

# Objective Structured Clinical Examination as a Formative Assessment Tool in Postgraduate Training

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## ABSTRACT

**Introduction:** Objective Structured Clinical Examination (OSCE) has been using as a tool in summative assessment of postgraduate training. But its utility in formative assessment is not yet studied widely. Hence this study has been taken to test the method of the OSCE as an instrument in formative assessment of the postgraduate students.

### Objectives:

1. To test OSCE as a tool in Formative assessment of postgraduate training.
2. To explore student acceptance of the OSCE as a part of evaluation.

**Materials and Methods:** First and second year postgraduate students (n=26) constituted as the study subjects. The OSCE comprised of a circuit of stations covering tasks such as counselling / communicating a problem, performing a procedure and problem-solving. A self-administered questionnaire was given to them immediately after the OSCE at the end of each session. The outcome measures on the student perception of examination, the quality of performance, authenticity and transparency of the process, and utilization of the OSCE as an assessment instrument compared to other formats.

**Results:** Majority opined (20/26) that OSCE is fair, well-administered, stress-free assessment method. 25 out of 26 students responded that OSCE highlighted their areas of weakness and bridging the gap. It covered a wide range of skills and tasks reflected those taught (21/26). This type of examination provided opportunities to learn (23/26). Further, 85% of students felt that OSCE helped to measure essential skills in pediatrics (21/26).

**Conclusion:** Postgraduate student's feedback revealed that OSCE is a fair, well-administered and stress-free method of assessment. It helps to assess wide range of skills as well as "Must Know" areas. OSCE appears to have potential to be considered as a better instrument for assessment as, it is unbiased and uniformly accepted. Hence it can be recommended as a formative assessment tool in postgraduate training.

**Keywords:** OSCE, assessment tool, post graduate students training

## INTRODUCTION

The assessment of post graduate student's clinical competence is of paramount importance, and there are several means of evaluating student performance in medical examinations.<sup>[1,2]</sup> The Objective Structured Clinical Examination (OSCE) is an approach to student assessment in which aspects of clinical competence are evaluated in a comprehensive, consistent and structured manner, with close attention to the objectivity of the process. The OSCE was introduced by Harden in 1975<sup>[3]</sup>, and first described as an assessment format in Pediatrics (Child Health) by Waterson and colleagues.<sup>[4]</sup> Since its

inception, the OSCE has been increasingly used to provide formative and summative assessment in various medical disciplines worldwide<sup>[5]</sup>, including non-clinical disciplines.<sup>[6]</sup>

The Faculty of the Department of pediatrics, Sri Venkateswara Medical College, Tirupati, Andhra Pradesh initiated the OSCE as a formative method of assessment for 1<sup>st</sup> and 2<sup>nd</sup> year postgraduate students in Pediatrics. Students and faculty were exposed for the first time to a relatively new assessment instrument in which aspects of competence (communication, history-taking and technical skills) were assessed in a structured, formal

manner. The study aim was designated and intended to evaluate students overall perception of the end of OSCE sessions, determine student acceptability of the process and provide feedback to enhance further development of the assessment.

### MATERIALS AND METHODS

A cross-sectional survey using a 32-item self-administered questionnaire was completed at the end of each OSCE (Table 2).<sup>[7]</sup> Students were asked to evaluate the content, structure, and organization of the OSCE, rate the quality of performance and objectivity of the OSCE process, and to give their opinion about the usefulness of the OSCE as an assessment instrument.

Participation was on a voluntary basis and students were assured that those who declined involvement in the survey would not be penalized. The Curricular Affairs Section handled the administration and analysis of the questionnaires. Institutional Ethical Committee approval was received from the Member Secretary, Institutional Ethics Committee, S.V. Medical College, Tirupati, Andhra Pradesh. Following completion of the questionnaire, an OSCE review session was conducted on 31<sup>st</sup> March 2016 with the students for feedback. Students were given the opportunity to review their individual performances at the respective stations. Examiner evaluations were also used in the feedback process.

The OSCE comprised a circuit of five stations, which involved completion of a number of tasks such as, counseling or communicating a problem, performing a procedure and problem-solving oriented around patient (Table 1).

