



# **Awareness and Knowledge of Dental Teaching Faculty on OSCE/OSPE Examination: An Online Survey**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

**Aims:** Past many decades the traditional way of examining the students includes both short and long cases as well viva-voce examination. In the conventional assessment method, there are some voids found such as communication skills.

**Study Design:** A descriptive cross-sectional study was performed using a pre-designed questionnaire through Google forms.

**Place and Duration of Study:** Questionnaire distributed to the participants of various dental colleges across India through e-mails, and through Whats App, from 16th Feb 2022 to 30th March.

**Methodology:** The questionnaire was pre-tested, and validation was performed. A total of 501 responses were received from the participants. The received data was entered in Microsoft Excel sheet. Descriptive Statistical Analysis was done by using IBM SPSS version 26.

**Results:** A total of 501 faculty members participated. Senior Lectures stood in first place (153) and the least interest shown by the Readers (100). While gender wise designations follow as in Senior Lecturer designation dominated by the female faculty. 82.4% of faculty were aware about the OSCE and 77.8% claimed they knew about OSPE. More than half of the participated faculty revealed that they have not undergone any training programme to conduct OSCE/OSPE.

**Conclusion:** Very few of the Dental Institutions conduct the OSCE/OSPE programmes. Though there are many ways to test the student's knowledge, no single method is superior to other methods. It is advisable to use a combination of methods for better results.

**Keywords:** *Objective Structured Clinical Exam (OSCE); Objective Structured Practical Exam (OSPE); traditional exam; clinical competence; examiner bias; exam stress.*

## 1. INTRODUCTION

Expertising in the clinical area is of supreme importance for any of the dental student. Teaching and assessment method which emphasizes clinical competence is extremely vital. A few of the Dental Institutions in the worldwide in general and majority of the institutions in India still following the traditional way of assessing the student skills. In conventional exam pattern, only the theoretical knowledge of the student will be assessed by the examiners, and students will get one clinical procedure to be performed. Some of the academicians blame this system having some lacunae which include, lack of standardization, accuracy, and a lot of examiner bias [1,2]. To solve these issues, in 1975 first time Harden RM et al [3], introduced Objective Structured Clinical Exam/Objective Structured Practical Exam (OSCE/OSPE) in medical examination claiming this method of assessment having more advantages and very minimal problems. The meaning of objective in OSCE/OSPE is physically present, not controlled either by individual feelings or bias, because the pre prepared checklist used by the teachers to assess all the students. Structured meaning all the exam appeared students will face the same questions and completes the same exercise within the stipulated time structure. The clinical/practical context in the OSCE/OSPE is the given

problem in the examination will mimic the real clinical or practical situations. The meaning of examination is the abilities of the students are tested in formative method [4,5]. The advantages with the OSCE/OSPE examinations includes, easy adoptability, homogenous situations to all the students, easy recall, uncomplicated reproducibility, performance of the students assessed by team of examiners which will remove the examiner bias with same [time frame and predefined uniform questions [6,7]. Like any other examination methods even the OSCE/OSPE too having some disadvantages such as the examiners need to undergo separate training to conduct the examination, conduction of the examination is expensive and extra burden on the institution and in all the examinations the actual situations given may not match with theoretically [8-10]. The National Assessment & Accreditation Council and Dental Council of India (DCI) in its regulations for the degree of Bachelor of Dental Surgery recommend the implementation of the OSCE or OSPE as a tool for assessing dental students' skills [4,5]. After OSCE/OSPE was introduced in dentistry, several dental schools have introduced OSCE/OSPE in different countries [1,2,11]. For conducting any exam, teacher/faculty plays pivotal role. The faculty should have proper knowledge and experience in their speciality for proper assessment of the examinees. There is only one study available on the perception of Dental

teaching faculty on OSCE exam (Wali O et al. August 2022) conducted in Jeddah Kingdom of Saudi Arabia [12]. Whereas no evidence of studies available on awareness and knowledge of dental teaching faculty in India so far on OSCE/OSPE assessment examination system. Hence this study unified the knowledge and awareness to analyse and portray the dental teaching faculty's attitude towards OSCE/OSPE examination which may create awareness among the faculty members to implement the OSCE/OSPE evaluation system in their institutions.

## 2. METHODOLOGY

### 2.1 Study Design

Descriptive cross-sectional study.

### 2.2 Study Population

Dental teaching faculty working in various Dental Institutions across India.

### 2.3 Sampling Criteria

Purposive Sampling.

