

## A review of objective structured practical examination (OSPE) in pharmacology at a rural medical college

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### ABSTRACT

**Background:** 1. To evaluate the attitudes of undergraduate medical students towards objectively structured practical examination (OSPE) component of Pharmacology practical examination. 2. To investigate any gender differences and any influence of medium of instruction in school on these attitudes.

**Methods:** The scores of 40 undergraduate medical students were analysed at S R T R Government Medical College, Ambajogai, Maharashtra, India. A Likert scale containing 9 items was used to assess the attitudes of students towards OSPE in Pharmacology. Student perspectives regarding the OSPE were obtained by asking them to respond to a questionnaire.

**Results:** The study revealed that the OSPE was an acceptable tool in Pharmacology practical examination. The overall mean attitude score was 3.99. The response of male students towards OSPE (4.2) was more favourable as compared to that of female students (3.9) Students strongly agreed that OSPE covers wide range of skills and it is a good form of examination and learning experience. Majority of students were in favour of continuing OSPE as a method for examination in Pharmacology.

**Conclusions:** OSPE was found to be a valuable tool to check the depth of understanding of undergraduate students. OSPE can be used as an index of the learning attitude of students. The present study is a small step in a direction of changing the traditional patterns of practical examination to a more objective and reliable way of evaluation in Pharmacology. It will help in modifying teaching-learning strategies so that both, the teachers as well as the students can gain maximum advantage.

**Keywords:** Evaluation, OSPE, Pharmacology, Practical, Undergraduates

### INTRODUCTION

The objectively structured practical examination (OSPE), a reliable and established practical examination system, is being increasingly used in many medical colleges in India along with other developing countries like Bangladesh, Pakistan and Nepal.<sup>1-3</sup> OSPE is an instrument to assess the components in practical skills such as simple procedures, interpretation of lab results, communication, attitude etc. These are tested using agreed check lists and rotating the student round a number of stations some which have observers with check lists. The advantage of OSPE includes objectivity and uniformity in questions and marking of students.<sup>4,5</sup> Evaluation is a systematic process that consists of finding out the extent to which educational objectives have been achieved by students.<sup>6,7</sup> No examination pattern currently available which can

fulfil all the criteria for assessment of students on the basis of their knowledge, comprehension, skills.<sup>8</sup> Also, there is a failure to evaluate students perspectives and feedback about traditional examination methods which are being practiced since decades.

The term OSPE is derived from Objectively Structured Clinical Examination (OSCE) in 1975 which was later modified to practical examination by Harden and Gleeson.<sup>9</sup> In an International Conference held in Ottawa in 1985, OSPE and OSCE techniques were introduced as a teaching and evaluation tool and its advantages were compared with disadvantages.<sup>10</sup> Being an objective parameter rather than subjective, OSPE pattern holds transparency in proper assessment of students.<sup>11</sup>

To evaluate the effectiveness of a particular examination methods, it is necessary that students attitude towards the pattern and conduct of examinations should be taken into consideration. The present study was planned to determine the attitude of undergraduate medical students towards the OSPE and to investigate any influence of sex and medium of instruction at school on these attitudes.

## METHODS

The study was conducted at Swami Ramanand Teerth Rural Government Medical College, Ambajogai, Maharashtra, India. The S R T R Medical College is affiliated to Maharashtra University of Health Sciences (MUHS), Nashik. Pharmacology is taught in 3<sup>rd</sup> to 5<sup>th</sup> semester of the MBBS curriculum in MUHS. The survey was held for the entire class of 4<sup>th</sup> semester in July 2011. The study was approved by the Institutional Ethics Committee.

We studied the attitudes of undergraduate medical students to evaluate OSPE as learning and teaching tool in Pharmacology. An informed verbal consent was taken from students. A Likert-type scale containing 9 items was used to assess the attitudes of medical students.<sup>12</sup> In a Likert-type scale the respondents are asked how strongly they agree or disagree to each item or statement.<sup>13</sup> The medium of instructions in examination was English. Students were required to indicate the agreement or otherwise with the 9 items by ticking one of the five alternative responses viz., strongly agree, agree, can't say, disagree and strongly disagree. The responses were graded using a differential scaling procedure – 5,4,3,2,1 for positive items (statements numbered 1,4,5,6,8,9) and 1,2,3,4,5 for negative ones (statements numbered 2,3 and 7). Mean attitude scores were calculated on each item as well as on the total scale. Using this technique, the scores can be interpreted as follows: 5 – most favourable attitude, 3 – neutral attitude, 1 – most unfavourable attitude.<sup>12</sup>

The behaviour of a person is strongly influenced by his/her attitudes.<sup>14</sup> They act as a connecting bridge between knowledge and practice. Our present educational system focus on primarily on imparting knowledge to the students, however, there is a felt need to take attitudes of the recipients, into consideration while formulating and developing the education and evaluation practices.

