



EXPLORING THE PROS AND CONS OF OSPE: AN ANALYSIS OF STUDENTS' AND FACILITATORS' PERSPECTIVE

Medical Education

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ABSTRACT

Background: Objective structured practical examination (OSPE) can be utilized to assess knowledge, skill, attitude and communication of the students. Being an assessment tool incorporating the new Competency based medical education (CBME) curriculum, this method too needs feedback for improvement and further implementation. **Methods:** A 360 degrees' feedback could be obtained using face to face discussions with the stakeholders where perception and usefulness regarding OSPE and its implementation was assessed by qualitative research. In this study, we have aimed at evaluating the attitude and perception of OSPE based assessment in Pharmacology on Phase II MBBS students and facilitators using focus group discussions (FGDs) among students and in-depth interviews (IDIs) among faculty. After each FGD and IDI, data including all field notes and recorded audio were transcribed close to the verbatim on the day of data collection. Free listing using Smith's Saliency score and pile sorting exercise was conducted. The data were analysed by Visual Anthropac version 1.0 software. To get the collective picture, two-dimensional scaling and hierarchical cluster analysis of pile sort data were undertaken. Debriefing of the findings of free list, pile sorting and FGD to the participants were done to increase the credibility of the results. **Results :** Forty-two free-listed items were identified from the FGD. The Pile sorting exercise identified the following themes such as merits of OSPE, critical appraisal of one's performance, OSPE related feelings and apprehension, content selection for OSPE, OSPE conduct, criticism of OSPE and modifications suggested by students. The students could appreciate their shortcomings through OSPE stations, self-assessed themselves and realized their pitfalls. Twenty-three free-listed items were detected from IDI. Four themes were identified such as advantages of OSPE over traditional practical examination, limitations and suggested improvements to the present OSPE examination, areas in the present OSPE examination that was appreciated and future planning of teaching learning sessions based on OSPE. **Conclusion:** OSPE not only assesses the students but is also a valuable learning tool. The students have self-assessed themselves and will progress towards being in-depth strategic learners. Students felt that group study and learning in systematic way with proper practice helps in improving OSPE performance. The faculty emphasized that OSPE can measure psychomotor skills in an objective manner and the teaching methods should be tuned with the assessment mode. The stress on maintenance and additions to the OSPE question bank showed that they were eager for further conduct of OSPE.

KEYWORDS

OSPE, Pharmacology, Focus group discussion, In-depth interview, CBME

BACKGROUND

Assessment needs to be comprehensive yet consistent and promote learning. It should gauge the weakness and strengths of students objectively. Not only the learning strategies can be improved but also significant feedback regarding the course content and appropriate teaching learning methods can be obtained. Objective structured practical examination (OSPE) can be utilized to assess knowledge, skill, attitude and communication of the students.^[1] It can test the higher levels of Millers pyramid and promote analytical thinking, reasoning and higher cognitive functions. For this a pre-prepared check list and responses are utilized. The facilitator evaluates the student silently on some of the stations (observed stations) and marks them as per the checklist provided. OSPE can be used to evaluate identification and handling of medical instruments, interpret laboratory results, simple procedures, problems on patient management, attitude and communication skills.

The National Medical Commission (NMC) Competency Based Medical Education (CBME) has introduced an updated curriculum for students incorporating hands-on demonstration on manikins, criticism of prescription and medical literature, computer assisted learning among others in undergraduate Pharmacology for medical students in India.^[2] For assessing the practical competencies, OSPE thus is the need of the hour as the traditional assessment methods are more suited

to assessing the cognitive domain in Pharmacology. OSPE assesses psychomotor and communication domains along with objective assessment of the knowledge domain.

Being an assessment tool incorporating the new curriculum, this method too needs feedback for improvement and further implementation. Many studies that have evaluated OSPE have utilized pre-prepared feedback questionnaires developed by the researchers. However, a 360 degrees feedback can be obtained using face to face discussions with the stakeholders where perception and usefulness regarding OSPE and its implementation is assessed by qualitative research. The qualitative research allows the freedom to explore territories which are prompted by the experiences of the stakeholders and are not bound by the discernment of the researchers. The focus-group-discussion and the in-depth-interview helps in unveiling the perception of the participants regarding OSPE and helps us to have insight on issues which may be unconceivable from researchers' outlook; thus explore the experiences of OSPE among teachers and students. In this study, we have aimed at evaluating the attitude and perception of OSPE based assessment in Pharmacology on Phase II MBBS students and facilitators using focus group discussions (FGDs) among students and in-depth interviews (IDIs) among faculty.

