶

Points to be considered in developing a check list of OSCE

Identify and describe clearly each of the specific actions desired in the performance. Add to the list those actions which represent common errors if they are limited in number and can be clearly identified. Arrange the desired actions and likely errors in the approximate order in which they are expected to occur. Provide a simple procedure for numbering the action as it occur⁷.

Scoring the skill

Tick behavior if adequate performance is observed. Count the total score as indicated. Divide the total score obtained against the total possible score times 100%.

Weight of skills: A mark is always provided against any correct maneuver. However some (parts of) skills must be given more weight because of their importance. Before subjecting students to the station it is good to review and validate by giving to the experts and reliability. Can be test by mock practice with PG students or junior teachers. This makes sure that the task expected of the student can be accomplished within the time

Performing OSCEs

Although OSCEs are performed in many settings in regard to the exam purpose, the organizing institution, and available facilities, they all share similar procedures. On the examination day, the following steps are followed in sequence⁸:

1. **Registration:** The first step is the registration. Ask the student to show the examination hall ticket and an identification card. Be reminded about the exam rules. Be checked for things which are allowed and other not allowed things. Provide an envelope which contains ID badge, stickers, a pencil, a notebook or clipboard (both with numbered blank papers), etc. to the student⁸
2. **Orientation:** The next step is orientation. An orientation video may be shown. Here: Exam format, procedures and policies will be reviewed. Introducing to team and team leader. Instructed about starting

station and how to proceed. The questions will be answered if there is any doubt to the student (and not allowed beyond this step)⁸.

3. **Escorting to exam position:** Now it is exam time. The students will be escorted to the station. They will stop by the assigned room door until a long bell / buzzer announces the start of the exam⁸.

4. **Station Instruction Time:** This is one or two minutes to read the instruction about this station situation, patient, and required tasks. Read carefully. At the next bell / buzzer enter the room⁸.

5. **The Encounter:** Start to encounter with the simulated patient. This is a 5-20 minute encounter. Perform the required tasks. Stop at the next bell / buzzer⁸.

6. **Post Encounter Period:** Next is a question period⁸.

There are some differences here. Some OSCEs will have no post encounter periods. Some will have one or two minutes of the encounter period assigned to an oral question asked by the examiner inside the exam room. No more communication is allowed with the simulated patient. Others have written questions to be answered on paper or computer outside the exam room for 5-10 minutes. At the next long bell / buzzer, the first station ended as well as the next station has started. After completing the task the student have to proceed to the next station quickly as it is the same long bell / buzzer at step 4⁸.

7. **Repeat Steps :** Repeat the steps until the students have been in all the stations. Some OSCEs will offer one or two short rest periods⁸.

8. **Exam ended / Escorting to dismissal area:** After the exam, the students will be escorted back to the dismissal area for signing out. The students will be asked to handle back all what they had received eg: the papers, and the pencil. The students may also be asked to stay without outside contacts for some time (sometimes hours) for exam security reasons⁸.

Advantages: It provides an opportunity to test a student's ability to integrate knowledge, clinical skills, as well as communication with the patient which is a must for any student aspiring to become a successful clinician. This method removes the bias on the part of examiner simultaneously providing opportunity to provide one to one constructive feedback to students for improvement. All the students undertake similar station and are judged on common parameter thus permits uniform and reproducible level of assessment. It provides opportunity to judge large number of skills covering most of the topics. It provides an opportunity to know the overall approach of the student towards patients and his problems. The structure of examination is flexible and easily adaptable as per local needs to the subject and department. Overall a reliable, valid and reproducible method both for formative as well as summative evaluation. Improvement in observation skills. Provide a safe way for trainees to practice skills without putting patients at risk. Enhance skills acquisition through hands-on approach. Provide opportunities for teaching as well as assessment and improve student confidence. Thus, provide valuable information to faculty about an individual's competency in particular situations. Identified as a satisfactory way of assessing communication, clinical skills, knowledge and intention².

Disadvantage: Development and administration are time consuming and costly. Offer opportunity for compromised test security. There is risk of observer fatigue. Observer has to record the performance of several candidates on lengthy check lists. Require careful organization. This method requires extensive planning and preparation on the part of examiners. It is difficult without team effort and administrative support. It requires more labor, time and resources. Some people also feel that it breaks the clinical competence into fragments and we tend to evaluate our students in a fragmented manner⁴.

Major appraisal: OSCE should not be seen as a replacement for something - for example, a case presentation or viva. It should be supplementing other tools. Using multiple tools helps to improve the reliability of assessment by taking care of content specificity and inter-rater variability. At the same time, one should not be over-enthusiastic to use OSCE type examination for competencies, which can be effectively tested by means of a written examination⁵.

INDIAN EXPERIENCES WITH OSCE:OSCE has been by and large used as an assessment tool for formative assessment of undergraduate medical students at a few centers. Most of the faculty is not oriented to its use, and not many universities have incorporated it in summative assessment plan for the undergraduates. Probably this is because the Medical Council of India has yet to recognize and recommend it as an acceptable tool for summative assessment⁶.

Summary:The main features of OSCE are that both the process and the product are tested giving importance to individual competencies. The examination covers a broad range of clinical skills much wider than a conventional examination. The scoring is objective, since standards of competence are preset and agreed check lists are used for scoring. Where questions are asked in response stations, these are always objective. Simulations can be used for acute cases and there is scope for immediate feedback. Patient variability and examiner variability are eliminated thus increasing the validity of the examination.

Conclusion:OSCE/OSPE is an assessment tool in which all possible components of clinical competence such as history taking, physical examination, simple procedures, interpretation of lab results, patient management problems, communication, attitude, ethics etc. can be tested using agreed upon check lists.

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