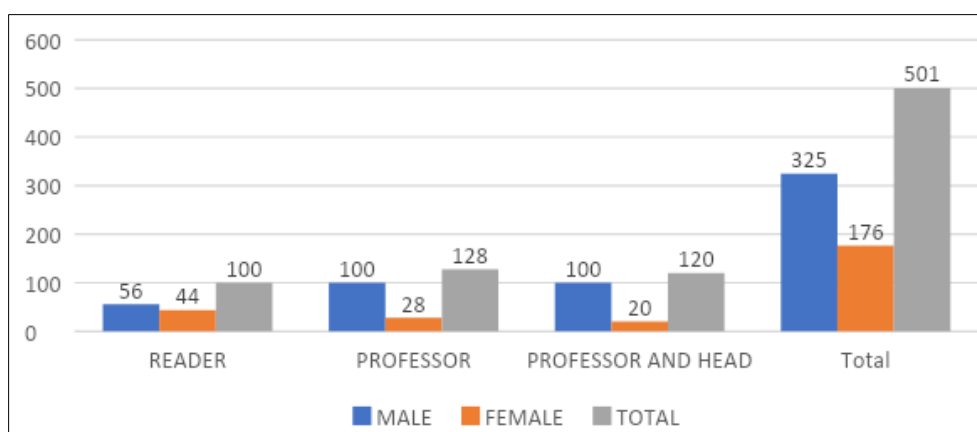
### 2.4 Study Instrument

This study was conducted using a predesigned and validated OSCE/OSPE close ended questionnaire, which was sent through Google forms. Google forms are an exceptional tool used to obtain the online data. The advantage with these forms is they can provide immediate statistical results to the researcher to draw the proper interpretation. The questionnaire

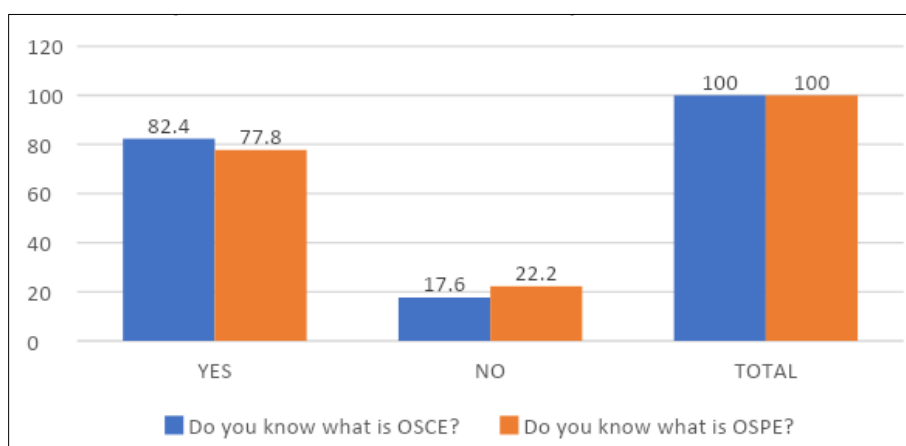
[Annexure-1] was pre-tested, and validation was performed. Proper validation various dental teaching faculty across India, to get face validity of the questionnaire, (2). A questionnaire construction expert was involved during the preparation of questionnaire and (3). A pilot study was undertaken on 30 participants. The questionnaire was distributed to the participants of various dental colleges across India through personal and institutional e-mails, also through various social media, from 16th Feb 2022 to 30th March 2022. This structured close ended questionnaire comprised of questions related to awareness on OSCE/OSPE, traditional exam pattern with drawbacks, training, assessment types, scope for self-evaluation, feedback, student progress, validity & reliability, examiner bias, exam stress, student strength and weakness. A total of 501 responses were received from the participants. The received data was collected and transferred onto Microsoft Excel sheet. The descriptive Statistical Analysis was done by using IBM SPSS version 26.

## 3. RESULTS AND DISCUSSION

A total of 501 faculty members were participated in the study. The participant's gender point of view, the male gender was dominated with 64.9% (325), and female percentage was less (35.1%). Whereas designation point of view the Senior Lectures were stood in first place (153) followed by Professors (128), then Professor and Heads (120), the least interest shown by the Reader designation (100). While gender wise designations follow as in Senior Lecturer designation dominated by the female faculty whereas rest of the designations male participation was big in number Graph 1.



