



# Attitude of Dental Prostheses Residents of Faculty of Dentistry of Tabriz University of Medical Sciences to Objective Structured Clinical Examination (OSCE)

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## Abstract

**Introduction:** Objective Structured Clinical Examination (OSCE) is one of the most authentic ways to evaluate clinical skills. The present study aimed at evaluating the attitude of dental prostheses residents of the faculty of dentistry of Tabriz University of Medical Sciences toward this kind of examination.

**Methods:** In this cross sectional-descriptive study, two questionnaires were designed. One questionnaire dealt with nature of OSCE and the other dealt with the attitude of residents about OSCE. After holding the OSCE in July 2012, 2013, and 2014, the questionnaires were delivered to all dental prostheses residents of the Tabriz dental faculty. In total, 40 questionnaires were filled out within three years. Questions included five-choice items based on a Likert scale. Furthermore, the students' scores in each exam were recorded to evaluate any possible relationship between the acquired grade and the student's attitude toward the exam. The collected data were analyzed using SPSS17 software ( $\alpha=5\%$ ).

**Results:** Most residents (62.5%) referred to the large number of questions as a positive factor. In addition, a majority of residents (90%) suffered from high levels of stress during OSCE. There was a close relation between the grade acquired by the residents in the examination and their attitude to OSCE as well as their evaluation about the examination. The students with better grades had more positive attitudes toward OSCE.

**Conclusion:** Considering the satisfaction level of the students in this study, OSCE was held efficiently and may be considered as part of the training program of the residents.

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## Introduction

In medical sciences, education is a regular, continuous, and planned process resulting in changes in the learner's knowledge, attitude, and skills.<sup>1</sup> Students learn psychomotor subjects better than cognitive ones. Since practical and clinical training is the main part of medical education, its evaluation plays a significant role in improving the quality of training and is a reliable tool for assessing students' learning rates.<sup>2</sup> Considering the extraordinary importance of clinical training, clinical evaluation is of high importance in evaluating the success rate.<sup>3,4</sup> In traditional education, students' learning rate is evaluated using oral and written examinations. One

of the most important disadvantages of this method is that students merely rely on their memorized materials and their capability in using theoretical and practical knowledge is not evaluated. Objectives and techniques to evaluate knowledge have been improved using modern techniques of education, i.e., student-based education and more participation of students in the learning process.<sup>5,6</sup> Quasi-real examinations evaluate cognitive as well as emotional and psychomotor areas.<sup>7</sup>

The Association for Medical Education in Europe recommended several methods and techniques for practical and clinical evaluation corresponding with educational

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objectives including Objective Structured Clinical Examination (OSCE).<sup>8</sup> OSCE was initially introduced by Harden *et al.* in 1975. It was then quickly used by other faculties and several studies were conducted to evaluate it.<sup>9</sup> OSCE is one of the most reliable and authentic methods for evaluating clinical skills of medical students. It is mainly held to objectively and comprehensively evaluate clinical knowledge and skills of the students when they face patients. OSCE deals with three important categories: diagnosis, treatment plan, and patient management.<sup>5</sup> This method evaluates the realization rate of educational objectives considering the cognitive, emotional, and psychomotor skills of medical students. Although details of the examination vary in different conditions, its general structure consists of 15-20 questions in separate stations and the examination is held for a specific time period.<sup>9</sup> Experienced human forces, detailed planning, facilities, and reliable assessment tools are required to hold the examination.<sup>10</sup>

Evaluating the attitudes of participants in several studies is a way to evaluate the efficiency of this examination and recognize its weak and strong points in order to improve the current conditions. According to results of the studies conducted on paramedical students in Iran and abroad, most students were more satisfied with OSCE than with other methods.<sup>11,12</sup> According to Zare<sup>13</sup> and Tazakori<sup>14</sup>, most nursing students were satisfied with OSCE in comparison with traditional evaluations and their grade average was higher using OSCE. According to some studies, students were dissatisfied with the OSCE method mainly due to high levels of stress arising from being observed by the evaluators and time limitations.<sup>11,15</sup> Several studies reported positive attitudes.<sup>16,17</sup> Saboury *et al.*<sup>5</sup> studied attitudes of specialized dentistry students of Shahid Beheshti University of Medical Sciences about OSCE. The attitude was generally positive, but most students referred to it as a stressful method.

