

## EDITORIAL

# A BRIEF OVERVIEW REGARDING VARIOUS ASPECTS OF OBJECTIVE STRUCTURED PRACTICAL EXAMINATION (OSPE): Modifications as Per Local Needs

In view of the large turn out for admissions in medical institutions, considerably more and larger groups of students have been admitted in various programs. Consequently, we are facing multiple problems in teaching and examinations. Most of the institutions are still using the same conventional practical examination, adopted long time ago. While, the deficiencies observed in this examination are well known. The objectivity and validity in practical examination like any other examination is necessary to be observed. Therefore, adoption of a valid method for practical examination is needed for the evaluation of individual competencies of students with reliability.

### Introduction

It is well known that conventional practical examination has several problems,<sup>1-3</sup> specially in terms of its outcome. Although grading/marking should depend only on student's competence yet variability in experiments selected and examiners both affects grading in conventional examination, significantly. Further, the subjectivity involved in this examination also affects the correlation negatively between marks awarded by different examiners and performance of the same candidate<sup>4</sup>.

In such examination, the marks awarded, reflect only the general performance of the candidate without evaluating the individual competencies. Outcome does not match with the purpose of examination due to problems of non-objectivity in the whole procedure, lacking the test of attitudes as well. The examiners stress on the correctness of the final experimental result and do not judge or concentrate on the student's ability to perform and get the observations/result of an experiment.

### What is the Solution?

On the basis of such defects observed in the conventional practical examination several attempts have been made in medical and other institutions, in many countries, to get the solution of these problems. These attempts were largely related to the adoption of appropriate measures for bringing the practical examinations towards objectivity so that they may become valid and reliable.

Out of the various methods adopted, the objective structured practical examination (OSPE)<sup>4,5,6</sup> was largely tested on the basis of the success of Objective Structured Clinical Examination (OSCE)

used earlier in medical institutions. However, It is important to note that the process of modifications in OSPE is still carried out in different institution on the basis of local circumstances and implementation problems. The experts are now recommending OSPE for both the educational and assessment purposes even for other faculties as well.

In this connection, the non-awareness to the procedure, benefits of OSPE and examination of 400 to 500 students for a particular course with limited facilities are the major problems that subjective examination is not mended towards objective one which is equally true for both the private and public sector institutions.

### What is OSPE?

Objective Structured Practical Examination (OSPE) is an assessment tool in which the competence of a student is evaluated:

1. for general experiments; in terms of: Identification of equipment/accessories of experiment, procedure of experiment, handling of instruments, making observations/results, interpretation of results, conclusion.
2. for clinical experiments; in terms of: history taking, physical examination, simple procedures, interpretation of lab results, patient management problems, communication, attitude, etc.

For this purpose, an agreed check list and response questions are used regarding the above mentioned aspect for the evaluation of student's competencies in both the general and clinical experiments. During this evaluation students pass through a number of stations. The teacher/observer evaluates the student silently on some of the stations.

The OSPE examination ideally consists of about 15-20 stations for the examination of a particular course. However, number of stations may be reduced according to the higher number of students to be evaluated, i.e., a modification in OSPE as per need. But, in order to maintain the validity of exam, the time for each station should not be less than 4 minutes. Further, in a particular exam of a single course, all stations should be completed in the same period of time. The students are rotated through all stations and have to move to the next station at the bell. Thus, using 15 stations of 4 minutes duration

each, 15 students can complete the examination within 1 hour. Similarly, in an institution having large number of students the number of stations (4 minutes each) may be reduced to 10, 8, or 6. It will raise the number of students to be examined within 1 hour.

Each station is designed to test a component of clinical or experimental competence. At some stations, called the "procedure stations" students are given tasks to perform on subjects or on instruments only, they are not suppose to write any thing. At all such stations there are observers with agreed check lists to mark the student's performance (The examination committee of the department may formulate check list having suitable number of questions & marks for each of them, within the total marks allotted to a station). At other stations called "response stations", students write the answers of the objective type questions or interpret data or record their findings of the previous procedure stations<sup>4</sup>. These answers are marked later by the teacher at the end of exam.

It is important that the number of procedure and response stations may not be same in their number for a single examination. Their ratio may be determined from the facilities, staff and space available in the examination lab.

### **Simplest Examples Of Procedure & Response Stations for 1<sup>st</sup> Year Students:**

The number of questions and marks for each of them may vary in both type of stations reflecting importance of a question or the type of experiment given.

#### **1. Procedure Station:**

**Object:** To examine the blood pressure of a subject.

#### **Check List:**

1. Explains to the subject what he is going to do
2. Applies the pressure cuff correctly
3. Asks the subject to sit comfortably
4. Keeps the bell of the stethoscope correctly on cubital fossa?
5. Deflates the pressure from the cuff properly
6. Takes care to repeat the procedure to ensure correct reading of systolic & diastolic pressures
7. Thanks the subject at the end of recording?
8. Resets the instrument and closes it down properly?

#### **2. Response Station:**

##### **Questions.**

1. Write the name of instrument you have used at the first station.

2. Write the specific name of sound that you heard in the stethoscope.
3. What was the posture of your subject during measurement of BP?
4. Which of the arm should be used preferably for the measurement of blood pressure?
5. The instrument that you have used for BP measurement was aneroid or manometer type?
6. What was the Systolic and diastolic pressure of the subject in your experiment?
7. What was the unit of measurement.
8. Calculate and mention the average blood pressure of the subject.
9. Write down the name of the artery which was occluded during the measurement of blood pressure.
10. What is your conclusion about the result you have obtained, the subject is normal or abnormal?

