

Implementing OSCE in Radiation Oncology and COVID-19 Era: The Way Ahead

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ABSTRACT

Objective structured clinical examination (OSCE) is a well established, versatile, reliable, and effective tool for the assessment of practical skills of medical professionals in an objective manner. It has proven to offer certain advantages over conventional practical examination methods in terms of its ability to add transparency to the examination and remove issues such as bias and favouritism sometimes reported with former methods. In India, though OSCE has been initiated and implemented in some of the specialities like paediatrics, ophthalmology, otolaryngology and dentistry but it is still in a nascent stage. There is a need to familiarize both medical students and faculty in our institutes so as to accept and include OSCE as a part of post graduate exit examinations in India. This article analyses the OSCE format including OSCE stations, its various attributes and important issues like the advantages of OSCE, relevant problems associated with it and their solutions. The article carries a special perspective on implementation of OSCE in radiation oncology post graduate examinations. Lastly, with the emergence of the COVID-19 and its adverse implications on medical education, and the prospects of a prolonged COVID-19 pandemic, the article deals with an approach to safely conduct OSCE as a part of post graduate examinations to avoid unnecessary delays in the exit of the post graduate students upon completion of their residency, to enable them to join as specialists at their new work places.

Keywords: OSCE, assessment, radiation oncology, OSCE in COVID-19 era

INTRODUCTION

“Objective structured clinical examination (OSCE) was developed by Harden and his colleagues, as an assessment tool, to accurately evaluate the candidate’s clinical skill and performance”^{1,2}. Ever since its introduction in the late 1970’s, OSCE has been used as an assessment tool in various medical education and physician certification exams. Over the last several years it has generated an increasing interest with evolving changes in medical education, evaluation, and certification methods.³ In the United States, Medical Licensing examination board has implemented OSCE model for not only assessment of foreign medical graduates, but also of American medical graduates^{4,5,6}. Outside the US, OSCE has been adopted in many medical institutions worldwide. In Asian context, countries like Singapore, Oman, Taiwan have introduced OSCE to most medical schools in recent years.^{7,8,9} In India, presently, though implementation of OSCE has been initiated in a few specialties like paediatrics, ophthalmology, and otolaryngology^{10,11} experiences are limited and there is a need to sensitize both the students as well as faculty members with respect to format and content, of OSCE and its advantages.

The aim of this review article is to provide a detailed understanding of OSCE and the attributes that make OSCE effective. The article has special perspective on potential use of OSCE in post graduate radiation oncology examination in medical

colleges in India and outlines the list of measures for successful implementation of OSCE for the same. Last but not the least, with the worsening situation of COVID -19 pandemic with each passing day, we are also aware of the problems being faced in medical academia such as conducting the medical post graduate examinations, delaying the exit of residents already having completed their training, and that similar problem could be faced in times to come, we have come up with certain suggestions to conduct the OSCE safely in these difficult COVID-19 times.

Need for OSCE

The conventional and existing model of medical post graduate practical examinations in India comprises of long case, short cases, spotters and a grand viva. These conventional examination methods have some serious short comings such as a lack of objectivity and uniformity in assessing the skills of different students, and the inability to test the communication skills of students. Moreover, the traditional format allows bias and favoritism to creep in, and does not allow standardization of different examiner's role, in evaluating the students. Often, the student's ability to clinically examine a patient, diagnose a disorder, and report it professionally is not analyzed objectively by examiners. To overcome these shortcomings, there is a need for introducing OSCE.

Advantages of OSCE

The OSCE format has numerous advantages and it can be incorporated into any medical speciality examinations.¹² Structure of the examination is objective in nature and promotes transparency and uniformity in assessment of the students. A large number of students can be evaluated within a short time period.¹³ The variation encountered in assessment of students on different clinical cases and topics is greatly reduced. Also, the inter-examiner variability is omitted when many students are assessed using an uniform and standardized format.¹⁴

There are several reports in literature which have evaluated the feasibility, reliability, and validity of OSCE in the medical and surgical fields.¹⁵⁻²¹ OSCE has been found to be a reliable tool to assess physical examination skills, clinical judgment and diagnosis, and interpretation of radiological and laboratory findings^{16,19,20,21}.