At present, OSCE is part of all medical and dental board exam evaluations in Iran. Considering the importance and wide application of this method, further research is required to study its different aspects. The present study aimed at evaluating attitudes of specialized dental prostheses students of Tabriz dental faculty toward OSCE examinations.

## Materials and Methods

### Methodology

In this cross sectional-descriptive study, two questionnaires were designed. One questionnaire dealt with nature of OSCE and the other with the OSCE examination (Table 1). The OSCE examination was carried out in three successive years, 2012-14, to increase the sample size and the year of examination did not induce any effect on the OSCE examination. Following the OSCE examination in July 2012, 2013, and 2014, the questionnaires were delivered to all dental prostheses residents. In total, 40 questionnaires were filled within three years. The questionnaire included ten five-choice items evaluating the general attitude of

the residents toward OSCE and twelve five-choice items toward OSCE nature.

### Data acquisition

All questions included a statement which could be ranked by the students on a Likert scale. The questions were designed based on conventional questions of previous and similar studies and were adjusted by two authorized professors of specialized dentistry education. According to authentic resources and authorities, the validity of the questionnaire was of content type and its reliability (0.74) was determined through calculating Cronbach's alpha coefficient. Also, the students' scores were recorded. In each exam These scores included the opinions of prostheses residents about their general attitude toward OSCE, levels of stress during OSCE, and the relationship between the grade obtained by the residents in the examination and their attitude toward OSCE.

### Statistical analysis

Statistical analysis of the Likert items was conducted by calculating frequencies in percent. Pearson correlations were used to evaluate the effect of the acquired score on the grade of participants' general attitude toward the examination and their evaluation from the mentioned examination ( $\alpha=5\%$ ). Statistical assessment was performed by SPSS version 17.

### Ethical consideration

Consent forms were available for individual examinees. They agreed and signed the consent forms on the basis that the examinees' names were kept confidential.

### Results

Opinions of prostheses residents about general attitude toward OSCE (questions 1-10) and the OSCE itself (questions 11-22) are shown in Tables 2 and 3, respectively. Most residents (90%) suffered from high levels of stress during OSCE. In addition, most residents (62.5%) referred to the large number of questions as a positive factor. There was a close relation between the grade obtained by the residents in the examination and their attitude to OSCE ( $p=0.015$ ,  $r=0.38$ ), as well as their evaluation about the examination ( $P=0.002$ ,  $r=0.48$ ). Students with better grades had a more positive attitude toward OSCE.

### Discussion

Acquiring required knowledge, skill, and attitude is the main and final objective in medical education. Evaluation aims at comparing predetermined educational objectives and the results obtained from the desired plan. Evaluation should be transparent, unbiased, and standard. It should assess students' performance based on the determined educational objectives and it should be continuous and provide the students with the required feedback.<sup>5</sup> To have a successful evaluation, it is better to collect and evaluate the students' feedback. In this regard, the attitudes of specialized prostheses students of dental faculty of Tabriz University of Medical Sciences toward the use of Objective Structured Clinical Examination were evaluated. Results of

