

Hematology OSPE In The First Year MBBS Curriculum

- A Feasibility And Acceptability Study -

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Abstracts: Background and Objectives: The use of OSPE (Objective Structured Practical Examination) for formative assessment has great potential as the learners can gain insight into the elements making up their competencies as well as ongoing feedback on personal strengths and weaknesses. The first year MBBS students are required to perform one hematology practical during university exams (Maharashtra University of Health Sciences). One of the important practical, Differential Leucocyte Count (DLC), was therefore chosen to introduce the OSPE pattern in hematology assessment and study its acceptability and feasibility. Methodology: The study was conducted in the Department of Physiology. 100 students were introduced to OSPE by a short lecture and a role play. Seven important steps (skills) of the DLC practical were assessed. Feedback from students was taken by a questionnaire and from faculty members and laboratory assistant by interview. Results: More than 90% of the students accepted OSPE in terms of learning the steps of the practical, clinical relevance and fairness in assessment. However, majority of students felt that the physical and mental effort needed was greater. The faculty commented favourably on the objectivity of assessment and potential to give feedback to learners and the support staff commented on greater workload and time needed for OSPE. Conclusion: Our study showed a high acceptability among students and faculty towards OSPE as a fair, objective and unbiased method of assessment compared to traditional method. The resources required, however, were greater. The study highlighted a need for continuous faculty development and increase in human resources to develop a comprehensive OSPE bank in future [Bhinganiya P NJIRM 2015; 6(5):71-75]

Key Words: OSPE, Hematology, feasibility, acceptability, first year MBBS

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Introduction: An integral part of a medical curriculum is an appropriate assessment of the students' competencies under psychomotor domain. Assessment drives learning, but to foster active learning, assessment needs to be formative¹. Although many options are available to make assessment consistent, the Objective Structured Practical Examination (OSPE) is one of the preferred methods. This method is adapted from Objective Structured Clinical Examination (OSCE) by Harden and Gleeson^{2,3}. The OSPE assesses practical competencies in an objective and structured manner with direct observation of the students' performance at planned stations^{2,3,4,5}. In terms of the Miller's framework of development of clinical competencies, which focuses on four levels of assessment: knows, knows how, shows how and does, the OSPE assesses the third i.e. shows how level, focusing on the assessment of performance of specific skills in a controlled setting⁶. 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 weaknesses¹.

The university examination in Human Physiology involves traditional examination pattern consisting of Hematology and Clinical practicals. In Hematology practicals, students perform a single practical (eg Hemoglobin estimation, Total WBC count, Differential leucocyte count, etc) which is followed by the viva and assessment based on global performance rather than candidate's individual practical skills⁷. This mainly focuses on the "knows" and "knows how" aspects, i.e the base of the 'Miller's pyramid of competence'⁶. Thus it was felt that there is a need for a more objective and structured assessment method, feedback to the students to explain their weaknesses and improve their practical skills and sensitization towards a new assessment system of OSPE.

Our college is Armed Forces Medical College and students, after passing their MBBS, are posted to Field areas where there are limited resources and here lies the key role of individual practical skills and competencies. The "Vision 2015" document of MCI also focuses on the skills along with knowledge and attitude to form the 'Indian

Medical Graduate⁸. Thus the need was felt to inculcate the skills of psychomotor domain from the first year of Medical training.

Hence we wanted to modernize our assessment methods and make it more objective and competence based. OSPE was introduced as a formative method of assessment for the first time in the First MBBS Physiology course with the objectives

- To develop and implement OSPE in Hematology practicals in the first year MBBS curriculum.
- To study its feasibility in terms of time, space, material and manpower requirements.
- To assess its acceptability among students and faculty.

Material and Methods: The study was conducted with 100 first year medical students in the Department of Physiology at the Armed Forces Medical College, Pune, India after the approval from the Institutional Ethics Committee for Research on Human Subjects and obtaining a written informed consent from the participants. The students participating in the study were introduced to the OSPE system by a short lecture and a role play organized by four faculty members. A faculty development program for OSPE was conducted. A blueprint of the syllabus and structured checklist for all stations were prepared, discussed and validated with the senior faculty members.

A total of 100 students were divided into 5 batches of 20 each. Each batch was observed on a separate day by four examiners.

Students were oriented by an OSPE map and a printed instruction list before the start of the exam. The OSPE was conducted for the Differential Leucocyte Count practical, consisting of 7 steps including:

1. Preparation of two peripheral blood smears by correct method (3 minutes)
2. Selection of the smear for staining (2 minutes)
3. Staining the smear with Leishman's stain (2 minutes)
4. Adding a correct amount of buffered water (2 minutes)
5. Proper mixing of the stain and buffered water by gentle blowing (8 minutes)

6. Drying of the smear and observing under oil immersion microscope (4 minutes)
7. Examination of the stained blood smear and focusing any leucocyte (5 minutes)

At the end of the 5th day of the OSPE sessions, a 12 item feedback questionnaire was completed by all the students. The questionnaire was framed to see the acceptability of this new pattern (OSPE) for hematology practicals. In addition, we wanted to gain an insight regarding students' views about pros and cons of both the assessment methods (OSPE vis-a-vis Traditional examination). Nine items in the questionnaire used 5-point Likert scale with response options – Strongly agree, Agree, Not sure, Disagree and Strongly disagree. Three open-ended items were used to elicit their suggestions to improve OSPE, comments on conduct of OSPE and any other suggestions for better assessment.

The student participation was voluntary and anonymous. Feedback from four faculty members and one lab assistant was taken by interview. Statistical analysis of the 5-point Likert scale was done in terms of percentage of students.

