OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)

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ABSTRACT

The Objective Structured Clinical Examination (OSCE) was first described by Harden in 1975 as an alternative to the existing methods of assessing clinical performance. The OSCE was designed to improve the validity and reliability of assessment of performance, which was previously, assessed using the long case and short case examinations. Since then the use of the OSCE has become widespread within both undergraduate and postgraduate clinical education. We recognize that the introduction of the OSCE into an existing assessment programme is a challenging process requiring a considerable amount of theoretical and practical knowledge. The two parts of this Guide are designed to assist all those who intend implementing the OSCE into their assessment systems. Part I addresses the theoretical aspects of the OSCE, exploring its historical development, its place within the range of assessment tools and its core applications. Part II offers more practical information on the process of implementing an OSCE, including guidance on developing OSCE stations, choosing scoring rubrics, training examiners and standardized patients and managing quality assurance processes. Together we hope these two parts will act as a useful resource both for those choosing to implement the OSCE for the first time and also those wishing to quality assure their existing OSCE programme

Keywords: OSCE, Assessment of performance, stations

Introduction:

Evaluation tool have far reaching consequences for students in their success or failure, consequently educators have the responsibility for development of testing devices or procedures that fairly evaluates student’s achievements and yields accurate results. The traditional system of practical examination in nursing education consists of either assigning a procedure to a student or a patient for identifying the needs on a priority basis for giving care, this depends upon student’s ability and availability of the patient for a particular procedure. In spite of the innovations in the mode of evaluation of student’s performance, the importance of conventional system of practical examination cannot be denied.

Definition:

1. A method of clinical/practical examination where predetermined decisions are made on the competencies to be tested and checklists incorporating important evaluable skills are prepared
2. An OSCE is a type of examination often used in health sciences. It is designed to test clinical skill performance and competence in a range of skills. It is a practical, real-world approach to learning and assessment.

Meaning and concept of OSPE:

Objective structured practical examination (OPSE) is a new pattern of practical examination. In OPSE each component of clinical competence is tested uniformly and objectively for all the students who are taking up a practical examination at a given place. Through OSPE one gets a reasonable idea of the extent of achievement of each student in every practical skill related to a particular discipline. It can be used for formative and summative evaluation.
Objective Structured Clinical Examination consists of a series of stations that examines the competency of students in taking histories, practicing specific clinical tasks, and interpreting some clinical data. There are two types of stations in this assessment method:

1. Practically-based - Students are given a written instruction and have to carry out a procedure.
2. Question-based - Students have to answer questions on their findings at the previous station and interpret these findings. The questions may be open-ended or of multiple-choice type.

Students are assessed by examiners through a previously-determined, objective marking scheme. OSCE can be adapted into other disciplines such as science and engineering.

Domains of OSCE:

1. **Objective:** The OSCE content and scoring procedures are standardized. Each examination station is designed to focus on an area of clinical competence. A standardized scoring tool is used to record what you do or do not do well.

2. **Structured:** Every OSCE candidate experiences the same problem, and is asked to perform the same task, within the same timeframe. The students will be exposed to the same level of difficulty, no matter where the examination is taken, and is marked using the same marking scheme.

3. **Clinical:** The tasks in each OSCE station represent real-life clinical situations. These assess your ability to apply clinical knowledge and skills when, for example, meeting with a patient, writing an admission or discharge order, conferring with a colleague, etc.

4. **Examination:** An OSCE enables a reliable assessment of a candidate’s competence. OSCEs are suitable for use in high-stakes assessments, such as the nursing examinations.

**How to organize an OSPE?**

In order to organize an OSPE one has to spell out objectives of practical experiences in a given discipline related to a particular subject such as practical examination in medical surgical nursing each student is supposed to,

1. **Demonstrate practical skills:** this may be done by assessing a student to,
   a. Monitor and record oral temperature.
   b. Convert 39 degree to F.
   c. Attach a heart monitor to a patient.
   d. Test urine for sugar.
   e. Start an IV drip on a patient.

2. **Make correct and accurate observations:** this may be done by assigning a student to,
   a. Interpret type of fever from the given graph.
   b. Identify the type of arrhythmia from the ECG graph provided.
   c. Differentiate between normal and abnormal ECG.
   These questions may not require the examiners to observe the student in action. These questions can be answered on a paper which can be collected later for evaluation.