Graph 1. Graphical representation of participant's designation and gender



**Graph 2. Awareness of Faculty on OSCE/OSPE**

**Table 1. Knowledge of the Dental Teaching Faculty on Traditional exam v/s OSCE/OSPE**

Questions	Response		Total %
	Yes (%)	No (%)	
8.In the traditional exam pattern-all the important skills of the students are tested?	241(48.1)	260(51.9)	501(100)
8a.In the traditional exam pattern-all the does all the students are tested equally?	234(46.7)	267(53.3)	501(100)
8b.In the traditional exam pattern-does all the students get the same questions?	289(57.7)	212(42.3)	501(100)
8c.Do you think OSCE/OSPE is better than traditional exam pattern?	429(85.6)	72(14.4)	501(100)
9. Do you suggest to follow OSCE/OSPE for all the exams?	393(78.4)	108(21.6)	501(100)

Awareness of faculty on OSCE/OSPE as an assessment method, the lion head share of faculty members was aware of OSCE (82.4%), whereas 77.8% faculty revealed that they know about OSPE exam Graph 2.

When it comes to knowledge of the dental teaching faculty members on traditional exam versus OSCE/OSPE, about traditional exam pattern we have observed mixed results. 51.9% of faculty were under impression that, all the important skills were not tested, when it comes to testing all the students equally in traditional exam, again 53.3% were stated that all the students were not testing equally, and majority percentage (57.7%) expressed that all the students will get same questions. Except minor percentage (14.4) rest all the faculty members strongly felt that traditional exam is not on par

with OSCE/OSPE exam pattern. A huge percentage (78.4%) of faculty members were in favour of implementing OSCE/OSPE assessment method for all the exams Table 1.

The knowledge of the Dental Teaching Faculty on OSCE/OSPE training; type of exam pattern; its advantages & disadvantages, when it comes to the training of faculty members for OSCE/OSPE, majority of the participants (64.7%) stated that they have not undergone any training for the conduction of OSCE/OSPE pattern, but huge percentage (83.6%) of them are shown positive attitude towards attending the training in the future. While responding to type of exam, there are 79.6% of the faculty felt that these are summative exams. The lion head share (90.2%) felt that OSCE/OSPE can provide outlook for the students on self-evaluation, and

almost all the participants (94.6%) were revealed that OSCE/OSPE can provide remarkable feedback on confusions even in minor areas and understanding of the students as well as very good assessment method (92.4%) for progress of the students. Hand full of participants (82%) agreed that OSCE/OSPE is a solution for the lacunae present in the traditional exam. A predominant percentage (94%) felt that the OSCE/OSPE pattern can enhance the accuracy and efficacy of the assessment. According to 82.6%, of the participants stated that there was no role of luck favouring the student in OSCE/OSPE assessment method and meticulously all the students will be assessed. A very good

percentage of faculty (91.2%) under the opinion of OSCE/OSPE pattern can minimise the bias among the examiners. Regarding the stress related to OSCE/OSPE, 59.1% percentage of the respondents felt that the students will undergo stress with this exam pattern. Whereas a greater number of faculty (71.3%) felt that OSCE/OSPE is a universally using method for the assessment. Major share of faculty (93.2%) under opinion of OSCE/OSPE can aid in the actual self- assessment of students. Almost all the participants (94.4%) felt that OSCE/OSPE can provide feedback to the students about themselves, as well their weakness and their strengths too (90.8%) Table 2.

**Table 2. Knowledge of the Dental Teaching Faculty on OSCE/OSPE training; type of exam pattern; advantages & Disadvantages**

Questions	Response		Total %
	Yes (%)	No (%)	
10. Have you attended any training programme on OSCE/OSPE conduction?	177(35.3)	324(64.7)	501(100)
10a.If no: Are you interested to attend in the future?	419(83.6)	82(16.4)	501(100)
11. OSCE / OSPE is a summative exam?	399(79.6)	102(20.4)	501(100)
11a. OSCE/OSPE can provide scope for self-evaluation by the student?	452(90.2)	49(9.8)	501(100)
11b. OSCE/OSPE can provide remarkable feedback about students understanding and pinpoint areas of confusion?	474(94.6)	27(5.4)	501(100)
11c. OSCE/OSPE is a valuable method in assessing students' progress towards competence?	463(92.4)	38(7.6)	501(100)
11 d. Will you agree that OSCE/OSPE can overcome the problems arising from the traditional exam system?	411(82.0)	90(18)	501(100)
11e. OSCE/OSPE can improve the validity and reliability of assessment?	471(94.0)	30(6.0)	501(100)
11f. Do you think, OSCE/OSPE can eliminate the 'Luck of the draw'?	414(82.6)	87(17.4)	501(100)
11g. Do you agree that OSCE/OSPE can reduce variations in marking standards from examiner to examiner?	457(91.2)	44(8.8)	501(100)
12. Do you think OSCE/OSPE exam can induce more stress in the student?	205(40.9)	296(59.1)	501(100)