#### **3. Procedure Station:**

**Object: To Observe & identify a prepared slide under the microscope.**

#### **Check list:**

1. Places the slide correctly at the stage of microscope.
2. Adjusts the binocular eye piece to his eyes for viewing the object?
3. Focuses the slide first in low magnification?
4. Uses oil immersion at high magnification?
5. Uses both the course & fine adjustment to focus the object given in the slide?

#### **4. Response Station**

##### **Questions**

1. Write the name of tissue that you have identified from the slide placed under the microscope at the earlier station.
2. Write the magnification of the objective which you have used to observe the tissue under the microscope.
3. Write the name of oil you have used to observe the tissue under 100X objective of the microscope.
4. Write the name of the part of microscope on which the tissue slide was placed on first station.
5. Write down the type of cells that you have observed from the section of tissue placed under the microscope.
6. Write down the name of the stain that may be used for the preparation of such slide.
7. Write down the name of the organ to which these cells and tissue belongs.

8. Is there any abnormal structure that you have seen in the tissue? If yes? write the name of that condition.

In this way separate stations may be prepared for various groups of students regarding different experiments they have already performed during semester. It is advised to not repeat the same stations for another group. However, if there are limited facilities and number of students are large, then for a single group duplicate stations may be used to complete two cycles at a time, provided lab space is enough. It will also enhance the number of students examined in an hour.

At the end of examination a separate questionnaire (preferably on likert scale) may be designed for students and teachers both to get feed back for the assessment of the process and to get information for future improvements in OSPE as per local needs.

#### Benefits of OSPE

OSPE is useful for any subject and the main benefit of OSPE is that both the examination process and the examinee are evaluated by giving importance to the individual competencies. OSPE can also examine both the clinical and experimental skills, better than a conventional examination. There is objectivity in OSPE and the standard to check the competencies are made earlier and agreed check lists are used for marking and evaluation. Similarly, there is no room for subjective questions, only objective questions are asked in response stations. However, those institutions having computer assisted practical softwares<sup>8,9</sup> or practical simulation equipments for various body systems, can be used best in OSPE. This examination removes the variability of experiments and examiner for a group of students or a class studying the same subject and thus it enhances the validity of exam.

In addition to the above points, OSPE provides integration of teaching and evaluation. Student take more interest due to Variety and keep themselves alert during the whole process of examination, which is not found in conventional one. If such examination is regularly used for formative assessment then it can enhance teacher-student interaction as well. This examination can be modified easily as per institutional circumstances and need. Further, large number of students can be tested within a relatively short time.<sup>4</sup> Hence, the process of OSPE is so educative that it is being recommended for formative assessment as well.

#### Restrictions

If proper planning, briefing to the students (before examination), preparation of procedure/response stations in an appropriate ratio (matching the number of students/groups) are not done, then the whole process of OSPE may become a failure. Therefore, all procedure and response stations must be assigned equal time with suitable check lists and response questions, agreed upon by the examination committee. In additions, if the number of students are large, then the selection of number of teachers conducting the OSPE for a class/group is very important. Generally, for the examination of a group of 15 students, at least 6 teachers are required at 15 stations (4 procedure and 12 response stations) to act as observers and organizers. They will ensure smooth flow through stations to complete the cycle, including a person, who is handling the bell, to indicate the shift of student to the next station. Another important restriction in OSPE is the availability of separate observer for each of the procedure station. This observer is necessary to evaluate students keenly, one by one, for the whole group/class, at a single procedure station.

#### REFERENCES

1. Edelstein DR, Ruder HJ. Assessment of clinical skills using video tapes of the complete medical interview and physical examination. *Med Teach* 1990; 12:155-162.
2. Stiliman PL, Brown DR, Redfield DL, Sabors DL. Construct validation of the Arizona clinical interview rating scale. *Educational and Psychological Measurement* 1977; 37:1031-38.
3. Newbie DI. The observed long case in clinical assessment. *Med Educ* 1991; 25:369-73.
4. Ananthakrishnan N. Objective structured clinical/practical examination (OSCE/OSPE). *JPGM* 1993;3(2):82-4.
5. Harden RM, Gleeson FA. Assessment of clinical competencies using an objective structured clinical examination (OSCE) In: *ASME Medical Education Booklet No. 8*. Dundee: ASME; 1979.
6. Harden RM, Stevenson M, Wilson DW, Wilson GM. Assessment of clinical competencies using objective structured clinical examination. *Br J Med Educ* 1975; 1:447-51
7. Hart IR, Honden RM, Walton HJ. Newer developments in assessing clinical competence. In: Hart IR, Honden RM, Walton HJ, editors. *International Conference Proceedings*. Ottawa: Congress Centre; 1985.
8. Ogilvie RW, Trusk TC, Blue AV. Students' attitudes towards computer testing in a basic science course. *Med Educ* 1999; 33: 828-831.
9. Sharmila T, Subramanya U, Reem RA, Ramnarayan K. Computer-Assisted Objective-Structured Practical Examination: An Innovative Method Of Evaluation. *Adv Physiol Educ* 2006;30:48-49.

---

#### Address For Correspondence

**Prof. Dr. Muhammad Abdul Azeem**, Department of Physiology, Ummal Qura University, Makkah, Saudi Arabia.  
**Email:** azenmu@gmail.com