**Table 1 : OSCE comprised a circuit of five stations**

Station	Skill	Domain
1	Hand washing technique (E)	Psychomotor
2	Clinical assessment (E)	Cognitive
3	Rest station	
4	Resuscitation (E)	Psychomotor
5	Counseling (E & SP)	Affective domain

\* E- Examiner, SP- Standardized patient attendant

This assessment format allowed the controlled exposure of students to all domains within a relatively short time period. Each station was 5 minutes duration. One minute was given between stations to facilitate change and the reading of instructions. With the inclusion of strategically placed rest stations, to reduce student and patient fatigue, all students completed the circuit over a 2-hour period.

A standardized technique of marking was used and student performance was assessed by criterion reference for each station. Criterion-based scoring was used, with each checklist item scored as 0 (omitted, incorrect or inadequate), or 1–2 (correct or adequate).

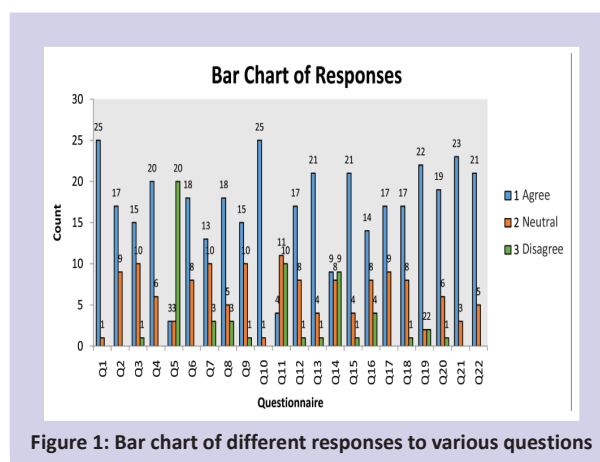
Content validity of each checklist was established by review and consensus by a core group of senior pediatricians. Stations were first selected to represent the curricular goals and objectives and to reflect authentic clinical situations. Checklists were designed to include the features thought to be most important by the development committee. Through discussions, consensus was achieved on the checklist items and structure.

The OSCE was conducted on 30<sup>th</sup> March 2016 one day prior i.e., on 29<sup>th</sup> March 2016 all the post graduates and faculty were briefed about Neonatal Resuscitation Programme (NRP) in detail. 26 post graduate students were participated in this process. They were also apprised of the valuable contribution they could make towards improving the assessment and encouraged to participate in the evaluation.

Data were collated and descriptive and non-parametric tests applied using Stata version 7.<sup>[8]</sup> Basic statistical analysis of the Likert items was conducted by calculating frequencies, means and standard deviations. Qualitative analysis was done through a form of content analysis by identifying themes in student responses and grouping responses according to thematic content. Content was analysed, themes identified and final grouping of responses were developed by consensus.

### RESULTS

The opinion of the students regarding OSCE was obtained by questionnaire and depicted in bar diagram.



**Figure 1: Bar chart of different responses to various questions**

Majority opined that OSCE is fair (20/26), well administered (20/26), without stress (20/26). Further they responded that OSCE highlighted their areas of weakness (25/26). It covered wide range of skills and tasks reflected those taught (21/26). Students expressed that this type of examination provided opportunities to learn (23/26). And also 85% of students told that OSCE exam helped to measure essential skills in pediatrics (21/26).

**Table 2: OSCE evaluation**

	Question	Agree %	Neutral %	Disagree %
1.	Exam was fair			
2.	Wide knowledge area covered			
3.	Needed more time at stations			
4.	Exam well administered			
5.	Exam very stressful			
6.	Exam well structured & sequenced			
7.	Exam minimized chance of failing			
8.	OSCE less stressful than other exams			
9.	Allowed student to compensate in some areas			
10.	Highlighted areas of weakness			
11.	Exam intimidating			
12.	Student aware of level of information needed			
13.	Wide range of clinical skills are covered			
14.	Fully aware of nature exam			
15.	Tasks reflected those taught			
16.	Time at each station was adequate			
17.	Setting and context at each station felt authentic			
18.	Instructions were clear and unambiguous			
19.	Tasks asked to perform were fair			
20.	Sequence of stations logical and appropriate			
21.	Exam provided opportunities to learn			
22.	OSCE exam score provide true measure of essential clinical skills in pediatrics			

**Performance testing**

The majority of students felt they were well oriented about the exam and that the required tasks were consistent with the actual curriculum that they were taught. They also felt that the process was fair but were not as satisfied with the time allocation for each station.

