

Introduction of Objective Structured Clinical Examination as an Assessment tool for learning in Surgery

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Received: 29-03-2023 / Revised: 07-04-2023 / Accepted: 14-04-2023

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Conflict of interest: Nil

Abstract:

Background: The curriculum tells the teacher what to teach and assessment tells the students what to learn. With the introduction of CBME, innovations in both teaching and assessment are needed to catch up with the learning. Competencies in CBME are a mix of all domains of learning, so we felt the need to introduce Objective Structured Clinical Examination (OSCE), as a method of assessment which can be aligned with the learning objectives. OSCE serve as an efficient and potent learning opportunity, nevertheless there are a variety of challenges with conduct and implementation of OSCEs regularly.

Aim and Objectives: To introduce OSCE as assessment method in 2nd phase MBBS students in surgery, to assess its feasibility, and to assess perception of students and faculty for OSCE as an assessment tool for learning in surgery.

Methodology: After the clearance from IEC, Surgery faculty was sensitized to the process of implementation of OSCE. Stations and Feedback questionnaire were designed (peer reviewed and validated). The MBBS PhaseII students were sensitized to OSCE and assessment was conducted. Feedback from students and faculty was collected as anonymous questionnaire form scored with a 5point Likert response scale and analyzed.

Results: 93.5% students and 95.5% faculty were satisfied with the OSCE as assessment and its feasibility. 96.5% students and 100% faculty wanted that OSCE should be followed as the method of assessment of practical/ clinical skills in surgery.

Conclusions: 1. Faculty found it feasible and worth implementing regularly in surgery.
2. Student appreciated this form of learning through assessment and feedback.

Keywords: Objective Structured Clinical Examination(OSCE), Surgery, Assessment, Competency Based Medical Education (CBME).

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Introduction

The curriculum tells the teacher what to teach and assessment tells the students what

to learn. There has been conspicuous change in medical education curriculum

with the introduction of CBME and same holds true for assessment methodologies also. We need to pay attention to the concerns raised in traditional clinical examinations about examiner variability, high level of subjectivity, lack of standardization & uniformity and testing of result not the process. [1,2]

The Objective Structured Clinical Examination (OSCE) first described in 1975 by Harden was developed to reduce bias in the assessment of clinical competence where various aspects of clinical competence are evaluated in a comprehensive, consistent, and structured manner, paying close attention to the objectivity of the process which helped to identify gaps in clinical knowledge. [3,4,5] One of the most important aspects of the training of a medical student is the acquisition of practical/clinical skills. An OSCE/PE consists of set of "stations" with predesigned objective skills that all student must perform sequentially. Stations are not simple spotting tests but may include psychomotor skills, such as performing an abdominal examination, administering intramuscular injections or soft skills such as communicating treatment, taking history, etc. Stations can be constructed as observed stations where an examiner scores the student on a structured checklist or global rating scale that includes further units of actions a student must perform to be considered competent on the said skill. [6] In OSCE, all domains of competencies are tested, specially the process part; OSCE is meant to test the '*shows how*' level of the Miller's pyramid. [2]

At present at our institution clinical assessment is done traditionally with long case and short case presentation. The major concern with these are lack of uniformity, examiner variability, high level of subjectivity, lack of standardization, limited assessment of clinical skill performance and total lack of assessment of soft skills like communication. These focus mainly on cognitive domain and on the "*knows*" and

"*knows how*" aspects of the Miller's pyramid. [2] Assessment in CBME focuses on improving learning as an ongoing and longitudinal assessment so that facilitators can identify the needs of the learner, plan remedial measures, and provide learning opportunities to improve learning. [7]

As Competencies in CBME are a mix of all domains of learning, so we needed to introduce new assessment forms which can be aligned with the learning objectives nevertheless there are a variety of challenges with conduct and implementation of OSCEs regularly. We aim to introduce OSCE in Surgery along with adoption of new CBME so as to improve overall clinical skills learning of the students and to assess them in a uniform and structured assessment method. Our specific objectives were to introduce OSCE as assessment method in 2nd phase MBBS students in surgery, to assess feasibility and perception of students and faculty for OSCE as an assessment tool in surgery.