Questions	Response		Total %
	Yes (%)	No (%)	
13. Is OSCE/OSPE a globally used assessment method?	357(71.3)	144(28.7)	501(100)
14. OSCE/OSPE can give the students a greater 'realistic self-assessment'?	467(93.2)	34(6.8)	501(100)
15. OSCE/OSPE can provide 'feedback' to the students?	473(94.4)	28(5.6)	501(100)
16. OSCE/OSPE can reveal students' strengths and weaknesses?	455(90.8)	46(9.2)	501(100)

### 3.1 Discussion

To our knowledge this is the first research study in India to delve into the opinion of dental teaching faculty members about OSCE/OSPE. This study scrutinizes the knowledge and awareness of dental teaching faculty in relation to OSCE/OSPE as assessment method of dental students. After 50 years of its introduction in medical examination, the OSCE/OSPE has been widely adopted as the examination to assess clinical competence all over the world in various medical disciplines including dentistry both in undergraduate and postgraduate levels [2,13].

Traditional exams usually assess the theory and students will get one clinical procedure to be performed [14]. According to Kumar V et al. [15] the lacunae in the curriculum can be identified with the implementation of OSCE/OSPE examination. The students during the OSCE/OSPE examination, will perform different clinical procedures in different stations by rotation within a stipulated period, the related theory knowledge levels can be assessed, also the weakness of the student can also be identified in that step. The present study results on strengths and weaknesses were revealed by the OSCE/OSPE pattern are on par with the reports of Plasschaert AJM [14] and his colleagues. Dennyhy PC et al. [16] and Mossey PA et al. [17] mentioned OSCE pattern is the ideal format for assessing the skills like communication skills, logical thinking and problem-based capacity, diagnosis, and treatment planning. Manogue M et al. [1] added that the OSCE/OSPE pattern targets mainly the skills which are not tested during the traditional exam such as communication skills and practical procedures.

According to Srivastava Waghmare et al. OSCE/OSPE is ideal method to examine the skills of the students also useful to fulfil the

proficiency. [18] According to Zayyan M, [8] for the successful conduction of OSCE/OSPE the faculty required training or should have previous experience. In the present study only few faculty members (35.3%) attended the training programme for conduction of OSCE/OSPE but majority of the faculty (83.6%) who have not been attended any training previously are very keen to attend in the future.

In the present study 79.6% of faculty members felt that OSCE/OSPE is a summative assessment method and very less faculty felt it is a formative type of evaluation. These results are not in line with the study results of Shumway JM [19], Lele SM [20] and Harden RM [3], who felt that an OSCE is a formative evaluation, whereas our study results are coinciding with the study results of Traynor M and Galanoui D [21] which reveals that the summative assessment designs to regulate clinical skills. Frantz JM et al. [22] from their pilot study concluded that the OSCE/OSPE can provide both summative as well as formative type of evaluation of the students. These results are contrary to many documented studies which claims that the OSCE/OSPE can provide either summative or formative type of assessment methods, including the present study. The study results of Shinde S et al., also reveals that the OSPE is accepted method as formative as well as a summative assessment to examine the skills of undergraduate students. [4]

Wass V et al. [23] and Manogue M et al. [1] claim that the OSCE increases the reliability of the examination and is very well suited to provide feedback to the students thereby enabling them to reflect upon and improve their abilities. The present study results on reliability were also supporting the above studies. Very big percentage of faculty (94%) felt that OSCE/OSPE can improve the validity and reliability. According to Al-Mously N et al. [24]

now worldwide, OSPE is accepted as a gold standard for assessing practical lab skills. OSCE has achieved worldwide acceptability as an established mode for learner assessment. [25,26] The literature witnessing on the advantages of OSCEs/OSPE system which reveals that the bias of examination will be reduced, and dependability will become more. [3,27,28] Our study results were also accepting on the examiners' bias. A total of 91.2% participants agreed that the bias of examiners will become less with OSCE/OSPE examination and can reduce the variations among the examiners.

According to Rathi B and Rathi R, [7] OSCE/OSPE acknowledged as honest, dispassionate, accurate and dependable method. when compared it as a fair, unbiased, valid, reliable assessment method as compared to traditional practical examination.

Some researchers claim that the OSCE increases the reliability of the examination [29]. According to Brown G et al. [30] and Puryer J et al. [31] the OSCE has also been shown to have good reproducibility. The results of the present study on feedback for the students, almost all the participants (94.4%) felt that OSCE/OSPE is very well suited to provide feedback to the students thereby enabling them to reflect upon and improve their abilities. The OSCE method can provide the scope for the students to know their weakness as well as their strengths.