METHODOLOGY

This qualitative study was carried out in the Department of Pharmacology at a tertiary care Medical College from May 2021 to April 2022. Phase II MBBS students attending Pharmacology classes of 2021-22 batch who consented for the study were included. Approvals from the Institutional Ethics Committee and The Scientific and Technical Advisory Committee were obtained prior to the commencement of the study.

OSPE for formative examination was conducted for the very first time in the Department. Of the 10 OSPE stations, 6 were response stations, 2 were skill stations and 2 were rest stations. Six minutes was allowed for each station. After the completion of OSPE and compilation of OSPE scores, focus group discussion among students were conducted. In depth interview was done among the faculty of the department.

Focus Group Discussion

Two FGDs involving 18 study subjects who fulfilled eligibility criteria were conducted to explore views and perception towards the OSPE. Two groups of students were identified according to their score in the examination; those scoring above the median marks obtained (high scoring students) and those scoring below the median (low scoring students). One FGD session was conducted on 9 high scoring students and another FGD with 9 low scoring students (selected by simple random sampling from the respective groups) for maintaining homogeneity of participants in the group. FGD was carried out with the help of a predetermined FGD guide composed of some guiding questions. The guiding questions were derived from literature research. There was a moderator for conducting the discussion, a recorder/scribe to note down the proceedings. Participants were asked to sit in semi-circular manner so that each one of them is in the view of the others. A predetermined logical sequence of open-ended questioning was done to stimulate discussion among the participants to understand their perceptions, attitude, satisfaction, or any difficulties etc. Participants were posed with questions in a neutral manner, their responses were heard attentively and if necessary, follow-up questions were asked. There was no leading question and participants were not shown approval or disapproval of what they said. Complete proceedings of the FGD including level of participation and sociogram were noted, and it revealed equal level of participation among the respondents. These sessions were electronically recorded, and each lasted for not more than 30 min.

In depth interview

The IDI was carried out on the faculty in the Department. It was conducted face-to-face with one interviewer and one participant only, lasting not more than 20 min using a pre-prepared IDI guide. Participants were posed with questions in a neutral manner, their responses were heard attentively and if necessary follow-up questions were asked. After the formal introduction of the interviewer with credentials, the IDI was electronically recorded from the selected respondents.

Data Collection And Statistical Analysis

Data collection and analysis were done simultaneously. After each FGD and IDI, data including all field notes and recorded audio were transcribed close to the verbatim on the day of data collection. All researchers then coded interview transcripts separately and any discrepancies in the coding were sorted out following exhaustive discussion. These coded notes were thematically analysed and emerging themes were identified with illustrative quotations. Statements in italics indicate direct quotations from the participants.

Finally, free listing using Smith's Saliency score and pile sorting exercise was conducted.^[3] Smith's Saliency score refers to the importance, representativeness or prominence of items to individuals or to the group, and is measured in three ways: word frequency across lists, word rank within lists and a combination of these two.^[4] Smith saliency index suggests a weighted mean that takes into account the number of items on a participant's list, placement of the item on the participant's list, and the frequency with which an item was mentioned^[5].

In the pile sorting exercise, free listed items were clubbed by the researchers individually which they feel goes together. Thus items under same pile were related and similar according to the participants. The data were analysed by Visual Anthropac version 1.0 software to get the collective picture, two-dimensional scaling and hierarchical cluster analysis of pile sort data were undertaken.^[6] Debriefing of the findings of free list, pile sorting and FGD to the participants were done

to increase the credibility of the results.

RESULTS

Ninety-six students participated in the OSPE examination. The total score of OSPE was 35. The median score was 22.5 (interquartile range 19–26.5).

