



PERCEPTION OF STUDENTS ABOUT OBJECTIVE STRUCTURED CLINICAL EXAMINATION AS AN ASSESSMENT TOOL IN PEDIATRICS IN A GOVERNMENT MEDICAL COLLEGE OF ARUNACHAL PRADESH – A CROSS-SECTIONAL STUDY

Nani Tago

Professor, Department of Pediatrics, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh – 791110.

Pepu Jini

Assistant Professor, Department of Pediatrics, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh– 791110.

Ngilyang Sunya

Assistant Professor, Department of Pediatrics, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh– 791110.

ABSTRACT

Background: Objective Structured Clinical Examination is an assessment tool which has been in existence since few decades, but is not widely used for the undergraduate medical program in India. Its validity, reliability, feasibility of execution and acceptance has received mixed responses. The undergraduate medical education program in India has adopted competency based medical education curriculum so that the Indian medical graduate has the requisite knowledge, skills and attitude to handle patients effectively. OSCE is an integral part of CBME. But, in Arunachal Pradesh, it has been sparingly used in nursing studies, but not in MBBS program. Therefore we aimed to assess the perception and attitude of students about OSCE before its introduction as a tool in both formative and summative assessments. **Methodology:** A cross sectional study was conducted using a self administered validated structured questionnaire immediately after OSCE. Study subjects were the students of Phase 3 part 2. 43 out of a total 50 students consented and participated. **Results:** Maximum positive response was demonstrated with 97.6% students finding it fair, 72.1% finding it well structured and sequenced, 72% agreed that tasks reflected those taught, 76.7% found the instructions fair and unambiguous and 88.4% agreed that exam provided opportunities to learn and also OSCE is practical & useful experience. **Conclusions:** The study showed overwhelming acceptance of OSCE as a transparent, useful and practical assessment tool which will provide opportunities for learning and is both reliable and valid.

KEYWORDS : Objective Structured Clinical Examination, Student's Perception, Competency Based Medical Education

INTRODUCTION

The undergraduate medical education program in India has adopted Competency Based Medical Education (CBME) curriculum since 2019 with the idea of learner-centric, patient-centric, and outcome-oriented education, so that the Indian medical graduate (IMG) has the requisite knowledge, skills and attitude to handle patients effectively in real life situations [1]. CBME has emphasized the use of objective structured clinical examination (OSCE) as a modality for assessment in undergraduate medical program in India. Traditionally, assessment has been used as an instrument of learning. In the CBME curriculum, assessment is driving learning (steering effect) and assessment is used as an instrument for learning.

Objective Structured Clinical Examination devised as an assessment tool by Harden in the year 1975, is performance based and is used to evaluate clinical skills of a medical student [2, 3]. It is being used for formative and summative assessment in the undergraduate medical program in India, with more vigor after the new CBME guidelines came into effect. Based on the principles, objectivity and structure, OSCE is a reliable and valid tool for assessment [4, 5, 6]. The traditional clinical assessment methods in Pediatrics mostly relies on case presentations, viva voce and spot demonstrations which are chance based and not uniform for all students. It lacks direct observation, immediate feedback and objectivity in assessment due to student, patient and examiner variability. Hence, it might not completely justify the uniformity of assessment and marking for medical students appearing the same examination. OSCE overcomes the shortcoming of traditional tools, where a structured assessment of a set of pre-determined competencies including psychomotor, communication, cognitive and data interpretation skills is done using multiple stations which are categorized into three types - question station, procedure station and rest station [2, 7]. OSCE is a unique instrument for teaching, learning, and assessment processes.

But, the acceptability of utilizing an assessment tool is dependent on the perception and understanding of its use

held by both students and faculty. Also, the primary aim of a formative OSCE is to familiarize students with the testing format and improve learning. It has a direct influence on learning behaviors within the educational processes of students [8]. While many authors have demonstrated good acceptance of OSCE [9-16], certain authors have found low acceptance of OSCE in medical education [17-19].

Neonatal resuscitation program (NRP) is one of the certifiable skills that every medical undergraduate needs to acquire [20]. Traditionally, NRP has been taught through lectures which only covers the "know" and "know how" components of the Miller's pyramid [21, 22].