3. **Analysis and interpret data:** this is one of the important skill components to be judged for the continuity of patient care. The nurse has to perform this task where she may come across normal and abnormal data in relation to patient’s investigation reports. The student asked to interpret,
   a. Hamogram: normal or abnormal
   b. Liver function test reports.
   c. Renal function test reports.
   d. Laboratory reports.

4. **Identify patient’s problems:** in order to organize her work the nurse has to identify the patient’s problems and set priority so as to clear to the immediate needs of the patient, such as to identify,
   a. Dyspnoea on the basis of her observations.
   b. Rigor following blood transfusion.
   c. Coning following lumbar puncture.
   d. CSF Rinorrhoea following head injury.

5. **Plan of alternative nursing interventions in a given situation:** in order to provide need based care the nurse plan’s alternative nursing interventions, as in case of air way obstruction the student nurse is expected to,
   a. Keep the patient in side laying position?
   b. Do oropharengal suction?
c. Check and record vital signs.

d. Start oxygen inhalation if required.

e. Keep the things ready for endotracheal intubation.

f. Assist the doctor in intubating the patient.

In order to assess the certain practical skills, the OSPE is organized in the form of several stations through which the candidate rotate till complete one full round.

**Types of stations:**

<table>
<thead>
<tr>
<th>SI.No</th>
<th>Stations</th>
<th>Question</th>
<th>Method of scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Procedure station</td>
<td>Check and record BP</td>
<td>Observed and scored by the examiner A using checklist</td>
</tr>
<tr>
<td>2</td>
<td>Question station</td>
<td>List 5 factors which help in maintaining BP</td>
<td>Answer on a sheet provided.</td>
</tr>
<tr>
<td>3</td>
<td>Procedure station</td>
<td>Take oral temperature and record it</td>
<td>Observed and scored by the examiner B</td>
</tr>
<tr>
<td>4</td>
<td>Question station</td>
<td>Convert 39 degree C to F by using formula</td>
<td>Answer a sheet provided</td>
</tr>
<tr>
<td>5</td>
<td>Procedure station</td>
<td>Test the urine albumin and record it</td>
<td>Observed and scored by the examiner C</td>
</tr>
<tr>
<td>6</td>
<td>Question station</td>
<td>List five causes of albinuria.</td>
<td>Answer on a sheet provided.</td>
</tr>
</tbody>
</table>

**How to score students in OSPE?**

1. For each specific skill, a checklist is prepared by breaking the skill being tested into essential steps and scores is assigned to each step which is proportional to the importance of the steps related to a particular procedure.

2. The objectivity in assessment is achieved by getting each component tested at one particular station by the same examiner and has the students rotate through all the students.

3. The time allowed is same for all the stations, 3-5 minutes is the length of time allocated to each station.

**Preparation and Requirements of the OSCEs process**

Application of OSCE requires well preparation in advance including but not limited to:

1. Series of timed framed stations.

2. Enough physical space with optimum light, ventilation, and seats

3. Close to the reality of clinical practice scenario stations and task that are similar for all examinees (standardized).

4. Sufficient, updated and appropriate exam equipment, tools and materials.

5. Special room with sufficient privacy for student and standardized patients.

6. Standardized patients for applying the required skills on.

7. Coaching for instructors.

8. Examinee rotates through all stations.

9. Each station aims to assess one or more specific clinical skills.

10. Development or adopting case scenarios with continuous updates.

11. The stations should be clearly marked.

12. Training for standardized patients who are real patients and programing the simulated dolls to present the special clinical problems.
13. Implementation guidebook.
14. Clear directions of flow for each station.
15. Pre-determined key answers with well-designed scoring sheets.
17. Panel of nurse experts to ensure validity and accuracy of stations.

Advantages:
1. Provides a uniform marking scheme for examiners and consistent examination scenarios for students.
2. It provides an authentic way to assess medical students including pressure from patients.
3. Generates formative feedback for both the learners and the teaching program. Immediate feedback collected may improve students’ competency at subsequent stations and even enhance the quality of the learning experience.
4. Minimizes the effect of cueing: When students go to a station, they will need to diagnose patients’ problems or carry out some clinical procedures. When they go to a subsequent station, they have to answer some questions relevant to their diagnosis or clinical tasks. However, students cannot go back to correct any mistakes or omissions on what they did in the previous station.
5. More students can be examined at any one time. When a student is carrying out a procedure, another student who has already completed that stage is answering the question at another station.
6. In the Objective Structured Clinical Examination, the setting is more controlled (only two variables exist: the patient and the examiner) and a more objective assessment of the student’s clinical competency can be made.
7. Provides more insights about students’ clinical and interactive competencies.
8. It can objectively assess other important aspects of clinical expertise, such as physical examination skills, interpersonal skills, technical skills, problem-solving abilities, decision-making abilities, and patient treatment skills.

