



Research Article

OSCE FOR RECORDING WHO ORAL HEALTH ASSESSMENT FORM AND DENTAL INDICES: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

To evaluate student's and examiner's educational experience and perception of Objective Structured Clinical Examination (OSCE) as compared to Routine examination as an assessment tool for recording WHO Oral Health assessment form (1997) and Dental Indices for formative assessment. Fifteen final year dental students served as controls 15 students were exposed to OSCE assessment method. OSCE consisted of 4 standardized stations and four well calibrated examiners. Following the examination an evaluation sheet regarding educational experience and perception of OSCE and routine examination was administered to the participating students and examiners. The educational experience was more satisfactory for the group of students undergoing OSCE as compared to routine examination. The passing percentage which was set at 50% was higher among the group of students which were assessed by routine examination as compared to OSCE. The OSCE, although relatively new in dental education, is an assessment that has the potential to improve the formative and summative assessment methods in dental schools. The OSCE can provide the opportunity not only to assess dental students, but also to provide them with useful formative feedback and challenge them in the development of varied skills that will be needed in their profession.

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INTRODUCTION

While routine practical examinations, stress chiefly on the recall demonstrated by the students¹, an Objective structured clinical examination (OSCE) assessment tool can be designed to evaluate other domains such as critical thinking, problem solving ability and communication skills which will facilitate holistic teaching learning experience for the students and the teachers Dwyer *et al* (2016), Lien Huiet *et al* (2016).

The practice of dentistry involves patient care to varied populations which includes paediatric patients, geriatric patients, specially abled individuals and medically compromised subjects. A very important aspect of patient satisfaction in health care delivery is doctor patient interpersonal relationshipLuraRomito *et al* (2014). Ambildhok Kadambari (2017). Soft skills such as communication skills, cognitive or emotional empathy, work ethics and professionalism form an important aspect of dental practice management.The curriculum should include interdisciplinary and team based approaches to teaching both patient centered and relationship centred care using experimental methodologies such as problem based learningLuraRomito *et al* (2014).Although there is an immense need to introduce newer and more comprehensive assessment tools in dental

education, only few studies have been conducted in the past aimed to evaluate the feasibility and reliability of such tools.OSCE can be designed to evaluate other domains such as higher level of cognitive skills such as critical thinking, problem-solving ability and communication skills Cobb Kate *et al.* (2013).

Dental faculty should explore innovative assessments methods in order to provide enriching and objective based educational process to the students and also to make teaching learning experience more standardized and reliable. The aim of this study is to assess overall satisfaction level regarding perception of an OSCE as compared to routine assessment method for dental students and the examiners.

MATERIALS AND METHOD

After obtaining relevant permission from the Principal of concerned Dental College and Hospital and the head of the Department of Public health Dentistry, study was commenced:The target population was fourth year dental students which consist of a class of 40 students. A total of 30 IV BDS students were included in the study. The purpose of the study was explained to the participants by giving the participant information sheet and written participant informed consent was obtained.

The totals of 40 fourth year dental students were divided into 8 batches and were posted in the Department of Public Health

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Dentistry on rotation basis for a period of 15 days. Out of the eight batches posted in the department from August to November 2017. Six batches were included in the study using Cluster random sampling technique. The allotment of the assessment tool was done to the six batches consisting of 5 students each was done using lottery method. Three batches were subjected to OSCE assessment and three batches served as controls consisting of 15 students in each group were subjected to routine assessment method.

The intervention group was assessed using OSCE assessment checklist, the skills assumes almost equal importance based on psychomotor/communication, cognitive and affective domains while the control group was assessed using routine assessment method. The objectives chosen to be assessed were appropriate to the skills learnt during the posting and the task to be performed at each station was appropriate for the objectives being assessed. The formative assessment was done for IV BDS students while recording WHO Oral Health Assessment form given in 1997 World Health Organisation (1997), Oral Hygiene index Simplified (OHIS) given by John C Green and Jack R Vermillion. (1964) and Decayed Missing Filled Surface index (DMFS) given by Henry T Klein *et al*(1938).The OSCE assessment was carried out by four examiners. The standardization and calibration of the examiners was done by the principal examiner from the Department of Public Health Dentistry, of the concerned dental College and Hospital. The same four examiners conducted the examination for the control group using routine assessment method. A pilot study was carried out on 10 subjects who were randomly divided into two groups, 5 were subjected to OSCE and 5 served as controls who were subjected to routine assessment method. The study was carried out in the Department of Public Health Dentistry to check for the feasibility pertaining to time, manpower and administrative management. The examination was carried out in the Undergraduate section of the Department of Public Health Dentistry in the concerned Dental College.