OSCE is an effective, reliable and valid tool for the acquisition of higher levels of clinical competence of "show" and "perform" of the Miller's pyramid. But, the conduct of OSCE has its challenges – manpower, logistics and meticulous preparation [16, 23].

OSCE has not yet been adopted as an assessment tool in any examination process in the lone medical college of Arunachal Pradesh, and assessment of the perception of students regarding this excellent assessment tool might help to determine the acceptability and justify the uniformity imparted by OSCE in the assessment process of undergraduate medical students who are expected to possess similar knowledge, clinical, procedural and communication skills to be certified fit to complete the undergraduate medical education in phase-wise manner, and also the feasibility of using OSCE in all types of assessment processes; the internal assessments, formative assessments and summative assessment.

Methodology

Study Procedure: A cross-sectional observational study was conducted in the department of Pediatrics, Tomo Riba Institute of Health and Medical Sciences (TRIHMS) in December 2023 after approval from the institutional ethics committee. Study subjects were the students of MBBS Phase III Part –II, batch of

2019. Convenience sampling technique was used. Out of the total strength of 50, 43 students participated in the study. The topic of neonatal resuscitation was chosen for the OSCE since it is a certifiable procedural skill in Pediatrics in the new CBME guidelines 2019 and NRP had been taught in interactive lecture and also by hands-on training using manikin by Demonstration, Observation, Assistance and Performance (DOAP) method in clinical postings and tutorials.

Training and sensitization on OSCE: Students were sensitized and orientation was imparted regarding the concept of OSCE, OSCE stations, timings and conduct of OSCE. Students that consented to participate in the study were included in the study. A day before the OSCE, the designated faculties for each station was briefed regarding the checklists, marking scheme, timing and the OSCE station map.

Conduct of OSCE

OSCE was conducted in the seminar hall of the department of Pediatrics. Basic NRP was selected for the introduction of OSCE. Peer reviewed and pre-validated checklist was used for marking the response. Review and validation were done by the faculty members of the department of Pediatrics and medical education unit (MEU) of the institute. An OSCE map was displayed outside the hall (Figure 1), and students were re-briefed regarding the flow of OSCE stations according to the map. A trained non-medical department staff was the time keeper. Immediately after the OSCE, all the students were invited to provide their feedback about OSCE as an assessment tool.

For the conduct of OSCE, 7 stations were arranged - 2 Question stations, 4 Procedure stations and 1 Rest station (Table 1).

Table 1: Distribution of Marks and Time with OSCE Stations

Questions	Mark allotted	Time allotted
Question station 1 - You are called to assist at the birth of a baby at 39 weeks of gestation. Write the 4 pre-birth questions to be asked prior to delivery attendance.	2	1 minute
Question station 2 - Write the list of equipments required for Neonatal resuscitation.	4	1 minute
Rest station		1 minute
Procedure station 1- Demonstrate the 6 steps of hand washing.	3	1 minute
Procedure station 2 - A baby is born with meconium-stained liquor and no cry at birth. Demonstrate the steps that you will perform.	2	1 minute
Procedure station 3- You have provided the initial steps of NRP; however, the baby is gasping after 30 seconds of birth. Demonstrate how you will provide positive pressure ventilation (PPV).	2	1 minute
Procedure station 4 - Demonstrate the steps to show that the AMBU bag is functioning.	3	1 minute
Total	16	7 minutes

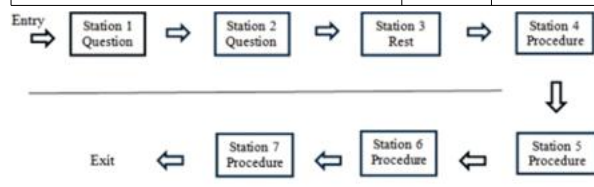


Figure 1: OSCE Map

The abbreviated Pierre et al' [7] OSCE evaluation questionnaire was adapted as a data collection tool for students' response and perception about the OSCE. It contains three sections—evaluations of the OSCE attributes, evaluation of the quality of OSCE performance and evaluation of OSCE validity and reliability. Students were asked to rate their responses on a four-point scale ranging; 'no comment', 'disagree', 'neutral' and 'agree'.

After the conduct of OSCE, immediate feedback was also provided to each student regarding their weakness and strengths in NRP.

RESULTS

Forty three out of 50 students of Phase III part II participated in the study

OSCE attributes(Figure A1 and Figure A2):

Maximum (97%) students felt that the OSCE is a fair method of assessment. But, only 35% students agreed that wide knowledge area was covered during the OSCE. 65% of the students perceived that the OSCE was well administered. Only 1/4th of the students perceived the OSCE very stressful. Majority (72%) students reflected that OSCE was well structured and sequenced. 56% of the students felt that chances of failing were minimized by OSCE.

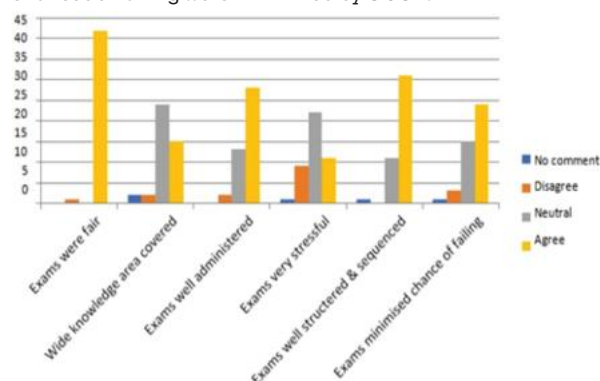


Figure A1: Response of OSCE Attributes

63% of students found OSCE less stressful than other exams. 56% of students felt that OSCE allowed students to compensate in some areas. 60% of students felt that OSCE highlighted areas of weakness in their preparation. Half of the students found OSCE intimidating. 58% of students felt that a wide range of clinical skills were covered.

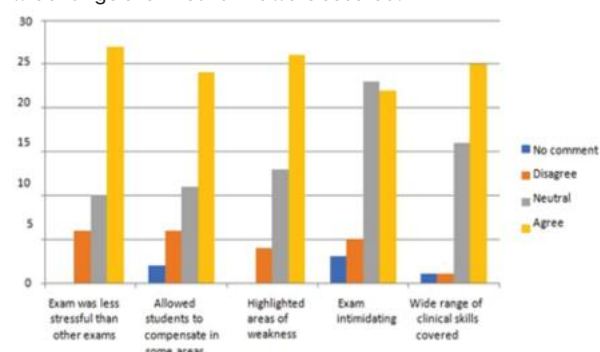


Figure A2: Response of OSCE Attributes

Quality of OSCE performance (Figure B1 and Figure B2): 63% of students concurred that they were fully aware about OSCE. 72% of students felt that OSCE reflected the subject taught. Less than 1/5th (16%) of the students felt that the time at each station was adequate. 53% of students felt that the OSCE setting & context at each station was authentic.

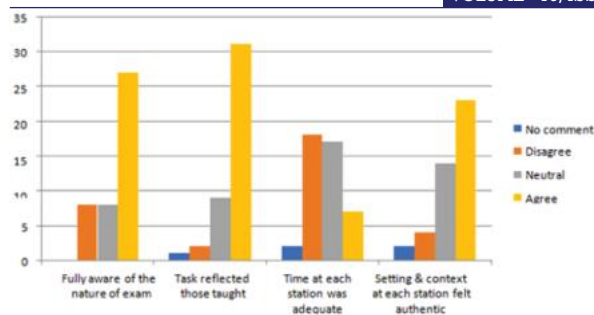


Figure B1: Response of the Quality of OSCE Performance

77% of students agreed that the OSCE instructions were clear and unambiguous. 88% agreed that the task asked to perform were fair. 63% agreed that the sequence of station was logical and appropriate. 88% agreed that OSCE provided opportunities to learn.

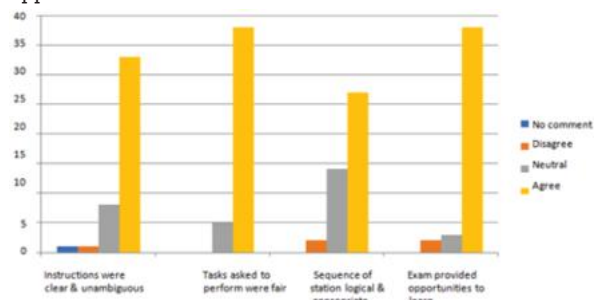


Figure B2: Response of the Quality of OSCE Performance

Validity & reliability of OSCE (Figure C): 67% of students felt that the OSCE score represented true measure of essential clinical skills. 74% felt that the OSCE scores are standardized. 88% felt that OSCE is a practical and useful experience. 65% felt that OSCE is non-biased based on personality and social relations.

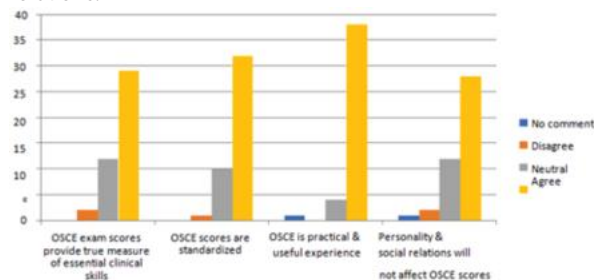


Figure C: Evaluation of Validity & Reliability of OSCE

DISCUSSION

Assessment is the cornerstone of any curriculum. Assessments are done of learning, but assessments are also done for learning [24]. Learning for professional life should drive assessment [25]. A good assessment tool should be objective, valid, reliable, internally consistent, and also, feasible, practical and acceptable at the same time [26-29]. This study has received good response from the students implying the acceptability and applicability of OSCE. Many previous studies have also demonstrated excellent acceptance of OSCE [9-16]. In our study, we found that most of the students felt that OSCE is fair. This resonates with the findings by Pierre et al [7], by Deepa et al [30] which was done for nursing students, Sallam et al [31], and Jawaid et al [15]. Also, most of the students felt that OSCE was well-structured and sequenced and well administered. The students found the instructions clear; the task reflected the subject taught, the task was fair and it provided them opportunities for learning.

With regard to reliability and validity of OSCE, the students

reflected that OSCE is practical and useful, OSCE scores were standardized and are true measure of clinical skills and non-biased. According to Brannick et al [32], psychomotor skills are assessed with greater reliability than affective domain by the use of OSCE. We have used neonatal resuscitation program in this study, which tests both the psychomotor skills and the affective domain.

The students reflected that OSCE helped them to highlight their weakness, helped them to compensate in other areas and minimized their failing chances. These findings are similar to that reported by Baruah et al [16].

Though majority of the students felt that wide clinical skills were covered in OSCE, this number comprised only 58% of the total students. In the study by Deepa et al, 100% of students felt so. Only one-third (35%) of the students felt that wide knowledge area was covered. This was probably because the procedure of NRP was assessed in detail but the OSCE did not involve skills or procedure from other areas.

Half of the students found OSCE intimidating, but only one fourth of the students felt that OSCE was stressful which is in contrast to a study done in Pakistan [18] where more than two third of the students found the OSCE very stressful. Most of the students also found that OSCE was less stressful than other forms of assessment, in our study.

With regard to conduct of OSCE, only two thirds of the students were aware of OSCE as an assessment tool. This might be because this assessment tool is not being used in any examination format in most of the medical colleges of north-east India. So, being a new and the first medical college of Arunachal Pradesh, this was expected in our study. But, most of the students found the OSCE stations logical and appropriate.

Only half of the students found the stations' setting and context authentic which is in contrast to the findings by Jawaid et al [15]. This maybe because students have never had exposure to OSCE as an assessment tool in any examination process.

