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'OSPE'-A much needed evaluation tool today

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Introduction

An integral part of medical curriculum is proper assessment of competencies acquired by the student which is an important aspect of learning. [1] The conventional practical examination has several problems. It neither gives significant feedback to the candidate nor demonstrates individual competencies.

Assessment cannot be sufficiently done by single examination. Conventional methods and theory examination are highly subjective and as the method tests only few learning outcomes, it is essential to implement new methods. One of these newer methods is objective structured practical examination (OSPE).

OSPE is now an accepted tool in the assessment of practical skills in Pre and Para-clinical subjects in many medical colleges. It is a variant of OSCE i.e. objective structured clinical examination initially described by Harden and his colleagues in Dundee university.[2] OSPE is highly objective and all the candidates are exposed to predetermined set of questions and thus minimizing the subjectivity. It is comprised of several 'stations' in which examinees are expected to perform a variety of practical tasks within a specified time period against criteria formulated to test the practical skill, thus demonstrating competency of skills and/or attitudes[3].

The use of OSPE for formative assessment has great potential as the learners can gain insight into the elements making up their competencies as well as feedback on personal strengths and weaknesses.[4] This is a structured examination into which a variety of test methods can be incorporated.[5]

Pathology is an important basic subject in Modern medicine. It has many sub divisions like haematology, cytology, histopathology and clinical pathology. Peripheral blood smear examination is one of the basic investigations in the evaluation of hematologic disease. It has been made mandatory for the students to have knowledge about preparing, staining and interpreting a blood smear as per university syllabus.

This study was conducted to assess the improvement in student's peripheral smear preparation as well as interpretation skill after a lecture demonstration session using OSPE as an assessment tool as compared to conventional practical examination and to explore its feasibility as a learning and assessment tool in terms of time, space, and material and manpower requirement.

Material and Methods

The subjects for this study included 150 II MBBS pathology students. This study was done after taking approval from the institution ethical committee. OSPE

was conducted over a period of 3 days with 50 students per batch. The faculty involved were already trained in OSPE in a Medical education technology workshop. The students were informed earlier about the OSPE by displaying a circular for them. On the day of OSPE, a lecture was given to them on peripheral smear preparation, staining and interpretation. Then students were asked to do it practically and then viva was taken and scores given. Majority of students failed to make a good smear and stain it. Later on the smears were interpreted by the students.

Later they were oriented to OSPE by a short lecture. The assigned faculty for each batch demonstrated the skill practically. A structured check list for all stations was prepared and validated with the senior faculty members.

OSPE for peripheral smear included following stations

1) Peripheral smear preparation by wedge technique.

2) Staining that peripheral smear by leishman stain

3) Interpretation of that stained peripheral smear by observing it under microscope

First station was given 10minutes, second station 15 minutes and last station 15 minutes. The following check lists were used for assessment.

Check list for assessing quality of preparation of peripheral smear

1. Did the student clean the slides?
2. Did the student mix the blood thoroughly?
3. Did the student place a drop of blood at one end of the slide?
4. Did the student place the spreader at an angle of 30-45^0 at the edge of the drop?
5. Does the smear cover 2/3rd portion of the slide?
6. Does the smear have tail like projections?
7. Does it have vacuoles or air bubbles?
8. Is it uniformly distributed over the slide?
9. Is the smear not too thick or thin?

Check list for assessing staining of peripheral smear with Leishman's stain

1. Did the student dry the PS in the air and place it on the staining rack?
2. Did the student pour the stain on the slide with a dropper and cover the whole PS?
3. Did the student add double the volume of distilled water after 2 minutes and kept it for 15 minutes?
4. Did the student wash the PS in a stream of buffered water until it has acquired a pinkish tinge?
5. Did the student wipe the back of the slide clean and set it up right to dry?

Check list for assessing Interpretation of peripheral smear

1. Does the student examine quality of smear?
2. Did the student mention about chromia and RBC morphology?
3. Did the student comment on TLC and DLC?
4. Did the student comment on platelet adequacy?
5. Did the student mention about parasite?

