

Under the microscope: Assessment of microscope handling skills among II MBBS students

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Abstract

One of the most needed skills in the hematology laboratory is proper handling of microscope. In this regard, a study was undertaken to assess the psychomotor skills of II MBBS students in focusing a given stained peripheral smear under the microscope. Assessment was based on observation & scoring using a predetermined checklist provided to the teachers. Meanscore of students was 2.43 out of 3. Boys had somewhat better handling skills than girls. Students need to be emphasized about the importance of methodical focusing of slides

Key words: Proper handling of microscopes, microscope safety, focusing peripheral smear

INTRODUCTION

Examination of the peripheral smear is a part of the mandatory exercise performed by II MBBS students in their routine formative and summative practical exams. Student's observation of the peripheral smear provided is a skill and we often encounter panicky students who land up breaking the slide, adding to their agony and confusion during exams. Proper use and handling of microscope and methodical focusing of peripheral smear under oil immersion is taught to medical students in their first year physiology practical's. One of the most needed skills in the laboratory is developing effective microscope using. It is not only important from students perspective, but is also required for maintenance & safety of the microscopes, which is one of the costly equipment in the laboratory. Literature search reveals that there are scarce studies published on the skills of handling microscope by medical students.

The present study was undertaken to assess the psychomotor skill of II MBBS students in focusing a given stained peripheral smear under the microscope.

MATERIALS AND METHODS

Students of II MBBS were included for study. Each student was provided with a monocular microscope with inbuilt illumination system, oil and stained peripheral smear. Students were instructed to focus

the peripheral smear under the oil immersion. The time allotted to perform this skill was four minutes. Each learner was observed by a teacher and scored using a predetermined checklist. The learner was observed for performing the following five steps and scores allotted are as given in the parenthesis.

The learner

1. Identifies the side of slide containing the smear.(0.5)
2. Places the slide correctly on the stage of the microscope.(0.5)
3. Focusses the slide first in low magnification.(0.5)
4. Adds a drop of oil on the smear and uses oil immersion for identifying the smear.(0.5)
5. Uses fine/ coarse adjustment to focus the slide.¹

RESULTS

II MBBS students batch consisted of 98 students, of which, 81 students (82.65%) participated in the study. Forty students (49.38%) were boys and 41 students (50.61%) were girls.

A total of 77 students(95.06%) were able to identify the smeared side of the slide correctly. All the 81 students(100%) could place the slide correctly on the microscope stage. Only 20 students (24.69%) focused the slide first in low magnification and then in higher magnification. Seventy two students (88.88%) used oil immersion for identifying the smear and 73 students (90.12%) used fine adjustment to focus the smear. Maximum score of 3 was obtained by 12 (14.81%) students, and minimum score of 1 was obtained by one (1.23%) student.

The mean score of students was 2.43. The mean score of boys were 2.48 and girls were 2.38.

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Table: Performance of students based on observation by using checklist

Observations	Identifies the side of the slide containing the smear	Places the slide correctly on the stage of the microscope	Focusses the slide first in low magnification	Uses oil immersion for identifying the smear	Uses fine and coarse adjustment to focus the smear
No of students(n=81)	77(95.06%)	81 (100%)	20 (24.69%)	72 (88.88%)	73 (90.12%)

Eighty one percent of students felt OSPE as an evaluation tool for the practical exercise is fair and 62% of students perceived it as well structured practical examination pattern.

Fifty nine percent opined that structured pattern of evaluation covers the appropriate cognitive domain in assessing the knowledge and comprehension. 74% felt relevant psychomotor skills were assessed using agreed check list.

Thirty six percent of students perceived OSPE to be less stressful and 55% felt it to be useful than the conventional examination pattern. 42% opined that OSPE decreases the chance of failing in the exam and 72% felt it highlighted the area of weakness.

Sixty one percent of the students felt that the time given was too short; especially for observed stations and 47% felt they could comprehend the OSPE pattern of examination in comparison to traditional method.

DISCUSSION

As is your pathology so is your medicine as said by William Osler Pathology forms the basis of medicine and prepares students for clinical practice. The conventional practical examination is beset with several problems. The final score indicating overall performance gives no significant feedback to the candidate and are not based on demonstration of individual competencies.^{4, 5, 6}

Objective structured practical examination is one of the new exam system designed to make assessment objective, valid and reliable. Over the years, experience has led to the use of OSPE not merely as an evaluation tool and also method of assessment in the international medical school. This has largely been attributable to the feedback that OSPE gives both to students and teachers.¹

OSPE model in pathology was introduced for eighty one undergraduate medical students of second MBBS after briefing about the new system of exami-

nation. Feedback given by students was constructive which are presented in Table 1. OSPE was seen as a positive and a useful practical experience by most students (82%). We find this congruent with other study in which students perceived OSPE as a favorable experience that should be repeated regularly.¹

Feedback from students (74%) suggests that OSPE is an objective tool in evaluating practical skills. Students perceived OSPE scores as a true measure for essential practical skills being evaluated, standardized and not affected by student personality. Standard to check the competencies are made earlier and agreed check lists are used for marking and evaluation ^{4,7}.

Students provided positive feedback about the quality of OSPE performance in terms of the instructions of the exam (62%) and individual competencies being assessed (72%). Examiner variability can be reduced by adopting structured practical examination. In addition to the above points, OSPE ensures integration of teaching and evaluation. ⁷

The evaluation of OSPE by students highlighted some areas that need to be enhanced in future, such as inadequate time at procedure stations. OSPE was perceived as a stressful experience by 31% of students. This perception could be due to the fact that this was the first time that OSPE has been implemented in Pathology. Hence, it was a new experience for all medical students which made them anxious about it.

From the students' point of view, OSPE was acceptable and generated wide appreciation. Feedback from the students indicated that students were in favor of OSPE. The feedback provided scope for improvement and refining the method. It serves as a tool for testing multiple dimensions of student performance because it tests both skills as in performance exercises and knowledge. Present study was helpful in sensitizing the student towards OSPE.

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