Disadvantages of Objective Structured Clinical Examinations
1. It requires an extensive amount of organizing.
2. It is expensive in terms of manpower, resources and time (such as number of examiners, patients, and even space of examination room)
3. It may discourage students from looking at the patient as a whole because the students’ knowledge and skills are being put into compartments.
4. The assessment examines a narrow range of knowledge and skills and does not test for history-taking competency properly. Students only examine a number of different patients in isolation at each station instead of comprehensively examining a single patient.

Steps in developing an Objective Structured Clinical Examination:
1. Decide the types of skills to be examined
2. Decide the types of assessment (such as a uniform checklist)
3. Consider the number of skill assessment stations needed (it is recommended to have 10 to 15 stations, and six minutes for each station) because the length of the examination is determined by the number of assessment stations and the time each candidate will spend at each station.
4. Allocate resources for the examination (such as space for examination rooms, marking sheets and plastic models)
5. Prepare the staff resources needed (including examiners, timekeepers and patient/volunteers)
6. Determine/arrange the day/period of exam
7. Conduct a review/evaluation of the arrangement of the exam after it is over
8. To design concise marking schemes that focus on actions that distinguish between good and poor performance
9. To provide marking scheme instructions on what students would do at each station for the examiners
10. To provide instructions which outline exactly the task required at each station for students
Marking Rubrics Below is a sample of the OSCE rubric:

<table>
<thead>
<tr>
<th>Marking Rubrics</th>
<th>Excellent</th>
<th>Proficient</th>
<th>Average</th>
<th>Poor</th>
</tr>
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<tbody>
<tr>
<td><strong>Diagnosis:</strong></td>
<td>Able to give an excellent analysis and understanding on the patients’ problems and situations and applied medical knowledge to the clinical practice and determined the appropriate treatment</td>
<td>Able to demonstrate medical knowledge with a satisfactory analysis on the patients’ problems, and determined the appropriate treatment</td>
<td>Showed a basic analysis and knowledge on the patients’ problems, still provided the appropriate treatment</td>
<td>Only able to show minimal level of analysis and knowledge on the patients’ problems, unable to provide the appropriate treatment</td>
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<td><strong>Problem-solving skills:</strong></td>
<td>Able to manage the time to suggest and bring out appropriate solutions to problems; more than one solutions were provided; logical approach to seek for solutions was observed</td>
<td>Able to manage the time to bring out only one solution; logical flow was still observed but there was a lack of relevance of the flow</td>
<td>Still able to bring out one solution on time; logical flow was hardly observed</td>
<td>Failed to bring out any solution in specific time; logical flow was not observed</td>
</tr>
<tr>
<td><strong>Communication and interaction with patients:</strong></td>
<td>Able to get detail information needed for diagnosis; gave very clear and detail explanation and answers to patients; paid attention to patients’ responses and words</td>
<td>Able to get detail information needed for diagnosis; gave clear explanation and answers to patients; attempted but only paid some attention to patients’ responses and words</td>
<td>Only able to get basic information needed for diagnosis; attempted to give a clear explanation to patients but omitted some points; did not pay attention to patients’ responses and words</td>
<td>Failed to get information for diagnosis; gave ambiguous explanation to patients</td>
</tr>
<tr>
<td><strong>Clinical skills:</strong></td>
<td>Perfectly performed the appropriate clinical procedures for every clinical tasks with no omission; no unnecessary procedure was done</td>
<td>Performed the required clinical procedures satisfactorily; committed a few minor mistakes or unnecessary procedure which did not affect the overall completion of the procedure</td>
<td>Performed the clinical procedures at an acceptable standard; committed some mistakes and some unnecessary procedures were done</td>
<td>Failed to carry out the necessary clinical procedures; committed lots of mistakes and misconception about operating clinical apparatus</td>
</tr>
</tbody>
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Conflict of Interest: None

Reference and Resources:


