



ORIGINAL ARTICLE

# Dental education development reflection from an objective structured clinical examination



Stanley Shih-Li Tsai <sup>a,b</sup>, Jenny I-Chun Sar <sup>c</sup>,  
Jenny Zwei-Chiang Chang <sup>d,e</sup>, Szu-Hsien Yu <sup>d,e</sup>,  
Eddie Hsiang-Hua Lai <sup>c,d,e\*</sup>, Chun-Pin Lin <sup>d,e</sup>

<sup>a</sup> Department of Medical Education, National Taiwan University Hospital, Taipei, Taiwan

<sup>b</sup> Graduate Institute of Medical Education and Bioethics, College of Medicine, National Taiwan University, Taipei, Taiwan

<sup>c</sup> Department of Dentistry, National Taiwan University Hospital, Hsin-Chu Branch, Hsin Chu City, Taiwan

<sup>d</sup> Department of Dentistry, National Taiwan University Hospital, Taipei, Taiwan

<sup>e</sup> School of Dentistry, National Taiwan University, Taipei, Taiwan

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## KEYWORDS

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**Abstract** *Background/purpose:* Recently, dental education has put emphasis on the assessment of clinical competencies using an objective structured clinical examination (OSCE). The purpose of this study was to assess several clinical competencies required for dental graduates by having dental students and residents of different levels take the same set of OSCEs. *Materials and methods:* Twelve 5<sup>th</sup>-grade dental students (D5), 12 dental interns (Ri), and 12 1<sup>st</sup>-year dental residents (R1) were recruited to take the same set of OSCEs composed of six stations: Station 1, explanation of a treatment plan for restoration of a missing tooth; Station 2, taking a study cast impression with alginate; Station 3, explanation of a treatment plan for restoration of an inlay; Station 4, explanation to a mother for taking a radiograph of her child's tooth; Station 5, placement of a rubber dam on a designated tooth and Station 6, explanation of pulpitis diagnosis and treatment. The examinee's performance was graded using both global rating and checklist scores.

*Results:* There were significant differences in the mean global rating and checklist scores of Stations 3, 5, and 6 among the three groups. In Stations 3 and 5, Ri performed best, followed by R1 and D5. In Station 6, R1 performed best, followed by Ri and D5. In Stations 1, 2, and 4, there were no significant differences among the three groups. However, Ri performed better than R1 in Station 1.

\* Corresponding author. School of Dentistry, National Taiwan University, Number 1 Changde Street, Zhongzheng District, Taipei 100, Taiwan.

E-mail address: [eddielai0715@yahoo.com.tw](mailto:eddielai0715@yahoo.com.tw) (E.H.-H. Lai).

*Conclusion:* More emphasis should be placed on professional communication skills in the resident training program.

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## Introduction

The focus of dental education worldwide has expanded during the past few years. Discussions have ranged from core competencies of dentists and academic programs to clinical assessment strategies.<sup>1–4</sup> Current emphasis has focused on patient-centered medical service and advanced clinical training, including especially the appropriate attitude and good communication skills. As a result, clinical performance assessment using the objective structured clinical examination (OSCE) has gained popularity. Moreover, its usage in dental assessment has been broadly discussed.<sup>5–8</sup> After analyzing the results of OSCE tests, academic courses could be adjusted to achieve the most suitable combination of teaching, testing, learning, and performing.<sup>9,10</sup>

The purpose of this study was to assess several clinical competencies required for dental graduates by having dental students and residents of different levels take the same set of OSCEs. In the beginning, the teaching committee raised several clinical competencies required for a dental graduate. However, no general consensus has been reached regarding the extent and degree of preparedness of these individuals—especially considering that these are students of different levels.<sup>11,12</sup> By utilizing OSCE, participants of different levels were examined for certain clinical skills, and their performance outcomes were correlated with current dental education. Furthermore, by evaluating the variation between learning and performance outcomes, curriculum guidance can be re-established.

## Materials and methods

An OSCE composed of six stations was designed for this study. Clinical scenarios were set up in the dental clinics of the National Taiwan University Hospital, Taipei, Taiwan where the examination took place. The process of station development began by assembling a multidisciplinary committee consisting of nine clinically well-experienced instructors from the Department of Dentistry, National Taiwan University Hospital. The committee provided a blueprint of certain core competencies required for a dental graduate (Table 1). The development of the questionnaire was based on this blueprint. After generating the six OSCE stations, both reliability and validity were tested. Six clinical scenarios were set up, including four using standardized patients and two testing the clinical skills. In the four stations using standardized patients, participants were asked to give treatment plans for restoration of a missing tooth and an inlay, an explanation to a mother for taking a radiograph of her child's tooth, and an explanation

of pulpitis diagnosis and treatment. In the two stations testing clinical skills, participants were asked to take a study cast impression with alginate and to place a rubber dam on a designated tooth. The examinees' performance was graded using a checklist score (successful items/total items evaluated, expressed as a percentage) and a global rating score (1 = clear fail; 2 = borderline; 3 = clear pass; 4 = very good pass; 5 = excellent pass).<sup>13</sup>

Nine clinically well-experienced dental staff members were recruited as OSCE examiners. OSCE examiner workshops were held once a week for 4 weeks. During the workshop, OSCE examiners were given a basic introduction about performance-based assessment and a more detailed instruction about the rating tool and the principle of formulating the checklists. Rehearsals were provided by video presentation and video rehearsal. Through team discussion, feedback, and educational programs, the confidence of the raters was enhanced. Furthermore, the validity and consistency were improved.<sup>14</sup> In the examination, residents of the dental department acted as standardized patients. A panel discussion was held 2 hours prior to the examination to improve the reliability of the actor's performance.

## Participants

Thirty-six participants—consisting of 12 5<sup>th</sup>-grade dental students (D5), 12 dental interns (Ri, also called 6<sup>th</sup>-year dental students), and 12 1<sup>st</sup>-year dental residents (R1)—were randomly selected and included in this study. Details on age, sex, and the past year's average school grade are listed in Table 2.

## Methods

Thirty-six examinees were randomly assigned into six groups, with six participants in each group. Six 10-minute OSCE stations were designed: Station 1, explanation of a treatment plan for restoration of a missing tooth; Station 2, taking a study cast impression with alginate; Station 3, explanation of a treatment plan for restoration of an inlay; Station 4, explanation to a mother for taking a radiograph of her child's tooth; Station 5, placement of a rubber dam on a designated tooth; and Station 6, explanation of pulpitis diagnosis and treatment. Each station provided 2 minutes for reading of the question and making the clinical judgment and 8 minutes for clinical performance. The whole procedure was recorded with a videocassette recorder. A faculty member was assigned in each station to monitor the whole procedure. Clinical performance was assessed using a checklist score and a global rating score, which were

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