Focus Group Discussion

Forty-two (42) free-listed items were identified from the FGD and they are listed in decreasing order of their Smith's Saliency score. (**Table 1**) Thus, impact of OSPE on students on "letting know their weakness" was found to be the most prominent item and "chocolate in the rest station" the least prominent.

Table 1: Free Listed Items Of Focussed Group Discussion With Smith Saliency Score

Items	Smith Saliency Score
I got to know about my weakness	0.314
I was tensed about OSPE in the beginning	0.276
OSPE helped me to evaluate myself	0.271
OSPE station on injection on manikin was good and required	0.244
I will attend classes regularly in future	0.202
Time distribution can be modified	0.165
I can improve from today's mistakes	0.163
CAL station was good and required	0.145
Confident during examination and enjoyed it	0.124
I am satisfied with OSPE conduct	0.121
No chance of bias in OSPE	0.118
The rest station should not be the first station for any student	0.116
OSPE is more practical based	0.109
I learnt time management	0.100
OSPE practice sessions should be conducted during class	0.098
Every topic is equally important for OSPE	0.088
Interview by evaluator instead of being silent observer will be appreciated	0.087
Rest station was absolutely needed	0.084
OSPE questions were to the point	0.082
Revision classes based on OSPE topics will be useful	0.069
Prior orientation session helped in OSPE examination	0.067
Prepare myself for future OSPEs	0.067
OSPE prepares for other examinations like PLAB USMLE which utilizes same method	0.059
Computer malfunction in CAL station led to panic	0.059
Group study is important for scoring well in OSPE	0.059
Time distribution of ADR station can be modified	0.059
ADR station was good and required	0.052
I will be less tensed in the next OSPE	0.047
Interested to have OSPE as practical examination in future	0.047
I need to study in systematic manner	0.044
Insulin syringes were provided instead of intradermal syringes for intradermal injection	0.042
The time given in all stations was adequate	0.032
I shall practice for OSPE in future	0.029
OSPE is more scoring	0.029
Dosage form station was good and required	0.029
Prescription writing station was good and required	0.026
Time should be oriented to marks	0.020
More exposure to the CAL software is required	0.018
Rest station need not be there after skill station	0.015
Calculations in Pharmacology station was good and required	0.011
Do not have to face intimidating examiner	0.009
Chocolate in the rest station is appreciated	0.007

Themes explored from FGD: The Pile sorting exercise identified the following themes (**Table 2**) and the cognitive Map with two-dimensional scaling and hierarchical cluster analysis is represented in

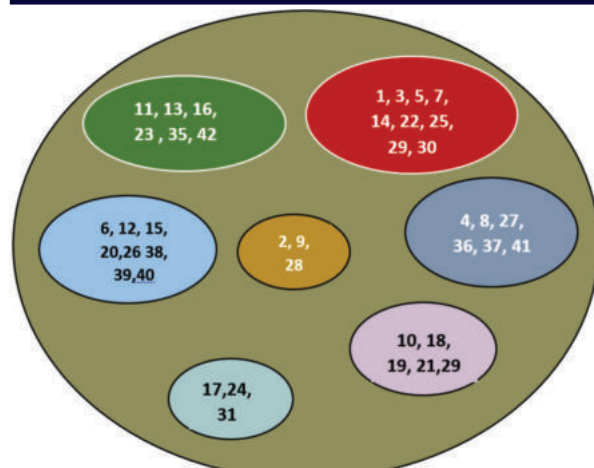


Figure 1: Cognitive Map with Two-dimensional scaling and hierarchal cluster analysis of issues faced by students during the OSPE. The numbers represent the serial number of the corresponding free listed item.