## Dental prostheses residents' attitude to OSCE

**Table 1.** Questionnaire evaluating OSCE examination of residents

Subject	Completely agree	Agree	Abstention	Disagree	Completely disagree
I know about objectives of clinical knowledge using OSCE method					
OSCE is an appropriate way to evaluate practical skills of dentistry					
OSCE is an appropriate way to enhance theoretic knowledge					
Clinical diagnostic skills of dentistry are well evaluated by OSCE					
OSCE may cover wide range of skills and practical techniques of dentistry					
OSCE specifies my weak and strong points in practical skills					
Written questions in OSCE are useful					
Providing feedback about students' weak and strong points at the end of OSCE results in improvement of their practical knowledge					
OSCE increases students' stress					
The examination differentiates skilled and unskilled students					
Before OSCE, required descriptions were provided about holding method of exam and the stations					
There was right time allocated to each station					
There was clear instructions for every station					
The stations were arranged logically					
The more the number of the stations, the more the evaluation opportunity of the students					
The less the number of the stations, the more the allocated time and the more effective the answers of the students					
OSCE results in improvement of my practical knowledge and skill					
OSCE results in enhancement of my theoretical knowledge					
OSCE increases students' stress					
Do you agree with practical test as part of OSCE?					
Post-exam feedback results in more knowledge					
I am interested in OSCE examination as part of residency training					

**Table 2.** Answers of prostheses residents to attitude questions in OSCE examination (in percent)

Questions	Completely agree	Agree	Abstention	Disagree	Completely disagree
I know about objectives of clinical knowledge evaluation using OSCE method	30	62.5	7.5	-	-
OSCE is an appropriate way to evaluate practical skills of dentistry	17.5	45	17.5	7.5	12.5
OSCE is an appropriate way to enhance theoretic knowledge	20	32.5	22.5	17.5	7.5
Clinical diagnostic skills of dentistry are well evaluated by OSCE	10	57.5	5	7.5	20
OSCE may cover wide range of skills and practical techniques of dentistry	-	42.5	10	35	12.5
OSCE specifies my weak and strong points in practical skills	-	45	32.5	10	12.5
Written questions in OSCE are useful	5	22.5	52.5	12.5	7.5
Providing feedback about students' weak and strong points at the end of OSCE results in improvement of their practical knowledge	35	50	10	-	5
OSCE increases students' stress	60	30	-	10	-
The examination differentiates skilled and unskilled students	-	32.5	10	37.5	20

**Table 3.** Answers of prostheses residents to questions about OSCE examination (in percent)

Questions	Completely agree	Agree	Abstention	Disagree	Completely disagree
Before OSCE, required descriptions were provided about holding method of exam and the stations	40	37.5	10	12.5	-
There was right time allocated to each station	15	65	-	12.5	7.5
There was clear instructions for every station	25	30	17.5	17.5	10
The stations were arranged logically	25	35	32.5	5	2.5
The more the number of the stations, the more the evaluation opportunity of the students	35	27.5	22.5	7.5	7.5
The less the number of the stations, the more the allocated time and the more effective the answers of the students	-	22.5	5	65	7.5
OSCE results in improvement of my practical knowledge and skill	10	70	7.5	5	7.5
OSCE results in enhancement of my theoretical knowledge	20	40	37.5	-	2.5
OSCE increases students' stress	27.5	62.5	-	10	-
Do you agree with practical test as part of OSCE?	10	47.5	10	30	2.5
Post-exam feedback results in more knowledge	30	40	12.5	15	2.5
I am interested in OSCE examination as part of residency training	20	45	17.5	5	12.5