Majority of the students found that the time allotted at each station was inadequate which was similar to the findings by Pierre et al [7], but contrast the findings by Nasir et al [14]. This might have been because the stations required procedures to be done and completed within 1 minute only. We allotted 1 minute for every station to keep the timing uniform and prevent undue wait, rest and logging. But, inadequacy of time might contribute to exam stress in OSCE and increase the chances of mistakes [33-35]. This presses upon the need to review in detail an average duration of time required to complete different procedures as every clinical procedure, communication and demonstration of skills might not be uniformly completed within a short duration of 1 minute. According to Medical council of India, for competency based assessments (CBA), validity and educational impact are the major determinants of its utility [1]. Despite subjective judgments being involved, their reliability can be improved by increasing the number of assessors, assessments, tasks and by involving all teachers of the department in CBA process. All the faculties of the department were engaged as assessors for our study.

The limitations of the present study on OSCE are that the study was limited to the topic of neonatal resuscitation program with only 7 stations, limited time allotment to complete tasks, and lack of prior experience in organizing and conducting OSCE.

CONCLUSION

OSCE is an important educational instrument for teaching-learning-assessment process. CBME is outcome based and student oriented. Acceptance of new educational tool by the

students on the basis of transparency, learning opportunities, constructive feedback, reliability and validity is essential prior to its introduction. The study shows overwhelming acceptance of OSCE as a transparent, useful and practical assessment tool which will provide opportunities for learning and is both reliable and valid. Time allotted to stations will need a detailed review to prevent undue stress.