Observations and Results

	% of students who could make a good smear after conventional briefing	% of students who could make a good smear after OSPE
Clean the slides	30	80
mix the blood thoroughly	50	95
Place a drop of blood at one end of the slide	65	98
Place the spreader at an angle of 30-45^0 at the edge of the drop	58	90
Does the smear has tail like projections	50	90
Does it have vacuoles or air bubbles?	80	15
Is it uniformly distributed over the slide?	56	88
Dry the PS in the air and place it on the staining rack	70	98

Table 1: Assessment of peripheral smear preparation skill of students

	% of students who could stain a smear after conventional briefing	% of students who could stain a smear after OSPE
Pour the stain on the slide with a dropper and cover the whole PS	75	100
After 2 minutes, add double the volume of distilled water and keep it for 15 minutes	66	98
Wash it in a stream of buffered water until it has acquired a pinkish tinge	77	99
Wipe the back of the slide clean and set it up right to dry	88	100

Table 2: Assessment of student's skill of staining peripheral smear with Leishman stain

	% of students who could write a proper peripheral smear report after conventional briefing	% of students who could write a proper peripheral smear report after OSPE
examine quality of smear	68	95
mention about chromia and RBC morphology	80	100
comment on TLC and DLC	85	100
comment on platelet adequacy	75	98
mention about parasite	68	90

Table 3: Assessment of student's peripheral smear interpretation skill

Result: Students showed significant improvement in the peripheral smear preparation, staining skills which are reflected in improvement in the accurate interpretation of smears by II MBBS students with OSPE.

Discussion

OSPE is not merely used as an evaluation tool but also as a method of assessment in the international medical school.[6] It assesses student's knowledge, different skills and attitude at the same time.[7]

It helped students not only to remember theory but also helped them to reflect on the outcome of their learning i.e. interpretation of peripheral smear. The feedback given by the students was based on a questionnaire. The feedback was constructive and showed high acceptance because of personal interaction and the individual attention they got in spite of crowd. OSPE made them realise that although they knew the skill, they were not well worse with it. Many students felt the manner of conduction non-threatening and comfortable.

The structured check list pattern also helped them navigate smoothly through the practical steps thus helping them to know their strengths and weaknesses, making OSPE a better examination method compared to the conventional one.[4] The evaluation of student by OSPE highlighted the objectivity in evaluating practical skills which was standardized and not affected by student personality and luck factor. They expressed satisfaction with this method of assessment and were confident in performing the skills.

A vast majority of students enjoyed OSPE because of its objectivity, more student assessment in less time, and uniformity. This finding is congruent with other studies in which OSPE was seen as a positive and a useful practical experience by students.[7, 8]

In our study, there was significant improvement not only in student's technical skill of peripheral smear preparation and staining but also in interpretation. In a study done by Dipankar Kundu et al,99% of students believed that OSPE helps them to improve and 81% felt that this type of assessment fits in as both learning and evaluation tools.[9] In another study done in pathology practical, the higher scores in OSPE were attributed to awareness of marking scheme in advance by the students and mechanical nature of assessment.[10] OSPE also helped the evaluators to assess the students in all the steps of the exercise, to have a better understanding of specific lacunae in student's performance and help the students overcome them.[10]

However the response stations in OSPE can become mechanical as questions become repetitive with each exam.[11] In Viva the examiner avoids repetitiveness by asking the same question in different ways.[9]

This problem of repetitiveness can be overcome by an elaborate OSPE bank.[12]

OSPE was found to be a better tool over the traditional method for assessing the practical skills of MBBS students in physiology, forensic medicine and biochemistry.[6] Other studies reported that OSPE helps to assess the performance grades of students.[1, 13-16]

Conclusion

This study confirmed the feasibility and student's acceptability of OSPE in evaluating practical skills and highlighted that demonstration and practice under supervision improved PBS preparation, staining and reporting skills significantly.

OSPE measured practical skills better as it was objective, valid and reliable method without examiner bias. Thus it has overcome the subjectivity of conventional method.

Not only students, but indirectly teachers were also evaluated for teaching each and every step with importance.

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