In addition OSCE also is useful to assess technical skills and even documentation and communication skills, such as end-of-life decisions^{17,18,19,20,21,22} which are normally not assessed by conventional examination methods. Literature further adds that OSCE examinations are more likely to assess qualities such as critical thinking and problem solving abilities not normally evaluated with conventional examination methods^{23,24}.

Problems with OSCE and the solutions

The major issues in implementing OSCE relate to time and money required in setting up OSCE. In many cases, the work and planning involved in setting up an OSCE is not only time consuming but also costly for the examiners²⁵. However, there are some reports in literature which infer that with a positive careful and well planned approach, the OSCE format can be implemented without any major hurdles and unmanageable organizational problems^{26,27}.

Some studies have reported the problem of insufficient time available to students for expected tasks at some of the OSCE stations.²⁶ To overcome this issue, the stations should be carefully planned and designed such that content is objective with short answer questions and there is adequate available time per station.

Format and structure of OSCE

The basic format of OSCE's is a series of assessment stations, planned and designed to accomplish specific tasks assigned to the students, to be completed within a required time period. The examiners, using previously determined

criteria and check lists, assess clinical knowledge and practical skills of the students using an objective-marking scheme.^{29,30}

The examiners may set up anywhere between 5 to 15 OSCE stations depending on the specific tasks to be assessed, allotting a time of about 5 to 15 min per station. The clinical competence of residents can be evaluated by assigning specific skills or tasks, such as taking a clinical history, performing a physical examination, formulating a differential diagnosis on the basis of physical or laboratory findings, planning appropriate treatment or counseling a patient on different aspects of their disease. In OSCE, each of these components is tested in designated station. Different formats can be combined within the OSCE stations, such as the use of standardized patients, laboratory data, equipment or slides, as previously described by Newble^{31,32,33,34}.

Setting up the OSCE

The usual considerations, requirements and steps involved in setting up an OSCE exam are as under:

1. Selecting the OSCE teams.
2. Identification of skills to be assessed and planning of OSCE stations
3. Recruitment and training of the standardized patients.
4. Formulation of objective marking schemes
5. Logistics of the examination process.

Requirements

Selecting the OSCE Team

The OSCE team includes examiners, timekeepers/helpers and real or simulated patients. Examiners should have experience with student assessment techniques and understand the standard OSCE protocol and checklist agreed upon at the outset. Examiners must assess the students objectively ensuring reproducibility of standardized marking scheme.²⁹

Identifying the Skills to be assessed

The various tasks of different types and varying difficulties provide a assessment circuit with aim to assess the students clinical knowledge and skills^{37,38}. The basic tasks include correct technique of history taking and demonstration of physical signs on clinical examination to formulate a differential diagnosis^{23,29,36}. More advanced tasks that can be assessed include requesting and interpreting investigations/image interpretation, practical management of emergency situations as well as decision making, communication, and handling of complex management issues^{1,37,39}. Such assessments are not feasible with traditional clinical examination methods.

Formulating marking scheme for OSCE

The marking scheme should be well planned and objectively designed. It should be concise, well focused and unambiguous aim to discriminate good performance from poor ones. The marking scheme must provide scores appropriate to the level of the student's performance²⁹. Standardized approach is recommended using checklists for clinical and technical skill stations, and global ratings should be used for communication skills and diagnostic task stations.^{31,40}