In our study we used a different methodological approach for conducting the examination. We have tried to modify the traditional examination pattern with the help of audiovisual aids. The students were taught the practical cum demonstrations using similar pattern throughout the year. They underwent first and second semester examination through traditional pattern of examination. We introduced OSPE as a examination tool in the last semester.

Responses were received from 40 students of whom 23 were male (57.5%) and 17 were female (42.5%). Out of which 33 (82.5%) have undergone their schooling from vernacular medium and 7 (17.5%) were from English medium schools. The OSPE was used in the spotter section of examination in pharmacology. It consisted of graphs, instruments, spots, laboratory animals, adverse drug reactions, pharmacy preparations along with various dosage forms. Photographs of each of them were used in the form of PowerPoint presentation. The photograph of each spotter was shown to students along with a set of questions. In the exam they were allotted 2 minute time for each spot as per guidelines of MUHS, Nashik. All the students were informed of the issue of anonymity and no identifying information was included in the questionnaire.

## RESULTS

**Table 1: Likert-type items used in the survey, with mean attitude scores.**

Sr. No	Item	Mean attitude score <sup>a</sup> (Maximum 5.0)
1	OSPE tests a wide range of skills	4.1
2	It is confusing to switch over from one exercise to another within a short period	3.3
3	OSPE is physically taxing	4.3
4	OSPE decreases element of luck	3.5
5	OSPE provides a fair and good means of evaluation	4.3
6	OSPE is a reliable type of examination	3.9
7	There is not much difference between OSPE and conventional form of practical examination	4.2
8	I prefer the OSPE to the conventional method of examination	4.0
9	OSPE is a good form of examination as well as learning experience	4.3

<sup>a</sup>Overall mean score: 3.99

The overall mean attitude score and item wise attitude mean scores are shown in Table 1 with the items used for assessment. The overall mean attitude score was towards favourable side except towards the point 'it is confusing to switch over from one exercise to another in a short period' (mean attitude score 3.3).

**Table 2: Students perspectives regarding OSPE.**

Sr. No	Questions	Yes		No	
		Number	Percentage	Number	Percentage
1	The questions asked were relevant.	39	97.5	1	2.5
2	Sufficient time was given to each student.	40	100	0	0
3	OSPE is the same as the traditional pattern of examinations (TPE).	2	5	38	95
4	OSPE covered a wide range of knowledge compared with TPE.	32	80	8	20
5	OSPE is more stressful compared with the old method (TPE).	8	20	32	80
6	OSPE is fair compared with TPE.	33	82.5	7	17.5
7	OSPE is easier to pass compared with TPE.	13	32.5	27	67.5
8	OSPE should be followed as the method of assessment for examination in Pharmacology henceforth.	34	85	6	15

**Gender analysis of attitudes**

The mean attitude score of male students (4.2) was more favourable than the female students (3.9). Male students strongly agreed OSPE as a good form of examination as well as a learning experience. They strongly disagreed with the point “there was no difference between OSPE and traditional pattern of examination.” Female students didn’t find OSPE as physically taxing. They also considered that OSPE provides a fair and good means of evaluation.

**Medium of instruction**

The vernacular medium students were more favourable (4.1) towards the OPSE than English medium students (3.9). The vernacular medium students strongly disagreed the point that ‘OSPE is physically taxing’ and ‘there is no much difference between the OSPE and TPE’. The English medium students were more favourable towards the point ‘OSPE provides a fair and good means of evaluation’. However they strongly disagreed to the point ‘OSPE decreases the element of luck’.