Material and Methods

This prospective study was conducted in our Department of Surgery after clearance from Institutional ethics committee. The departmental faculty was sensitized to the process of implementation of OSCE as an assessment tool for 2nd phase MBBS students posted in Surgery. Consensus on the topics for OSCE sessions were decided by departmental faculty after deliberations and discussions. OSCE stations and Checklists for the sessions were designed, peer reviewed and validated by experts in the field of surgery. Blue print of stations and list of material and logistics needed for each station was prepared. Feedback questionnaire both for faculty and students was framed and validated. The questionnaire was divided into 3 main headings with total 20 questions for faculty and 14 for students (Sensitization and pre-exam information for OSCE, OSCE setting & conduct, Satisfaction regarding OSCE as assessment/feasibility) table 1&2.

Table 1: Student's questionnaire

Sensitization and pre-exam information for OSCE	
	Sufficient information about the OSCE was provided well in advance.
	The exam instructions were clear.
	Instructions to perform each activity were clear.
OSCE setting & conduct	
	The time allocated at each station was adequate.
	The staff was helpful in guiding us through the process of OSCE.
	There was appropriate supervision of stations
Satisfaction with OSCE as assessment & its feasibility.	
	The OSCE helped to identify my gaps in knowledge.
	The OSCE covered a wide knowledge range.
	The OSCE tested a wide range of clinical skills.
	I feel more confident in performing clinical skills after OSCE
	Feedback given after OSCE gave me an opportunity to clear my doubts
	The OSCE was a valuable practice and learning experience.
	OSCE should be continued as the method of assessment of practical/ clinical skills in surgery
	OSCE should be extended to other subjects as well as a method of assessment of practical/ clinical skills

Table 2: Faculty questionnaire

Sensitization and pre-exam information for OSCE	
	Sufficient information about the OSCE was provided well in advance.
	The marking scheme was clear and elaborate
	The exam instructions were clear.
	Instructions to perform each activity were clear.
OSCE setting & conduct	
	The time allocated at each station was adequate.
	The sequence of stations was logical and appropriate.
	The stations were well prepared for each activity.
	The exam was well designed and structured.
	The exam was administered well.
Satisfaction with OSCE as assessment & its feasibility	
	The OSCE was a reliable assessment method.
	The OSCE offered more learning opportunities than other exams.
	The OSCE should be continued as the method of assessment of practical/ clinical skills in surgery
	The OSCE covered a wide knowledge range.
	The OSCE score is a true the measure of clinical skills.
	OSCE is a more objective way of assessment as compared to the traditional method
	The OSCE tested appropriate skills mapped to the learning outcomes.
	I feel more satisfied with assessment with OSCE as compared to the traditional method
	OSCE reduces the bias in clinical evaluation.
	The OSCE helped to identify gaps in knowledge of students.
	The OSCE helped to identify weaknesses in communication and patient-care skills.

The questionnaire also included overall percentage rating scale and open-ended questions inquiring about the strengths and weaknesses of the OSCE and suggestions for improvement in its conduct.

The MBBS Phase II students were sensitized and introduced to the conduct of OSCE sessions. All students who have consented to be part of this study were included. Pilot study with 7 students done prior to the conduct of OSCE for the batches.

OSCE sessions were conducted in 3 batches of 30 students and each student was allotted to six stations. The structured assessment was done with the aid of the validated checklist. Feedback was given to students in the batches of 10 students each after assessment on same day with discussion on checklist points .

Perception of students and teachers were collected using an anonymous feedback questionnaire form scored with a 5 point Likert response scale. Data was entered in Microsoft Excel and analyzed with SPSS

software. The categorical variables were summarized using percentages.

Observations and Results

On the analysis of feedback questionnaire for Students we found that 34.8% strongly agreed and 51.4% agreed with total of 86.2% that Sensitization and pre-exam information for OSCEs was adequate and clear, 9.2% were still uncertain.

For OSCE setting & Conduct- 96% agreed (58.1% strongly) that the time allocated at each station was adequate, staff was helpful with adequate supervision of stations but 1.47% disagreed with it. A total of 93.5% agreed that they were satisfied with the OSCE as assessment method (61.3% strongly and 32.2% agreed).