Table 2: Pile Sorting Of Perception Of OSPE By The Students Into Themes

Pile number	Theme	Perception of OSPE by the students
1.	Merits of OSPE	1. No chance of bias in OSPE 2. OSPE is more practical based 3. Every topic is equally important for OSPE 4. OSPE prepares for other examinations like PLAB USMLE which utilizes same method 5. OSPE is more scoring 6. Do not have to face intimidating examiner
2.	Critical appraisal of one's performance	1. I got to know about my weakness 2. OSPE helped me to evaluate myself 3. I will attend classes regularly in future 4. I can improve from today's mistakes 5. I learnt time management 6. Prepare myself for future OSPEs 7. Group study is important for scoring well in OSPE 8. I need to study in systematic manner 9. I shall practice for OSPE in future
3.	OSPE related feelings and apprehension	1. I was tensed about OSPE in the beginning 2. Confident during examination and enjoyed it 3. I will be less tensed in the next OSPE
4.	Content selection for OSPE	1. OSPE station on injection on manikin was good and required 2. CAL station was good and required 3. ADR station was good and required 4. Dosage form station was good and required 5. Prescription writing station was good and required 6. Calculations in Pharmacology station was good and required
5.	OSPE conduct	1. I am satisfied with OSPE conduct 2. Rest station was absolutely needed 3. OSPE questions were to the point 4. Prior orientation session helped in OSPE examination 5. Interested to have OSPE as practical examination in future 6. The time given in all stations was adequate 7. Chocolate in the rest station is appreciated
6.	Criticism of OSPE	1. Interview by evaluator instead of being silent observer will be appreciated 2. Computer malfunction in CAL station led to panic 3. Insulin syringes were provided instead of intradermal syringes for intradermal injection

7	Modifications suggested by students	1. Time distribution can be modified 2. The rest station should not be the first station for any student 3. OSPE practice sessions should be conducted during class 4. Revision classes based on OSPE topics will be useful 5. Time distribution of ADR station can be modified 6. Time should be oriented to marks 7. More exposure to the CAL software is required 8. Rest station need not be there after skill station
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1 Merits of OSPE: The FGD regarding the OSPE conducted was sorted into themes of which students praised the merits of OSPE being unbiased, practical, covers all practical topics, is more scoring and also is a window to the exams like PLAB and USMLE. Also a student said "OSPE is less worrying as I do not have to face intimidating examiner", "Everybody has similar questions" which adds to its advantages.

2. Critical appraisal of one's performance: The students could critically appraise their performance in the OSPE and realized their scope of improvement. Students said that "OSPE helped me a great deal in understanding my loopholes", also "I will try to implement the knowledge I gathered today, discuss among my friends and prepare myself for future OSPEs". Another student commented "I got to know about my weak points through some of the OSPE stations".

3.OSPE related feelings and apprehension: OSPE was a new form of assessment for the students, they were apprehended in the beginning but enjoyed it and said "I will be less tensed in future OSPEs".

4. Content selection for OSPE: When the students were probed into the areas of OSPE examination they felt were good and required, most of the content of the stations were felt important to them.

5. OSPE conduct: Many students commented about the conduct of the OSPE examination. They were satisfied with the number of stations, timely rest stations with chocolate and water, to-the-point questions in stations, adequate time in stations, and that the prior orientation session was a necessity. One student commented that "In rest station we can write our answers left from previous stations".

6. Criticism of OSPE: While discussing about the mishaps, there was mention of computer malfunction for one student for which she had to repeat the Computer assisted learning station once more after the computer was changed. Also, insulin syringes were supplied instead of intradermal syringes for intradermal injection which led to confusion among some students. One student critically acclaimed that "Observer should ask some question related to the Computer assisted learning experiment what we have done, the mechanism of action, otherwise some student may memorize some steps which are tough instead of understanding". Another said "Dosage forms, devices and charts if conducted in viva like fashion would be more helpful for me".

7. Modifications suggested by students: The students also suggested some modifications. One student said "Rest station should be there where the student can utilize their time properly and not after skill station." Also another said that "I faced the rest station as the first station and it should not be so for any student as it is a waste of time", and also that "Time should be increased by one minute for each station for those who started with rest station". Suggestions for making time variable according to the task given to perform or marks allotted was also made by a few students. One student said that "Revision classes based on topics that were tested in OSPE will be helpful" and another commented that "The pattern of questions should be discussed for betterment".

In Depth Interview

The four in-depth interview conducted on the faculty of the Department of Pharmacology revealed 23 free listed items and they are listed according to items of greatest prominence "Uniform and unbiased" with score 0.981 to least prominence "OSPE question bank made in the department" with a score of 0.079. (Table 3) They were sorted into themes as follows (Table 4):

1. Advantages of OSPE over traditional practical examination: The

advantages stated by the faculty was that OSPE was uniformity and unbiasedness. The examination could cover all three domains of learning knowledge, skills and communication and multiple topics. Since the examination was structured, there was minimal inter-observer variation. One faculty commented that “*Uniformity since same questions and similar markings based on performance*” and another said “*Each candidate gets equal time and importance*”.