**Table 3: Gender analysis and effect of medium of schooling.**

	Gender		Medium of schooling	
	Male	Female	English	Vernacular
Mean Attitude score	4.2	3.9	3.9	4.1

**Table 4: Comparison between TPE and OSPE.**

Traditional Pattern of Examination (TPE)	Objective Structured Practical Examination (OSPE)
Subjective in nature	Objective in nature
Requires longer duration of examination	Curtails the time duration
Does not dependent on technical facilities like audiovisual aids, electricity	Dependent on technical facilities
Physically taxing to students	Minimises stress on the students
No observer fatigue	Observer fatigue present
Less logistic problems	High logistics problems
Difficult to maintain uniformity	Uniform difficulty level can be maintained
Chance of luck present	Eliminated chance of luck
	Wide range of topics can be evaluated
	Maintains transparency in evaluation

**DISCUSSION**

It is a well known fact that assessment drives learning. A good test must be acceptable to those using it, feasible,

valid and reliable. The objectively structured practical examination (OSPE) tends to reduce the subjectivity among the examiners while assessing students by having a set of identical or common questions / exercises.<sup>10</sup> OSPE is being increasingly used as an objective instrument for the assessment of the knowledge and skills of medical undergraduates.

The present study indicated that the OSPE was an acceptable tool considering the conduct of practical examination in Pharmacology at the undergraduate level. The spotters test a wide range of topics in Pharmacology and the students did not find this particularly confusing. The students agreed that the time allotted for each exercise was sufficient. However the students found difficulties to switch over from one exercise to another in short period of time. Increasing the time interval in between two stations can overcome this problem. Students suggested that OSPE covers a wide range of knowledge and considered it as a fair method of evaluation. Majority of the students were of opinion that OSPE should be followed as the method of assessment in Pharmacology.

There was a borderline difference in the attitudes of male and female students. On the contrary to expectations, students from vernacular medium of education were more favourable towards use of OSPE in future in Pharmacology.

Adoption of OSPE as a method for assessment leads to decrease in the time span of the examination. The assessment was uniform for all students and it reduced the stress of students by making them go through only one round of examination. The same set of exercises was given to all students eliminating the role of luck. The advantages of OSPE include faculty-student interaction, integration of teaching and evaluation, adaptable to local needs and relatively short time.

For OSPE to be a better tool, the check list of parameters on which the students are being evaluated should be shown to them. The scores in every section of examination should be told to the students, so that they can understand on which sectors they are lagging behind. By analyzing the overall scores, the teachers can identify the subject areas which require more focus in subsequent sessions.

The results of the study should be considered in the light of its limitations. Only 40 students were enrolled in the study as participants and hence the interpretations of this study cannot be generalised to all the medical colleges in India. The Likert scale used consisted of more positive questions than negative ones. It can create acquiescence bias in the students. A scale comprising of equal positive and negative questions can eliminate this bias. Gitanjali (2004) has mentioned some of the problems faced by the authors while conducting OSPE viz., time constraints,

logistic problems, shortage of observers, observer fatigue, and problem with electricity etc.<sup>15</sup>

In a pioneer study by Natsu et al<sup>12</sup>, the role of OSPE in evaluation of medical undergraduates in the subject of pharmacology has been assessed. The students had positively accepted OSPE as a mean of examination in the study. In the present study, we further evaluated the influence of gender and medium of schooling towards OSPE. We also evaluated the change in trend of attitudes of medical students towards OSPE after a period of 20 years of its introduction in Pharmacology, especially in a rural based medical college.

Though many studies have proven the utility of OSPE as a teaching and examination tool, there are very few universities at present utilizing this pattern in India. The authors recommend that there should be incorporation of OSPE in the University curriculum as an examination pattern. It can be viewed as a different implementation technique for evaluation of students. Hence the status of OSPE should be complementary to the conventional patterns, and not the replacing one. The OSPE section should constitute about 25% in the evaluation process along with traditional sections.

In conclusion, the study marks the importance of the role of students in developing new assessment tools. It reveals that OSPE was well accepted by the students compared to traditional pattern of examination. Though this method is not a panacea to all the lacunae in the traditional patterns of examinations, it does bring a considerable improvement in evaluation methodology. This study is a small step in a direction of changing the traditional patterns of practical examination to a more objective and reliable way of evaluation of tomorrow's doctors.

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