96.6% (61.3% strongly) wanted that OSCE should be continued as the method of assessment of practical/clinical skills in surgery and 92.2% wanted that OSCE should be extended to other subjects as well for assessment of practical/clinical skills. Student feedback questionnaire responses in numbers (Q1-Q14) has been depicted in Fig1.

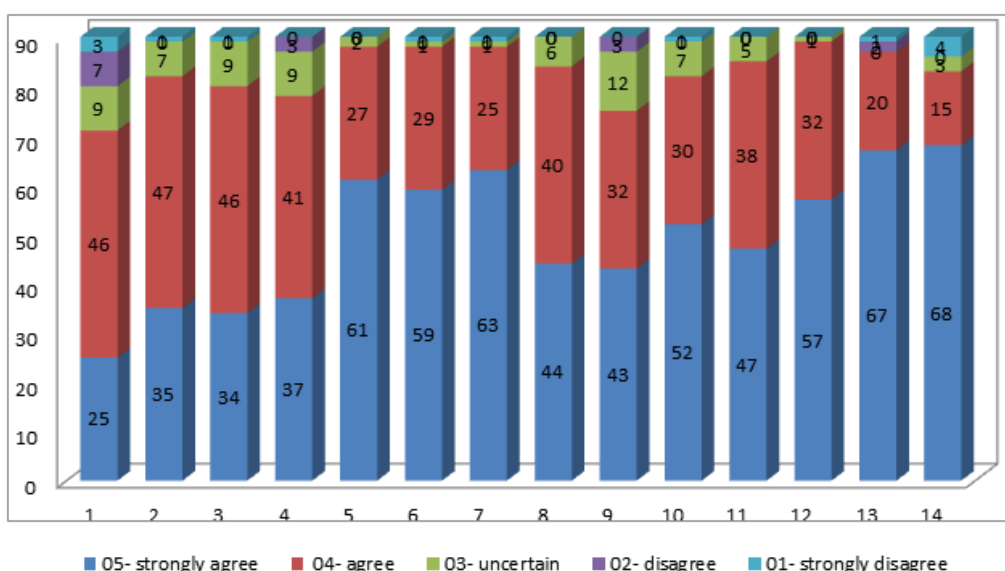


Figure 1: Student feedback questionnaire summary

In response to the open-ended questions asked to students the major themes which

appear on comments on strengths of OSCE were that it helped them to clear the

concepts of clinical skills and made them aware about the important aspects. Students commented that “Best part was that they applied what they knew and later got to know where they were lacking by feedback.” Many expressed that it was best examination so far as they got to learn and apply knowledge. It was an interactive learning experience and boosted confidence. 72 students gave the overall rating above 80%.

While commenting on weaknesses of OSCE some of the students said that stations with simulated patients confused us and we forgot to ask some points. Since it is rarely done it should be conducted more frequently to open our minds. Students suggested that more stations and skills should be included which shows their keen interest in this assessment method. Some suggested that more time for preparation should be given to them in future so that they can perform even better.

Faculty feedback analysis showed that (faculty subjects=16)59.4% strongly agreed & 40.6% agreed with total of 100% that Sensitization and pre-exam information for OSCEs was adequate and clear.

For OSCE setting & conduct -67.5% strongly agreed and 25 % agreed that the stations were well prepared and structured, sequence of stations was logical and appropriate, exam was administered well and with adequacy of time allocation at each station. 7.5% were still uncertain.

95.5% (59.7% strongly) were satisfied with the OSCE as assessment and its feasibility. 87.5 % were more satisfied (50% strongly) regarding assessment with OSCE as compared to the traditional method. 50% (8/16) gave above 90% overall rating and 43.8% gave rating between 80-90%. Faculty feedback questionnaire responses in numbers (Q1-Q20) has been depicted in fig 2.