Use of standardised or Simulated Patient in OSCE

Standardized patients have been defined as "real" or "simulated" patients trained to present a clinical problem."²⁹ They can demonstrate symptoms and signs of a particular disease under a specific area of interest.^{33,41} Their use allows different students to be presented with a similar clinical assignment, thereby eliminating an important source of variability in assessment of the students. These simulated patients offer a reliable availability and adaptability, which allows simulation of clinical scenarios appropriate to the student's level of skill to be assessed^{29,42,43}. In addition, they can also simulate scenarios such as bereavement or terminal

illness to assess communication skills of the students.⁴³ However, it takes time and effort to train them in performing and understanding disease or clinical concept to be assessed, may involve making payments for hiring them to perform a role of a patient, thereby increasing the costs of examination. Still considering the advantages and versatility offered, it is often worth the cost^{2,42}

OSCE Logistics

OSCE requires adequate space for setting up various stations, and relevant equipment and materials for the exam. The manned or supervised stations should be planned to accommodate an examiner, a student and a real or standardized patient, as required. These should be planned in a way that discussions between a student-patient or a student-examiner are discrete and other students performing their tasks during the exam are not distracted or disturbed. The stations should be clearly marked and the order of movement should be specified with separate and well defined entry and exit channels. Simulated patients, if needed, may be hired actors or may be volunteers, depending upon the financial constraints.

Implementing the OSCE in radiation oncology

With respect to radiation oncology postgraduate exit exams, core assessment areas such as history taking, physical examination techniques for local tumor and regional/ metastatic involvement, interpretation of laboratory and imaging findings need special emphasis as they play a key role in determining the stage of a carcinoma and hence deciding the subsequent treatment plan. From therapeutic perspective, evaluation of knowledge and competence in use of radiation delivery modalities like tele-therapy; brachy-therapy and newer techniques like 3D CRT, IMRT, IGRT, SBRT, concepts of medical oncology including use of chemo-therapeutic drugs are key concepts that need to be evaluated. In addition, basics of radiation biology and

radiation safety are also required to be assessed.

We propose a tentative blue print (**table#1**) for planning OSCE stations and a protocol for conducting the OSCE in radiation oncology post graduate examinations. The exam can be scheduled over a period of 2-3 days with not more than 15 students a day using about 15 to 20 stations. Clear verbal or written instructions to the candidates on what is required of them in each particular station. The OSCE stations can be organised as described below.

1. Clinical performance examination (CPES) stations consisting of 5-7 stations with an allotted time of 10-15 minute per station depending upon the allotted task, assessing skills such as history taking, clinical examination, investigation and interpretation skills, together with clinical decision making. Some of these stations, such as history taking and clinical examination would require the presence of examiners/observer (manned, type E stations). An objective assessment of the trainee can be done by completing a predetermined checklist to evaluate the performance.

2. The OSEPS (Objective Structured Examination of Practical Skills) may consist of 8-10 stations, with about 5-7 minute per station to appropriately evaluate the student's conceptual knowledge and practical skills with spotters of radiation equipment, specimens, and multiple choice or short answer questions on different clinical topics, aspects of radiation biology and radiation safety. At most of these stations, the assigned tasks could be completed without the presence of an examiner (unmanned, type W stations) except one or two station involving a procedure or technical aspect. The students here would record their findings on the answer booklets provided for the purpose as has been done in some other studies⁴⁴.

Table #1. A blue print for OSCE stations in Radiation oncology (W: unmanned; E: Examiner present/ manned stations)

station No.	Station Category	Topic Covered	Station type
1	Conceptual	Radiation physics	w
2		Radiobiology and Radiation safety	w
	Spotters specimens		
3		Tele-therapy equipments	w
4		Brachy-therapy equipments	w
5		Radiation accessories	w
6		clinical specimen/ spotter	w
clinical case			
7		History taking	E
8		Physical examination	E
9		Differential diagnosis and appropriate investigations	w
10		Treatment plan and outline	w
Clinical concepts			
11		Basic surgical and medical oncology	w
12		Radiation treatment (3-D CRT, IMRT, IGRT, SBRT)	w
13		Targeted and hormonal therapy	w
14		Oncological emergencies	w
15		Critical and end of life counseling	w
16		Palliative care mmanagement	w

Below is an example of clinical OSCE station task.