Most saw the OSCE as a useful learning experience and that the content reflected real life situations in Child Health. More than half of the students were satisfied with the conduct, organisation and administration of the OSCE.

**Perception of Validity and Reliability**

Although half of the students believed that the scores were standardized, they were unsure whether their scores were an actual reflection of their pediatric clinical skills. Student responses to the question about bias due to gender, personality or ethnicity, were not interpretable.

**Qualitative data**

Students were asked follow-up questions related to positive and negative aspects of OSCE and suggestions for improvement. The open ended responses were grouped by thematic content (Table 3).

**Table 3: OSCE feedback questionnaire**

1.	What did you like about the exam?
2.	What did you learn from the exam?
3.	What difficulties did you have during the OSCE station?
4.	What improvements would you suggest in the station and examination?
5.	Did this help you have a unbiased assessment of your clinical skills?
6.	Was the feedback useful to improve your clinical skills?
7.	Would you like this type of assessment in future? yes/no

In feedback form 11 students opined that this method of examination was helpful in gaining good knowledge without any stress (16 comments). They have learned skills and their application at appropriate time (20 comments). Some of the students faced difficulty in time management at the station (12 comments).

Majority suggested to allot more time for the station (10 comments). All students are in favour of unbiased assessment of their clinical skills (26 comments). They are very much satisfied about the feedback by the facilitators which helped them to improve their clinical skills (26 comments). All the students welcomed this type of assessment in future (26 comments).

**DISCUSSION**

Students overwhelmingly perceived that the OSCE in Child Health had good construct validity. This was demonstrated by the favorable responses concerning transparency and fairness of the examination process, and the authenticity of the required tasks per station. Excellent levels of acceptance of the OSCE by students have been previously described in the literature.<sup>[9-12]</sup> They however expressed concerns and uncertainty about whether the process would minimize their chances of failing or that the results were a true reflection of their clinical skills. This was understandable, since it was their first encounter with this type of assessment.

It is well recognized that assessment is a catalyst for both curriculum change and student learning. The students

recognized the value of the instrument for formative evaluation. In addition, as many medical colleges have adopted a student-centred approach to medical education, greater student participation in quality assurance exercises must be encouraged. Students perceived the OSCE to be fairer than any other assessment format to which they were exposed. Although student views on fairness may not be consistent with published literature, the impact and influence on acceptability of the instrument should be noted.

They offered constructive criticism of the structure and organisation of the process. At some stations they felt that the instructions were ambiguous and that the time allocation was inadequate for the expected tasks. The feedback was invaluable and facilitated a critical review and modification of the station content and conduct of the examination over time. Faculty perceived that the concerns about time allocation per station and the degree of stress expressed by the students were due to inadequate preparation for the examination, particularly in competences not previously assessed in the 'traditional' examination.

The high student response rate has helped to ensure that the findings presented are a valid representation of student opinion. Students have traditionally viewed the end of clerkship assessment as a 'high-stake' examination and also perceive it as predictive of their performance at their final PG examination.

Student perception of the OSCE however, may have been influenced by anxiety and lack of confidence associated with a new assessment. The responses may also have been affected by the timing of the inquiry (immediately after the examination); hence student stress and fatigue should be taken into consideration. Whereas the high response rate ensured that the views were reasonable representative of the students, differences in assessors could have influenced the interpretation of the results of open-ended responses.

Implementing the OSCE in medical student examination at Dr. NTR UHS, Vijayawada, AP. has been challenging, however student participation in the evaluation and their overall acceptance of the instrument have been encouraging. Feedback from students has been useful in effecting improvements to the process and greater emphasis has been placed on the teaching and evaluation of history taking, communication and technical competencies.

It is also sending a clear message to students that the achievement of overall competence is imperative to clinical practice in the current environment. Ultimately, these provide the loop necessary to drive the continuum of curriculum development. This has been timely

considering that the Faculty of Department of Pediatrics, S.V. Medical College, Tirupati, Andhra Pradesh is undergoing significant reform.<sup>[13]</sup> Further developments involving psychometric evaluation will strengthen the process.

## CONCLUSION

In summary, the findings of this study highlight the need for student participation in the development of new assessment tools in medical curricula. Student acceptance will be more favorable for assessment formats that they perceive to be transparent, authentic and valid. Traditional medical curricula must be responsive to global paradigm shifts in postgraduate medical education.

## CONFLICT OF INTEREST :

The authors declared no conflict of interest.

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