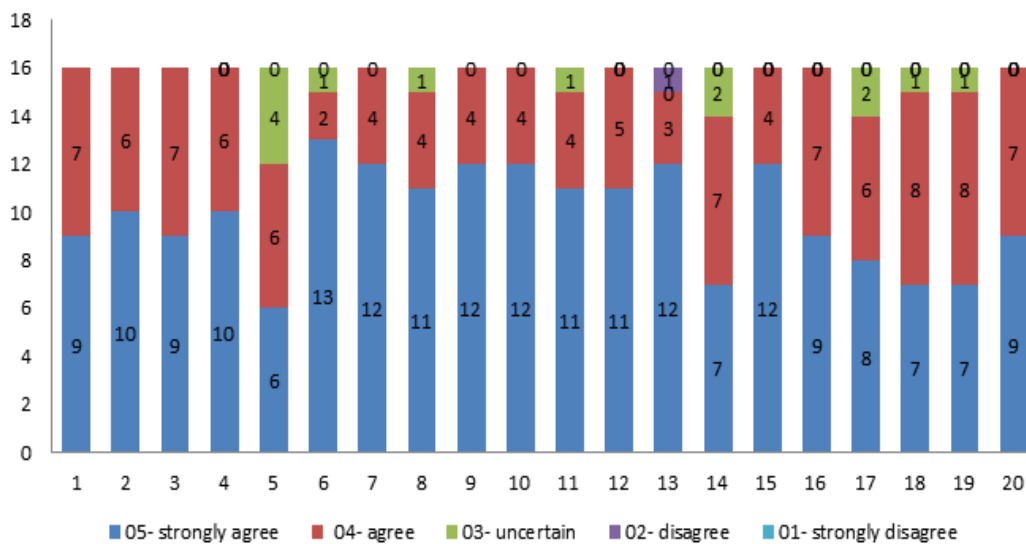


Figure 2: Faculty feedback questionnaire summary

In response to the open -ended questions asked to faculty they said that it reduces bias and is better assessment of clinical skills with more emphasis on active learning. “Many of them added that it will help in improving the clinical skills and help the staff to know the shortcomings of

students so that more attention is paid on those aspects especially in communication. Use of checklist for evaluating the students helped the faculty in giving precise feedback too.”

Comments on weaknesses of OSCE were that it was difficult to plan and arrange

OSCE stations as they needed more time for planning OSCE as compared to traditional assessment methods.

In their suggestions for improvement they wanted regular OSCE trials, more stations, more information for students about conduct to reduce the surprise element.

100% faculty agreed that OSCE is more objective way of assessment as compared to the traditional method. All students got above 50% marks. 82 out of 90 students felt more confident in performing clinical tests after OSCE assessment and 94.4% (85 students) agreed that Feedback given after OSCE gave them an opportunity to clear their doubts.

100% faculty agreed that the OSCE tested appropriate skills mapped to the learning outcomes. 96.6% (87) students and 100%(16) faculty agreed that OSCE should be continued as the method of assessment of practical/ clinical skills in surgery. 93.7% faculty (15/16) agreed that the OSCE offered more learning opportunities than other exams. Students too were of the opinion that the OSCE helped them to identify their gaps in knowledge (97% agreed to it).

Discussion

Detailed analysis of the perceptions in our study suggested that both students and faculty perceived several benefits from participating in the OSCE conduct and implementation. The efforts and time for planning and arranging OSCE stations is more as compared to traditional assessment methods but OSCE not only covers the cognitive, affective, and psychomotor domains of learning but large number of students can also be assessed while performing the skill rather than assessing the end result as done in traditional clinical exams.

Madalena et al. [8] in their Systematic Review found that by its characteristics, the OSCE is an ideal method to cope with the exigencies of an outcome based education

assessment, where the student is required at different phases of education to demonstrate the achievement of a range of learning outcomes in a variety of settings. When a school decides on OSCE implementation, it is important not to estimate the OSCE cost alone, but also consider what can only be achieved with an OSCE exam. They found that The OSCE is a feasible approach to the assessment of clinical competence for use in different cultural and geographical contexts.

During the deliberations and discussions by departmental faculty on OSCE sessions for our study two ideas surfaced-

First to create a common pool of 250- 300 OSCE stations for the appropriate competencies in surgery by faculty which can be used for assessments later for students in different phases of MBBS whenever needed. Even help of our senior residents can be sought whom we found very enthusiastic while implementation and conduct of this OSCE project.