Fistful of evidence available from the literature on student's anxiety and stress during the OSCE/OSPE examinations which leads into repercussion during the assessment [32,33]. Whereas our study results were against the above studies and in favour of Shitu B et al. [34] and Shahazad A et al. [35] study results, in which the students felt the stress induced during OSCE/OSPE exam was less than the traditional exam.

Some researchers explained the reasons also. According to Brand HS et al. [36] stress may be the result of more expectations for good grades as well tedious preparation for the exam by the students may lead to excess stress levels, Whereas Marshall G et al. [37] claimed that the rudeness and callous behaviour of some of the examiners may also lead to the stress for students. Even some unscientific information such as shaking of student's hands, increased

blood pressure found during the OSCE examination [38].

The role of faculty members very crucial for the success of OSCE/OSPE exam, in relation to proper designing, standardize the final assessment, critical areas of examination to be focused, smooth conduction and providing feedback to students. [39] The present study results on improving the validity and reliability of OSCE/OSPE exam system (94%) will also matching with the above study reports. These results are concurring with the results of Manogue M et al. [1] As per Mamatha SD et al. [40] OSCE/OSPE can inventorying the present method of conventional clinical/practical examinations. OSPE/OSCE is a systematic examining method without examiner bias.

#### **4. CONCLUSION**

To implement any new assessment method successfully, the concerned faculty must have thorough knowledge and experience in that subject. Hence it is advisable to undergo training programme by all the teaching faculty. Some of the countries already implementing OSCE/OSPE programme in their dental curriculum. Less number of dental institutions in India following the OSCE/OSPE. No single method of assessment can exhaustively examine the dental students. Hence it is advisable to follow different methods rather than one method. The Dental Education Units of all the dental colleges may plan for providing periodic training programme for all the faculty members for the smooth assessment of student skills both theoretical and clinical/Practicals.

#### **5. LIMITATIONS OF THE STUDY**

Our study concluded with a smaller number of participants. The questionnaire was not sent to all the dental faculty members in India.

#### **6. FUTURE RECOMMENDATIONS**

Further studies may require to involve more number of faculty members for the more authenticated results.

#### **CONSENT**

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

This research has been registered with the Institutional ethics Committee board.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## ANNEXURE-I

### Questionnaire:

1. Name : [Optional] ..... 2. Gender: Male ( ) Female ( )
2. Designation: Professor & Head ( ) Professor ( ), Reader ( ), Sr. Lecturer ( )
3. Do you know what is OSCE? Yes ( ) No ( )
4. Do you know what is OSPE? Yes ( ) No ( )  
In the traditional exam pattern-all the important skills of the students are tested? Yes ( ) No ( )
5. 5a. In the traditional exam pattern-all the does all the students are tested equally? Yes ( ) No ( )  
5b. In the traditional exam pattern- does all the students get the same questions? Yes ( ) No ( )  
5c. Do you think OSCE/OSPE is better than traditional exam pattern? Yes ( ) No ( )
6. Do you suggest to follow OSCE/OSPE for all the exams? Yes No
7. Have you attended any training programme on OSCE/OSPE conduction? Yes ( ) No ( )  
7a. If no: Are you interested to attend in the future? Yes ( ) No ( )
8. OSCE / OSPE is a summative exam? Yes ( ) No ( )  
8a. OSCE/OSPE can provide scope for self-evaluation by the student? Yes ( ) No ( )  
8b. OSCE/OSPE can provide remarkable feedback about students understanding and pinpoint areas of confusion? Yes ( ) No ( )  
8c. OSCE/OSPE is a valuable method in assessing students' progress towards competence? Yes ( ) No ( )  
8d. Will you agree that OSCE/OSPE can overcome the problems arising from the traditional exam system? Yes ( ) No ( )  
8e. OSCE/OSPE can improve the validity and reliability of assessment? Yes ( ) No ( )  
8f. Do you think, OSCE/OSPE can eliminate the 'Luck of the draw'? Yes ( ) No ( )  
8g. Do you agree that OSCE/OSPE can reduce variations in marking standards from examiner to examiner? Yes ( ) No ( )
9. Do you think OSCE/OSPE exam can induce more stress in the student? Yes ( ) No ( )
10. Is OSCE/OSPE a globally used assessment method? Yes ( ) No ( )
11. OSCE/OSPE can give the students a greater 'realistic self-assessment'? Yes ( ) No ( )
12. OSCE/OSPE can provide 'feedback' to the students? Yes ( ) No ( )
13. OSCE/OSPE can reveal students' strengths and weaknesses? Yes ( ) No ( )

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