pre-test questions indicated the positive attitude of residents to the OSCE method, as 62.5% of the subjects were aware of objectives of this evaluation method and its efficiency in evaluating practical skills. The findings corresponded with studies by Imani<sup>18</sup>, Awaisu<sup>19</sup>, and Saboury<sup>5</sup> conducted on medical, pharmaceutical, and dentistry students, respectively. Abraham et al.<sup>20</sup> confirmed the OSCE examination for a physiology course where the students were more satisfied in comparison with the traditional methods. Additionally, the satisfaction of psychiatry residents with OSCE taking two different board exams, one by OSCE technique and two by traditional method, was confirmed in a study conducted by Zarghamiet al.<sup>21</sup> Faryabi et al.<sup>15</sup> studied the attitudes of dentistry students of Kerman University of Medical Sciences and reported that only 34.8% of the students referred to the usefulness of OSCE and most of them preferred the written method. In the present study, there was not any difference between students' attitude before and after OSCE, which is contrary to the findings of a study conducted by Saboury et al.<sup>5</sup> Several studies have been conducted about the effect of the OSCE examination on an increase of students' stress. In the present study, most students (90%) suffered from high levels of stress during the examination, which was similar to the findings of Furlong et al.<sup>22</sup> The students' stress reported in studies of Saboury et al.<sup>5</sup>, Jaliliet al.<sup>23</sup>, and our study were 64.1%, 63.3%, and 62.5%, respectively. Both Brand et al.<sup>24</sup> and Zartman et al.<sup>25</sup> referred to stress among students during the examination. Unfamiliarity of the students with this kind of examination, presence of invigilators and instructors in the examination, nonstandard and ambiguous questions, time limitations, and fatigue resulting from the exam have been introduced as causes of stress in different studies. However, every subject may be stressful under any condition.<sup>26</sup>

Similar to the study of Saboury<sup>5</sup> and Faryabi<sup>15</sup>, most students (62.5%) in the present study referred to the usefulness of more stations in improving the quality of examinations. Most students believed that there was a logical process considering time duration, order, and number of the stations, indicating the appropriate structure of the examination. Additionally, pre-test and post-test opinions were the same.

There was a meaningful relation between the acquired grade, students' attitude toward the examination, and their evaluation about the examinations. Students with better grades had more positive attitudes toward the examination. This was similar to a study conducted by Malik et al.<sup>27</sup> It may indicate that objectivity and uniformity of the examination along with its justness resulted in better attitudes and satisfaction and most students were interested in including OSCE as part of residency courses. This result was similar to those in a study by Furlong et al.<sup>22</sup>

A majority of students emphasized that OSCE was able to evaluate a wide range of skills and practical methods in dentistry. In addition, a study by Sood reveals the advantages and disadvantages of the procedure during treatment. Clinical skills can be evaluated well by OSCE, and feedback from the exam improves theory and practice of dentistry science.<sup>28</sup>

Particular clinical skills can be measured by using OSCE to observe the performance of a task and improve the validity of interpretation. It is possible to provide immediate feedback enhancing learning capabilities which can be the case for teachers as well to help them correct their teaching-learning errors. On the other hand, there exist some disadvantages to the exam, including labour-intensiveness and its costs, limitation of resources and faculty time, and challenges with real patients. In addition, in cases of complicated skills that normally require a comprehensive

peer review, it is difficult to make a conclusion in the short examination time period, which decays the validity at the expense of reliability. OSCEs are also not able to provide adequate information to performing procedures and managing life-threatening clinical situations.<sup>29-31</sup>

In the current study, only postgraduate students of prosthodontics were evaluated. Further studies are required to evaluate the possible effect of student's grade and specialized field on the attitude of students upon usefulness of OSCEs in learning.

Since accurate, complete, and exact evaluation of clinical skills and capabilities is not possible through traditional methods only, it is necessary to hold appropriate examinations, e.g., OSCEs, in order to evaluate cognitive (knowledge), attitude, and psychomotor (skill) areas as well. This examination may serve as a starting point to evaluate the students more objectively, effectively, and satisfactorily.

### Conclusion

OSCE is a technique by which the professional skills and capabilities of practitioners in clinical situations are determined. It also deals with three important categories of diagnosis, treatment plan, and practical management. This method evaluates the realization rate of educational objectives considering cognitive, emotional, and psychomotor skills of medical students. Considering the satisfaction level of the students in this study, OSCE was efficient in improving the quality of the examination, providing effective feedback to the students, and improving the course and may be regarded as part of residents' training courses. Although there are some barriers and restrictions in holding the examination, its use is recommended for dental prostheses residents in order to confidently evaluate their practical skills.

### Competing interests

The authors declare that there is no conflict of interest.

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