On a second thought some had an opinion that this pool should not be kept only for assessment (just like keeping a question bank) but students should be provided access to it along with the marking checklist and scheme, so that they should know the importance of all the steps or components of clinical skills for learning purpose. We hope to work on it in near future as a team.

In a study by Young et al. [9] the authors too highlighted that the OSCE provided a useful insight into domain specific training deficits and OSCE can support and guide in diagnosing program and students deficiencies. Sloan et al. [10] classified the OSCE as a useful performance based assessment tool allowing faculty to test individual skills. They too found that the OSCE is feasible and reached a consensus of introducing it in a large scale.

No doubt in the initial phase as commented in our study by faculty that it is difficult to plan and arrange OSCE stations and more

time is needed for planning OSCE. It may be felt that time spent by staff on the OSCE is important and can be justified both by the need to assess students' clinical competence and by provision of an important learning experience for students along with feedback given during or after the OSCE. In this context the OSCE can be seen as a response to current trend in medical education to assess 'for learning' and not only 'of learning', consistent with the concept of a 'programmatic assessment fit for purpose' as suggested by van der Vleuten et al. [11] Although being in an institution with limited resources indeed makes it difficult to carry out complex assessments that involve an organizational structure, adequate infrastructure, and enough human and material resources, it is also true that we can and we must adapt. The incorporation of this tool has a positive impact on learning. [12]

There were also requests for frequent OSCE conduct and to increase the number of stations. These findings reflected the keen interest students had in learning by OSCE assessment. As put up by Lee et al. [13] repeated practice and evaluation in multiple formative OSCEs reduces the surprise element of the examination and helps to improve residents' confidence and performance. It also enables them to identify their strengths and weaknesses. Both students and teachers consider that OSCE assessment changed their way of studying, placing more emphasis on necessary clinical skills for the acquisition of competences.[12] The OSCE has been used to evaluate those areas most critical to performance of health care professionals, such as the ability to obtain/interpret data, problem-solve, teach, communicate, and handle unpredictable patient behavior, which are otherwise impossible in the traditional clinical examination. [14]

Joshi M K et al. [15] In their experience of OSCE as a Summative Assessment Tool for Undergraduate Students of Surgery concluded that OSCE is better assessment

tool as compared to the traditional method of examination, feasible and acceptable to students and faculty alike. OSCE conduct in surgery at our institution was found feasible and we could assess different domains of learning including history taking, clinical examination and communication in alignment with the competencies with the usage of single assessment method. In addition OSCE along with feedback was a great learning experience for students and faculty too. Since this was introduced in 2nd phase after 4 weeks of clinical posting so simple form of OSCEs were framed. Students as well as many of the faculty were new to the form of assessment and faculty found planning and arranging OSCE stations little difficult, so in near future we as department are planning to keep a pool of OSCEs ready and slowly increase the complexity of OSCE stations for future use as these students enter 3rd and 4th phase of MBBS.

Outcomes: (What this study adds)

OSCE is not only feasible as assessment method in surgery but also a great learning experience for students and faculty.

Conclusions

Introduction of OSCE was accepted and highly appreciated by both our students and faculty. Comments regarding the learning benefits perceived by students and examiners highlight the potential utility of this assessment form and its feedback which helps in learning by OSCE. In the long run it will help in creation of Competent health professionals assessed by a validated structured assessment method.

Limitations

1. Each faculty member was involved only once in the conduct of each session of OSCE due to hectic clinical duties.
2. Less number of OSCE stations.

Acknowledgements

I express my sincere thanks to Principal GMC Jammu, MEU Coordinator GMC Jammu, MEU Coordinator GMC Kathua

and Faculty at CMC Ludhiana for constant support and guidance. I am highly thankful to Faculty, Senior & Junior Residents of Dept. Of Surgery and phase 2nd MBBS students for their help and participation in conduct of the project.

Ethical Approval and/or Institutional Review Board (IRB) Approval – Approved vide no. IEC/GMC/2021/566

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