Task–Clinical examination of a breast carcinoma patient

Points in this scenario to be scored in the check list would include:

1. Did the student explain to the patient about the nature of examination?
2. Did he obtain informed consent from the patient?
3. Did he obtain a precise clinical history?
4. Did he ask the patient to expose the breast and axilla or raise her arms above the head?
5. Did he examine breast and axillae on both sides with proper technique?
6. Did he palpate the abdomen (for any organomegaly)?
7. Did he palpate the supraclavicular nodes?
8. Did he take care not to cause any discomfort to the patient?

In this particular example, points 1, 2, and 8 would test the affective aspects of the student whereas points such 3, 4,5, 6, 7 would allow objective assessment of his physical examination skill.

Conducting the OSCE safely in the COVID era

WHO declared COVID-19 as a pandemic on 11 March 2020. This pandemic has caused major problems and presented challenges all over the world in practically

all fields of life. Even academic medical institutes have not been left unaffected, leading to suspension of their academic activities and delays in conducting exit examinations of the institutes. The present pandemic is unlikely to resolve anytime soon and it is anticipated that COVID-19 may turn into an endemic disease. Therefore it is critical to ensure that final year resident students are not delayed entry to the clinical workforce in times of healthcare crisis. However, it is also essential to assess clinical competency for graduation from medical school, and maintaining performance standards. In view of the above facts, we recommend following steps and protocol to conduct OSCE safely in the COVID-19 era.

1. The stations should be planned and set up in a way so that there are different entry and exits. Participant should enter and leave the examination area one at a time, maintaining social distancing. Care should be taken to ensure adequate physical separation between participants.
2. If actual patients are to be included in the examination process, they should be rigorously screened for COVID-19 prior to their inclusion in the examination process. In all patients, there should be no travel history to COVID-19 affected regions, or suspected/ sick family

members in the two weeks prior to the examination.

3. Similar COVID-19 screening should be done in case of examiners and students to be included in the examination process.
4. All the participants should be reassured that the people involved in the examination process would be thoroughly screened and that the safety precautions would be paramount.

COVID safety Protocol on days of the examination

1. Participants to be screened at entrance of building
2. Individual temperature taken and recorded on arrival
3. Individual travel history and declaration about last month of travel or contact with suspected / sick COVID -19 patients should be obtained
4. Everyone should wear masks
5. Hand sanitiser outside and inside every room
6. Avoid non-essential touching (such as handshaking)
7. Social distancing (except when examining patients)

CONCLUSION

The OSCE method of clinical assessment has shown obvious advantages compared to traditional clinical assessment, especially in terms of objectivity, uniformity transparency and versatility. It allows assessment of resident doctors' skills within a relatively short period of time, and over a broad range of clinical skills and issues. At the same time, OSCE removes issues of bias and prejudice in assessment of the students and allows them to go through the similar conditions and criteria for assessment.

With respect to radiation oncology, to enable inclusion of OSCE in the examinations would require creating familiarity with the OSCE format, both among students and faculty members. This will require several organised and structured measures such as (a) active participation and

contribution from the radiation oncology faculty of more than one academic institutions, (b) obtaining feed back regarding the format and content of the examination from postgraduate residents c) Workshops/meetings for validation, certification, and finalisation of OCSE protocol before its use in radiation oncology exit examinations in academic institutes in India.

Lastly, with the everyday worsening situation of the COVID-19 pandemic and the fact that it is unlikely to resolve anytime soon, it is paramount that the final post graduate examinations are not delayed but conducted in a safe environment, ensuring safety of everyone involved in the process. Therefore with a well planned lay out and proper precautions, OSCE can be conducted safely to avoid an unnecessary delay in the exit exams of the radiation oncology students at the end of their post graduate training.

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