2. Limitations and suggested improvements to the present OSPE examination: The major limitations suggested by the faculty was that shortage of manpower and improvisation of logistics to implement OSPE. The respondents commented that “With a shortage of manpower, the tasks and burden of implementation is great, on each faculty”, also “Entire planning and system may collapse if a single faculty is unavailable due to unavoidable reasons, since each one has a specific role to play”. A big room was required to conduct OSPE, however, the computer assisted learning (CAL) laboratory was reorganized to conduct the same with use of curtains, boards and labels. Necessity of closed circuit camera monitoring to keep a check on unfair means was a suggested improvement.

3. Areas in the present OSPE examination that was appreciated: All faculty appreciated the effort and diligence of pre-planning of OSPE, preparation and testing of checklists and enthusiasm of the entire faculty and staff in organising OSPE in the Department. The mentorship of the OSPE team leader was duly acknowledged. Another area was the strict time keeping and smooth running of the entire examination.

4. Future planning of teaching-learning sessions based on OSPE: The faculty felt that all the SLOs may not be assessed by OSPE. During planning of a teaching – learning session, the SLOs that might be assessed by OSPE could be taught in a more structured way. For those SLOs which require checklists, they should be prepared a priori and the students may benefit if the discussion in class follows the items in the checklist. The faculty also suggested creation, maintenance and improvements upon the current OSPE question bank for future OSPE examinations.

Table 3: Free Listed Items Of In-depth Interview Among Facilitators With Smith Salience Score

Free listed Items of In-Depth Interview of faculty	Smith Salience Score
Uniform and unbiased	0.981
Structured and objective	0.680
Minimal inter-observer variation	0.644
Cover multiple domains	0.632
Preparation of OSPE checklist and teaching can be carried out mentioning those steps in checklist	0.581
Every faculty is indispensable for a particular role	0.445
Plan structured TLM session	0.429
Equal time limit for all candidates	0.399
Improvisation of logistics requirements like big room, curtains, boards	0.353
Cover multiple topics	0.200
Communication domain can be covered	0.200
Pre-planning with minute detailing and mock drill was carried out diligently	0.188
Equal importance for all candidates	0.175
TLM should be aligned to assessment	0.175
TLMs should be more specific and audio-visual aid based	0.173
Strict time keeping could be done	0.166
All SLOs may not be tested by OSPE alone	0.162
Shortage of manpower	0.125
Pre-planning requires dedication from all faculty	0.115
OSPE checklists made with sincere effort	0.113
Availability of CC cameras in OSPE room to avoid unfair means	0.100
Mentorship of OSPE team coordinator was helpful	0.083
OSPE question bank made in the department	0.079

Table 4: Pile Sorting Of Perception Of OSPE By The Faculty Into Themes

Pile number	Theme	Perception of OSPE by the faculty
1.	Advantages of OSPE over traditional	1. Uniform and unbiased 2. Minimal inter-observer variation 3. Structured and objective

	practical examination	4. Cover multiple domains 5. Cover multiple topics 6. Equal time limit for all candidates 7. Equal importance for all candidates 8. Communication domain can be covered
2.	Limitations and suggested improvements to the present OSPE examination	1. Shortage of manpower 2. Every faculty is indispensable for a particular role 3. Availability of CC cameras in OSPE room to avoid unfair means 4. Improvisation of logistics requirements like big room, curtains, boards 5. Pre-planning requires dedication from all faculty
3.	Areas in the present OSPE examination that was appreciated	1. Strict time keeping was done 2. Pre-planning with minute detailing and mock drill was carried out diligently 3. Departmental enthusiasm in carrying out OSPE was infectious 4. Mentorship of OSPE team co-ordinator was helpful 5. OSPE checklists made with sincere effort
4.	Future planning of teaching-learning sessions based on OSPE	1. All SLOs may not be tested by OSPE alone 2. Plan structured TLM session 3. Preparation of OSPE checklist and teaching can be carried out mentioning those steps in checklist 4. TLMs should be more specific and audiovisual aid based 5. OSPE question bank made in the department