Results: All 100 students (100%) completed the questionnaire. Students' responses to the close-ended and open-ended items in the questionnaire are summarized in Table 1 and Table 2 respectively. The feedback from the faculty members and hematology lab assistant are summarized in Table 3 and Table 4 respectively.

Table 1: Students' response to OSPE feedback questionnaire based on Likert scale

S. N	Item	Response of students				
		SA	A	NS	DA	SDA
1	The new pattern of examination (OSPE) is useful for learning the important steps of the practical.	57 %	39 %	4%	-	-
		96 %			-	
2	The time required to complete practical was adequate.	32 %	58 %	7%	1%	-
		92 %			1%	
3	The physical effort required for this	8%	38 %	33 %	19%	3 %

	pattern of examination was more than the earlier pattern.	46 %			21%
4	The mental effort required for this pattern of examination was more than the earlier pattern.	18 %	47 %	16 %	14% 4 %
		65 %			19%
5	The topic chosen was relevant clinically.	43 %	51 %	4%	1% 1 %
		94 %			2%
6	The topic chosen was important for assessment.	34 %	58 %	7%	1% -
		92%			1%
7	There was fairness in examination & assessment.	52 %	44 %	4%	- -
		96 %			-
8	Every student was given the same time to complete the practical.	38 %	52 %	8%	2% -
		90 %			2%
9	This pattern of examination is one of the best methods of assessment.	37 %	51 %	12 %	- -
		88 %			-

S A: Strongly Agree, A: Agree, N S: Not Sure, D A: Disagree, S D A: Strongly Disagree

Table 2: Students' response to open ended questions

S N	Item	%
10	What did you like the best in this examination pattern ?	
	Students felt that each and every step was observed and assessed directly and they liked the individual attention of the Faculty	72%
	Immediate feedback was given which helped them to remember the practical in a step wise manner	66%
	Helped to identify their mistakes	52%
	Reinforcement of important steps	60%
	As all the students had the same questions at each station and as the same check list was used, fairness in exam was appreciated and the role of luck factor was eliminated.	56%

11	What did you not like at all in this examination pattern ?	
	More of mental and physical stress because of the presence of faculty	52%
12	In what way could this examination pattern be improved ?	
	OSPE should be applied for all the topics during revision	78%

Discussion: OSPE being implemented for the first time in the department, this study was aimed at understanding its acceptability to the students and faculty and its feasibility as perceived by the faculty and staff. This study could form the basis of the future development to reform and refine OSPE as an assessment tool.

Our study showed that OSPE as a newer pattern for hematology assessment was highly acceptable among the students. Majority of them (>90%) agreed that OSPE was helpful in learning the important steps of the practical. OSPE pays more attention to the practical examination and can be utilized as a teaching as well as assessment tool^{9,10}. As OSPE is a formative assessment and ongoing feedback was given, the students agreed that this helped them to remember the steps of the practical. Its structured checklist 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 with the traditional examination¹¹.

Since all the students were exposed to similar types of questions with the same difficulty level, they felt that the checklist system is a fair and unbiased method with lesser element of luck playing any part in assessment. This was welcomed by the students. This is in line with other studies reporting similar findings^{12,13}.

Most of the students felt that the time allotted was adequate for all stations and the instructions were clear and adequate. However, with the presence of examiners at each observed station, students were intimidated and anxious. They felt physically and mentally stressful. Similar findings have been found by Allen R¹⁴.

Table 3: Feedback from faculty members (04)

1	As all the students are being observed for the same questions and assessed with the same checklist, OSPE is more structured and provides fairer assessment.
2	Since there is individual observation of performance, the common areas of weakness and strengths can be commented upon
3	OSPE requires man power and time management for a) Choosing the topic and preparation of checklist b) Setting the OSPE station c) Orienting the students to the new pattern d) Conduction of dry run e) Individual assessment of the students (the ratio of faculty to student was 3:20) f) Input to the students on each step of practical Due to multiple commitments towards the department, limited manpower, time constraints, the feasibility of conducting the entire OSPE exam becomes limited. Man power and resources to be increased for conduction of OSPE

Table 4: Feedback from lab assistant (01)

Work load is more for preparation of OSPE stations in comparison to traditional examination
Time required is more for preparation of OSPE stations

Majority of the students felt that OSPE was a more satisfying experience and suggested that more OSPE sessions should be conducted for all topics during revision. During the entire OSPE session, reinforcement was done for the important steps and the areas where majority of the students committed similar mistake were noted and at the end of the sessions, feedback was given. This was positively welcomed by most of the students as their areas of weakness were discussed and the correct approach in the examination was explained.

The faculty liked this new objective, structured, unbiased and fairer assessment method. However they suggested for increase in man power and

resources for conduction of OSPE. They also commented that the ongoing feedback of mistakes along with OSPE will be helpful for learning the steps of the practical and makes OSPE a method of teaching along with assessment. Favorable responses to implement OSPE for assessment has been found in a study by Duerson MC¹⁵.

In the process of setting OSPE, the Department of Physiology could develop a validated OSPE bank for future use. The feedback from the students was invaluable and it would facilitate in forming a more comprehensive, compact OSPE checklist which would evaluate more cognitive, psychomotor and attitudinal skills. This also emphasized the need of continuous faculty development in the field of medical education for its betterment. This also sent a clear message among students that achieving better practical competencies and not mere memorizing and recall is must for better grades.

Conclusion: In spite of the limited use of OSPE in majority of the medical colleges across India, our study which introduced OSPE for the first time in hematology practicals showed a high acceptability among students and faculty as a fair, objective and unbiased method of assessment compared to traditional examination pattern. This study also brought out that OSPE can be used a method of teaching. However the manpower and resources required would be higher. It also highlighted the need for a continuous faculty development in OSPE and preparation of a comprehensive OSPE bank in future.

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