The assessment was carried out using checklist specially devised for OSCE stations, the examination consisted of four OSCE stations. Each station consisted of the required checklist, Station A,B and C was concerned with General Information and Clinical assessment, Station D was a Viva station, each station was allotted with a fixed and uniform time which was decided to be 10 minutes. Marks were equally divided among all the four stations, a score of 10 was allotted for each station, and the examination consisted of a total of 40 marks. A score of 50% or more was considered as pass for each station. The Viva station consisted of a list of standardized questions and an answer key, based on which marks were allocated. The control group was assessed using routine assessment methodology. The feedback for the assessment method was obtained from the examiners as well as the participants from the control and the intervention group.

RESULTS

The mean age of the students was 21.45 years; there were 5(15.15%) males and 25(84.85%) females (Table 1). There was a significant difference between satisfaction level among students and examiners in the satisfaction level as an assessment tool for OSCE and Routine examination. The satisfaction level was 100% pertaining to Standardized station enabling fairer peer comparison and help improve student performance when OSCE is used as an assessment tool among

students. 90% of the participants subjected to OSCE were satisfied with the assessment of clinical skills performance, objective based evaluation, evaluation of wide range of skills and application of theoretical and clinical knowledge, whereas the satisfaction level was 80% for assessment of communication skills and interpretation of results, 70% satisfaction level was reported in the assessment of errors in case handling (Table 2). The satisfaction level among the examiners was 80% for assessment of wide range of skills and application of theoretical and clinical knowledge and 100% for rest of the domains when OSCE was used as an assessment tool (Table3). The passing percentage which was set at 50% was highest among the group of students which were assessed by routine examination followed by OSCE (Table 4).The satisfaction level among the examiners and the students was higher for OSCE as compared to routine examination procedure and it was statistically significant.

Table 1 Student’s demographics

Age	21 to 22 years
Mean	21.45 years
Gender	
Male	5
Female	25

Table 2 To evaluate student learning experience and perception of Objective Structured Clinical Examination (OSCE) and Routine examination as an assessment tool for practical examination

Sr.no	Assessment of the following domains	Satisfied with OSCE (%) (Satisfied and Very satisfied)	Satisfied with routine examination (%) (Satisfied and very satisfied)	Test (Chi square test)
01	Clinical skill performance	90	50	0.523
02	Communication skills	80	60	0.667
03	Interpretation of results	80	70	0.267
04	Reveals errors in case handling	70	70	0.872
05	Standardized station enabling fairer peer comparison	100	40	0.385
06	Objective based clinical skills evaluation rather than subjective	90	60	0.285
07	Wide range of skills are evaluated	90	50	0.333
08	Helps to apply theoretical as well as clinical knowledge.	90	70	0.412
09	Will help in improving student performance	100	80	0.231

Note: All chi-square values were statistically significant (p<0.001).

Table 3 To evaluate examiners teaching experience and perception of Objective Structured Clinical Examination (OSCE) and Routine examination as an assessment tool for practical examination

Sr.no	Assessment of the following domains	Satisfied with OSCE(%)	Satisfied with routine exam (%)	Test (Chi square test)
01	Clinical skill performance	100	40	0.04
02	Communication skills	100	60	0.324
03	Interpretation of results	100	40	0.453
04	Reveals errors in case handling	100	40	0.943
05	Standardized station enabling fairer peer comparison	100	40	0.754
06	Objective based clinical skills evaluation rather than subjective	100	40	0.833
07	Wide range of skills are evaluated	80	20	0.443
08	Helps to apply theoretical as well as clinical knowledge.	80	40	0.436
09	Will help in improving student performance	100	20	0.435

Note: All chi-square values were statistically significant (p<0.001).