DISCUSSION

The FGDs revealed some notable aspects in OSPE based assessment conducted. The FGDs and IDIs made the researcher aware of facts regarding OSPE which were hitherto understated. The students could appreciate their shortcomings through OSPE stations, self-assessed themselves and realized their pitfalls. Thus OSPE serves not only as an assessment tool but also paved a way forward for future learning. The learning of students is dependent on the learning objectives, teaching learning methods and assessment taken.^[7] Since “assessment drives learning” students take learning in a way they are accountable for.^[8] Students felt that group study and learning in systematic way with proper practice helps in improving OSPE performance. This awareness itself promotes analytical learning instead of rote learning. Students understood that devotion of time to honing practical skills and regular attendance was essential. Group rehearsals was also committed by students in a study by Bashir A et al^[9] and the Rudland study.^[10] Time management for completing OSPE was also pointed out by students, for this practice of skills and questions set for OSPE was imperative. Some students mentioned that in the OSPE method of assessment they did not have to face intimidating examiners which was consistent with Wani P and Dalvi VS where students also reported that students felt relieved of their anxiety as they OSPE lacked the fear of facing the examiner.^[11]

Too much of objectivity decreases subjectivity as was pointed out by some students who wanted a face to face question answer session by the examiners instead of just observing the students. Since this type of assessment was a new one to the students and different from traditional approach, students were still habituated to facing viva-voce and not observation. It is time that we inculcate that even observation can assess students and just not asking questions. Some stations (Charts, dosage forms and devices, computer assisted learning) as rightly pointed out by students could be taken both in OSPE as well as viva-voce to appreciate the understanding in the subject. Thus a balance needs to be achieved between both observation and questioning as assessment tools. Structured interaction between examiner and student may be incorporated to achieve this balance in some stations. On the flipside of viva-voce emerged from the IDI conducted on faculties who expressed their perception that OSPE can evaluate multiple topics

which may not be possible in the traditional method of viva-voce. Similar observations were noted by students who too expressed their satisfaction regarding the multiple domain content selection of the OSPE examination.

Though time in each station was critically acclaimed by many students, modification of time according to task or marks is not in the essence of OSPE. However, the stations can be modified by clubbing stations which require less time and allowing more time for others. Also, equal weightage of marks to all the stations might also reduce the time crisis. The FGDs made us aware that the opening station should not be a rest station as it wastes time for that student. Thus, it was taken into account that such incident should be avoided. The mishaps faced regarding computer malfunction made sure that further OSPE planned with spare computers. Also, revision classes focusing on OSPE stations were a welcome suggestion as it paves way for more dedicated learning by the students.

The IDI revealed the intense pre-planning, rigor and enthusiasm of all the faculty of the Department in conducting the OSPE event. While manpower and logistics shortage were limitations noted by them, they overcame the issues by improvisation and dedication to carry out a uniform, structured, objective, strict time-bound OSPE for the very first time in the department covering myriad of topics and multiple learning domains. The stress on maintenance and additions to the OSPE question bank showed that they were eager for further conduct of OSPE. OSPE made facilitators realize that incorporating changes in their teaching methods and aligning their teaching learning methods with assessment mode will help students prepare for OSPE.

CONCLUSION

OSPE not only assesses the students but is also a valuable learning tool. The students realized their shortcomings and OSPE will definitely change their learning strategy. The students have self-assessed themselves and will progress towards being in-depth strategic learners. The faculty emphasized that OSPE can measure psychomotor skills in an objective manner and the teaching methods should be tuned with the assessment mode. This analysis has come up with the deficiencies that were faced during the assessment and also while teaching the course content. Thus, this paves a way for improvement and overcoming the shortcomings. It is noteworthy that the department should be having optimum human resources and infrastructural support to conduct OSPE successfully.

DECLARATION OF INTERESTS:

The authors certify that the study reported has not received any financial support from any pharmaceutical company or other commercial source. None of the authors or any first degree relative of the authors have any financial interest in the subject matter discussed. The study was purely academic in nature.

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