Conflict of Interest: None

REFERENCES

1. Medical Council of India. Assessment module for Undergraduate Medical Education Training Program. 2019;1-29
2. Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured clinical examination (OSCE). *BMJ*. 1975; 1:447-51.
3. Harden RM, Gleeson FA. Assessment of clinical competence using an objective structured clinical examination (OSCE). *Med Ed*. 1979; 13:45-54.
4. Cohen R, Reznick RK, Taylor BR, Provan J, Rothman A. Reliability and validity of the objective structured clinical examination in assessing surgical residents. *Am J Surg*. 1990 Sep;160(3):302-5.
5. Saboori A, Dastjerdi V, Mahdian M, Farazi FM. Examining outlook of postgraduate students of dental Faculty of Medical Sciences of Shahid Beheshti university about objective structure clinical (Osce examination). *JDS*. 2010; 28:88-94.
6. Bhatnagar KR, Saoji VA, Banerjee AA. Objective structured clinical examination for undergraduates: is it a feasible approach to standardized assessment in India? *Indian J Ophthalmol*. 2011;59(3):211-4.
7. Pierre RB, Wierenga A, Barton M et al. Student evaluation of an OSCE in paediatrics at the University of the West Indies, Jamaica. *BMC Med Educ*. 2004; 4:22.
8. Al-Hashimi K, Said UN, Khan TN. Formative Objective Structured Clinical Examinations (osces) as an Assessment Tool in UK Undergraduate Medical Education: A Review of Its Utility. *Cureus*. 2023 May 4;15(5):e38519
9. Newble DI. Eight years' experience with a structured clinical examination. *Med Educ*. 1988; 22:200-04.
10. Duerson MC, Romrell LJ, Stevens CB. Impacting faculty teaching and student performance: nine years' experience with the objective structured clinical examination. *Teach Learn Med*. 2000; 12:176-82.
11. Kowlowitz V, Hoole AJ, Sloane PD. Implementation of the Objective Structured Clinical Examination in a traditional medical school. *Acad Med*. 1991; 66:345-7.
12. Woodburn J, Sutcliffe N. The reliability, validity and evaluation of the objective structured clinical examination in podiatry. *Assess Eval High Edu*. 1996; 21:131-47.
13. El-Nemer A, Kandeel N. Using OSCE as an assessment tool for Clinical skills: Nursing students' feedback. *Aust J Basic Appl Sci*. 2009; 3:2465-72
14. Nasir AA, Yusuf AS, Abdur-Rahman LO, Babalola OM, Adeyeye AA, Popoola AA, et al. medical students' perception of objective structured clinical examination: feedback for process improvement. *J Surg Educ*. 2014 Sep-Oct;71(5):701-6.
15. Jawaid M, Masood Z, Jaleel F. Students' perception of surgical objective structured clinical examination (OSCE) at Dow university of health sciences. *Postgrad Med J*. 2014; 28:44-7
16. Baruah MN, Panyang PP, Nath AK, Hazarika D, Biswanath P. Introduction of OSCE (Objective Structured Clinical Examination) in Neonatology for Undergraduate Students. *J Med Sci Clin Res*. 2019; 8(7): 947-53.
17. Ansari T, Mansour MA, Tanzil S. Acceptability of objective structured clinical examination (OSCE) as an effective assessment tool among undergraduate medical students of Majmaah University, KSA. *RMJ*. 2021; 46:685-9.
18. Siddiqui FG. Final year MBBS students' perception for observed structured clinical examination. *J Coll Physicians Surg Pak*. 2013 Jan;23(1):20-4.
19. Gnamathasan CA, Abdullah J, Achike FI. Promoting Students' Acceptability: A Survey of Examinees (Students) and Examiners (Faculty) Perception of OSCE in a Malaysian Medical School. *J Med Educ*. 2012; 16:9-21.
20. Weiner GM, Zaichkin J. Textbook of Neonatal Resuscitation, 8th Edition. American Academy of Pediatrics, 2021
21. Miller GE. The assessment of clinical skills/competence/performance. *Acad Med*. 1990;65(9 Suppl):S63-7.
22. Mehay R, Burns R. Miller's Pyramid of Clinical Competence. In: Mehay R, editor. The Essential handbook for GP training and education. London: Radcliffe Publishing Limited; 2009:536.
23. Behera P, Gopi G, Siddaiah A, Sridhar PR. Challenges of objective structured clinical examination as a tool in medical assessment. *Indian J Community Fam Med*. 2022;8(2):156-60.
24. Dannefer EF. Beyond assessment of learning toward assessment for learning: educating tomorrow's physicians. *Med Teach*. 2013 Jul;35(7):560-3.
25. Schüttelz-Brauns K. Does assessment drive learning or should learning for professional life drive assessment? *GMS J Med Educ*. 2022;39(5):61.
26. Walters, D. Osborn, P. Raven. The development, validity and reliability of a multimodality objective structured clinical examination in psychiatry. *Med Educ*. 2005;39(3):292-8
27. R.K. Reznick, D. Blackmore, R. Cohen, et al. An objective structured clinical examination for the licentiate of the Medical Council of Canada: from research to reality. *Acad Med*. 1993;68(10):S4-6
28. Hosseini S, Vartanoosian J, Hosseini F, Fard FF. Validity & reliability of OSCE/OSPE in assessing biochemistry laboratory skills of freshman nursing students of Shahid Beheshti University of Medical Sciences. *J Nurs Midwifery Faculty Shahid Beheshti Univ Med Sci Health Serv*. 2013;23(8):34-43
29. Taghva A, Rasoulman M, Panaghi L, et al. Validity and reliability of the first objective structured clinical examination (OSCE) in psychiatry in Iran. *IJPCP*. 2007;13(1):17-24
30. Nair DS, Sathya JH. A cross-sectional study regarding student evaluation of an osce in community health nursing clinical course at St. John's college of nursing, Bangalore. *Int J Adv Res*. 2020;8(12):570-4
31. Sallam A, Atwa H, Abdelaziz A, Nasser AA. Medical Students' Perception of a Newly Implemented Objective Structured Clinical Examination (OSCE) in Orthopedic Surgery and Trauma: A Mixed-Method Study. *J Ecophysiol Occup Health*. 2022;22(1):29
32. Brannick MT, Erol-Korkmaz HT, Prewett M. A systematic review of the reliability of objective structured clinical scores. *Med Educ*. 2011;45(12):1181-9.
33. Emebigwine DLA, Linda NSB, Martin P. Objective structured clinical examination: Do first-year nursing students perceive it to be stressful? *Curationis*. 2023;46(1):e1-e7.
34. Emadzadeh A, Ravanshad Y, Makarem A, et al. Challenges of OSCE national board exam in Iran from participants' perspective. *Electron physician*. 2017;9(4):4195-4201.
35. Ataro G, Worku S, Asaminew T. Experience and Challenges of Objective Structured Clinical Examination (OSCE): Perspective of Students and Examiners in a Clinical Department of Ethiopian University. *Ethiop J Health Sci*. 2020;30(3):417-26.