Table 4 Passing percentage of students using OSCE and Routine examination as an assessment tool

	Assessment methods	Passing percentage
01	OSCE	80%
02	Routine examination	90%

DISCUSSION

Student centered teaching learning methods should be based on adult learning principles an area that can be studied to understand all domains of relatively new and innovative assessment tools in dental education such as the OSCE. This study provides evidence that dental students and the examiners find a comprehensive, OSCE aimed at assessing clinical preparedness to be an effective and meaningful assessment method as well as a positive learning experience. Unlike routine examination formats with which students were familiar, the OSCE provided an opportunity to assess various domains relevant to the real world settings. Standardized station enabling fairer peer comparison and help better prepare for the next phase of their education. In a study conducted in India by Bapat R M (2009) developed and implemented an OSCE in periodontology for final year BDS students, majority of the students in the study felt that the standardized stations enable fairer peer comparison and self-evaluation but on the negative side students found the examination very stressful due to limited time allocated at each station.

The mock OSCE training program builds various domains of medical education and constructive feedback Bapat (2009) and Epstein R M (2007). This study also shows that OSCE may be particularly well suited to prepare students for patient care and assess their skills before entering the competitive world outside. Another study provides evidence that dental students find a OSCE aimed at assessing clinical preparedness to be an effective and meaningful assessment method as well as a positive learning experience. Students agreed that they learnt a lot more by participating in the study. Didactic education method did not prepare students to develop clinical reasoning skills Epstein RM (2007) and Graham Roseanna (2014). Studies that have examined dental OSCEs from a student's perspective have similarly found that the examination is generally perceived positively by students and seen to be a good test of practical skills in clinic. Davenport ES (1998), Manogue M and Brown G (1998).

In assessing solely restorative and endodontic treatment, it was similarly found that the majority of students were of the opinion that the examination was objective based and able to test their clinical skills and doctor patient interpersonal relationship appropriately Larsen T and Jeppe Janson D (2008) Hammad *et al.* (2013). OSCE was more stress provoking than a routine examination, but dental student anxiety level was not associated with scores obtained in the examination Brand HS, Schoonheim-Klein M (2009) Sahebalzamani, M. F. H., & Jahantigh, M. (2012). In this study stress and anxiety among students undergoing OSCE assessment could have contributed to lower scores as compared to the control group.

In order to minimize subjectivity, only one faculty member, an expert or specialist in the discipline being tested, is responsible for grading each individual section of the OSCE. In addition, if a station is monitored by a faculty member, the same faculty member remains at the station for the duration of the

examination and uses a checklist to minimize subjectivity. In another study the students and examiners agreed that the OSCE enables faculty members to evaluate students' knowledge in basic science, pathophysiology, clinical diagnosis and treatment planning, and helps reveal errors in case handling Jorge A (2016). The inter examiner reliability was good due to due calibration of the examiners before the commencement of the study there by reducing the subjectivity in OSCE as an assessment tool.

However, time pressures, lack of space for development of OSCE stations, and increasing number of students may adversely affect the implementation of OSCE as an assessment tool in routine examinations in dental colleges. Much more conceptualization, calibration of examination, standardisation of station, adequate time allocation and planning are required for an OSCE than for other assessment methods, so a great deal of support is needed from one's colleagues to carry out a study of this nature Shailesh M. Lele (2011). Its feasibility depends on the active involvement of faculty members at every stage, along with the supporting staff; the requirement of human resource is twice that of traditional method Shailesh M. Lele (2011).

Nevertheless this study suffered from certain limitations such as only 4 OSCE stations and limited syllabus was considered, there is a need to include complete syllabus and increase the number of OSCE stations, a small sample size was considered due to limited availability of resources and time, however OSCE training programs are easier to manage when conducted on small groups.

CONCLUSION

Each of these procedures performed in the practical examination consisted of several sub skills, which the students are expected to perform. The faculty members do not directly observe the actual performance of these sub skills by the students. Thus the very purpose of formative assessment is not fully served under routine assessment methods Shailesh M. Lele (2011). The OSCE, although relatively new in dental education, is an assessment that has the potential to improve formative and summative evaluation in dental schools. Students are aware of the weaknesses of many current forms of assessment, but have largely come to accept the knowledge-focused and summative nature of testing. The OSCE can provide the opportunity not only to assess dental students, but also to provide them with useful positive and negative feedback and challenge them to use the higher order cognitive skills, soft skills to improve empathy and communication that will be needed in their future profession. In situations where OSCE is not feasible due to lack of manpower or adequate place for the examination DOPS can serve as an alternative method of evaluation. There is a need to develop a standardised checklist for various dental procedures carried out at the undergraduate and post graduate level of various dental specialities. Further studies using videotape rather than direct observation would serve as a more purposeful research.

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